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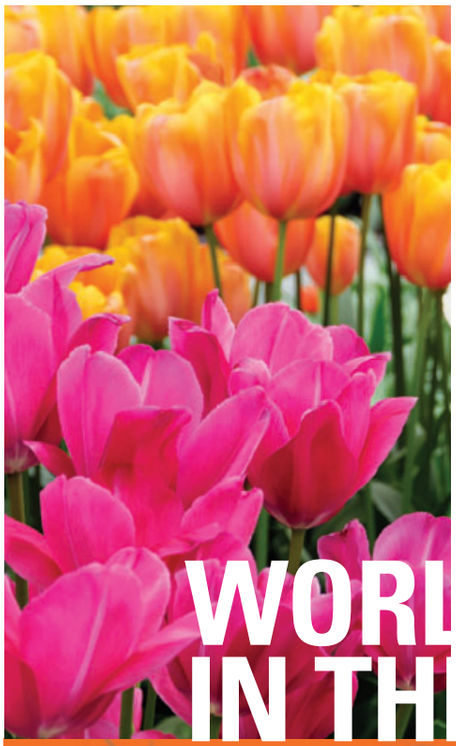

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Update on the Biopsychosocial Model for Chronic Pain

WIP-0514 THE BIOPSYCHOSOCIAL MODEL IN PAIN

R. Smeets
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We all are confronted with many patients who suffer from pain. Most of us are trained to look for medical causes in order to relieve patients from their pain. But we also know that many of these patients will develop chronic pain with huge problems in staying active and experiencing moderate to high levels of disability and lower quality of life. What can you as a clinician, even though you are mainly focusing on biomedical causes and relief of pain, do to prevent the development and maintenance of this accompanying disability and loss of quality of life? This refresher course will specifically focus on the important role of non-medical factors such as psychological, social and your beliefs/attitudes as clinician regarding pain in better treating patients with chronic musculoskeletal pain and more specifically how they function and potentially experience limitations in their daily life and participation in society.

You will learn how to look for these potentially contributing factors, how to diagnose the level of functioning of these patients and how to inform patients about their pain, how to treat it even the way how you might better prescribe pain medication and other pain relieving treatments and finally how you can help them to stay active despite being in pain.

Finally the necessity to collaborate intensively with other medical specialist and therapists who are involved in the treatment of patients with chronic pain will be discussed.

Evidence-based Interventional Pain Medicine According to Clinical Diagnoses. Part 1: Clinical Anatomy

WIP-0438 HEAD (ESPECIALLY THE OCCIPITAL REGION) AND NECK; THORAX AND LUMBOPELVIC REGION; CERVICAL AND THORACIC SYMPATHETIC SYSTEM

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Anatomy and Embryology, Maastricht University Faculty of Health Medicine and Life Sciences, Maastricht, the Netherlands

During refresher course 4/part 1 clinical anatomy of head, neck, thorax and lumbopelvic region relevant for pain syndromes and interventional pain techniques will be discussed. This refresher course is strongly recommended for pain practitioners, especially for participants who will attend the cadaver workshop and WIP examination.

In the head the occipital nerves will be discussed related to subcutaneous interventions. In the neck the spinal cord will be linked to interlaminar approaches and the dorsal root ganglion to transforaminal approaches respectively. Topography of the cervical medial branch, relevant in facet joint pain, will be explored.

The thoracic medial facet joint branch and the sympathetic system in the paravertebral space, including stellate ganglion will be demonstrated. This also holds for the parasympathetic (vagal) system. Complex regional pain syndrome and thoracic facet joint pain are the syndromes here. A cranial excursion to the cervical (para) sympathetic system will be held. The abdominal sympathetic system among others is subject of refresher course 8/part 2 by Andreas Herrler.

In the lumbar region vertebral muscles and connective tissue, epidural space and cauda equina will be discussed, related to interlaminar epidural corticosteroid injections and lumbar spinal cord stimulation. Transforaminal dorsal root ganglion approaches will be coupled to the neuroforamen and dural sleeve anatomy.

Attention will be spent to lumbar L1-L4 facet joint innervation and L5 primary dorsal branch. Besides that lumbosacral transition, sacrum, sacrococcygeal plexus and sacroiliac joint will be demonstrated.

Specific Pharmacological Considerations in the Prescription of Analgetics

WIP-0584 PHARMACOTHERAPY OF PAIN IN THE ELDERLY

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Background and aims: Drug selection for frail elderly has a low level of evidence, although the drug use in elderly is high. In elderly persons the pharmacology of many drugs is changed because of decrease the metabolic capacity of the liver and decrease of renal function with age (1). Guidelines are based only on the result of clinical studies, in these studies frail elderly are underepresented, reason to developed evidence and practice based criteria for drug selection in elderly persons.

Methods: We developed a model based on 31 criteria for drug selection in elderly persons (2). We applied the model for drug selection in frail elderly for opioids and NSAIDs (3,4)

Results: Most opioids are applicable in frail elderly, restrictions are applicable for methadon, buprenorphine and nicomorphine only. NSAIDs shold be restricted in elderly in general. If there is no alternative for NSAIDs, celecoxib is usefull in elderly without cardiovascular risk factors and naproxen combined with a gastroprotective drug is usefull in elderly without bleeding risk factors.

Conclusions: Drug selection in elderly should include specific riskfactors which are commen in frail elderly. Ur drug selection criteria model is usefull in the selection of analgesics in elderly.

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Conflict of interest

Update on the Biopsychosocial Model for Chronic Pain

WIP-0573 THE ROLE OF PSYCHOSOCIAL FACTORS IN CHRONIC PAIN

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Cognitive-Behavorial Treatment Modalities to Decrease Disability:

Background: Persons with chronic musculoskeletal pain often report impaired ability to perform daily activities. The impact of pain on a patient's daily functioning and/or workability is high and contributes significantly to decreased quality of life and high societal costs. As no total cure for chronic pain is available at the moment treatment aiming to restore daily functioning or return to work, despite the presence of pain, is of upmost importance.

Methods: In this refresher course presentation the content and working mechanisms of several evidence based interventions, such as pain education, graded activity and graded exposure in

vivo will be presented and discussed. These therapies use basic behavioural principles of operant and classic conditioning paradigms that are involved in the processing of pain. A matching of current understanding of the content and goals of these treatments with knowledge of the activity in cortical areas involved in the processing of pain perception will be proposed. Furthermore the importance of the role and attitudes of the health care professional in applying these type of treatments will be explained.
Results: Afterwards participants will know what the specific elements of the presented therapies are, which patients are suitable for each type of treatment, and how the effects can be explained by modern insight in functional changes within the central pain system in the brain.
Conclusion: Improving daily functioning despite pain is possible.

Chronification of Post-operative Pain: What is the Issue?

WIP-0333 PREVENTION OF CHRONIC PAIN AFTER SURGERY: THERAPEUTIC STRATEGIES

P. Lavand'homme
Anesthesiology, St Luc Hospital UCL Medical School, Brussels, Belgium

Central sensitization plays a major role not only in acute postoperative pain experienced by the patient but also in the development and maintenance of chronic pain after surgery. Thereby, past and current strategies have focused on the modulation of central sensitization by blocking nociceptive transmission e.g. neuraxial and peripheral nerve blocks, systemic administration of antihyperalgesic drugs like ketamine, gabapentinoids, nitrous oxide. As opioids are well known to induce central sensitization, preventive strategies also rely on opioid sparing (multimodal) anesthesia and analgesia. Recently, glia i.e. microglia and astrocytes is considered as a major key player in the central sensitization process and future developments should involve glial inhibitors. Despite the use of these preventive strategies, chronic postsurgical pain still remains an unresolved issue. More, the failure of current preventive strategies should incite the care providers to question the role in interindividual factors like the duration of central sensitization after tissue injury and the role of preexisting central sensitization related to the presence of pain either at the surgical site or elsewhere. Preoperative individualization of perioperative pain management seems currently to be the next step to improve the success in the prevention of pain chronification.

Update on the Biopsychosocial Model for Chronic Pain

WIP-0572 COGNITIVE-BEHAVIORAL TREATMENT MODALITIES TO DECREASE DISABILITY

J.R.de Jong
Rehabilitation, University Hospital Maastricht, Maastricht, the Netherlands

Exposure in Vivo in Chronic Pain:
Background: There is accumulating support for the role of pain-related fear as explanation of why patients who experience acute pain develop chronic pain problems and associated disability. Pain-related fear is associated with catastrophic (mis) interpretations of pain, hyper-vigilance, increased escape and avoidance behaviors, as well as intensified pain experience and functional disability, central change, motor abnormalities and depression.
Exposure therapy: One of the most effective strategies for treating anxiety disorders undoubtedly is exposure therapy with or without cognitive strategies. Currently, exposure is seen as the process in which the patient is repeatedly exposed for prolonged periods to a feared object or situation and hence in the absence of aversive consequences; also named extinction. Studies with replicated single-case experimental methodology and Randomized Clinical Trials showed that Exposure in Vivo (EXP) is a promising treatment in Chronic Pain (CP) patients. Due to gradual and repeated encounters to feared activities, the goal of EXP is to provide patients with the most convincing evidence that expected detrimental consequences of these feared activities are in fact a catastrophic overestimation. Pain reduction is not the primary goal. Exposure consist of several components: behavioral analysis, goal identification, education, graded hierarchies, exposure in vivo, and generalization.
Application: The current presentation will focus on EXP as a novel treatment for CP. Principles of EXP will be demonstrated by audiovisual material.

Specific Pharmacological Considerations in the Prescription of Analgetics

WIP-0430 TOPICAL TREATMENT IN CHRONIC PAIN MANAGEMENT

P. Finch
Pain Management, Perth Pain Management Centre, Perth, Australia

Background: Topical agents have been compounded since antiquity. For example, indigenous Australians developed an extensive pharmacopeia for many conditions including chronic pain. Ancient remedies were also developed in Neolithic times and later in Mesopotamia and early Egypt. Parts of plants were mixed with wine, honey or animal fats and applied externally. Wine was used in wounds for its antiseptic effect, possibly a pH related effect.
Discussion: Approximately 25% of modern medications are developed from plants. More than 85 000 plant species have been documented for medical use globally. Many of them are used topically. The topical route refers to the application of drugs to the skin or mucous membranes where there is thought to be a local pharmacological mechanisms of action. Peripheral mechanisms exist for the main types of pain and there are logical targets for topical treatment. Topical administration maximises local concentrations of drugs and minimises systemic effects by reducing systemic absorption. Many drugs are used topically, but often with poor evidence for efficacy, including local anaesthetic agents, tricyclic antidepressants, NMDA antagonists, alpha-2 agonists, NSAIDS, TNFalpha antagonists and nitric acid donors. Topical applications can include skin applications, oral rinses, vulval creams, rectal suppositories and corneal drops.
Conclusion: The topical route can provide effective analgesia with fewer systemic effects. Multiple targets are possible and both inflammatory and neuropthic pain can be influenced by topical agents. Despite a history stretching back into antiquity, topical analgesia is still in its infancy!

Evidence-based Interventional Pain Medicine According to Clinical Diagnoses. Part 2: Clinical Anatomy

WIP-0437 THE ABDOMINAL SYMPATHETIC SYSTEM, INTERVERTEBRAL DISC, PTERYGOPALATINE GANGLION AND GANGLION GASSERI

A. Herrler
Anatomy and Embryology, Faculty of Health Medicine and Life Sciences, Maastricht University, Maastricht, the Netherlands

This refresher course is thought of building up a basis especially relevant for the cadaver workshop and exam. As you have booked those parts it is strongly recommended to follow these lectures in before.

The abdominal sympathetic system: This lecture is building on the lecture "Thoracic sympathetic systems" given by Arno Lataster in before. After introducing the general sympathetic organization, different abdominal structures will be discussed. Building onto the general sympathetic organization topography and formation of the sympathetic trunk as well as the abdominal autonomic ganglia shall be presented. A very important take home massage will be to realize the diversity of this system.

The intervertebral disc: Back pain is a major health problem in which the intervertebral disc is playing a major role. After introducing histology and embryology the attention will be turned onto the blood supply and innervation of the intervertebral disc. All this will be discussed on the background of function and aging.

The pterygopalatine ganglion and ganglion Gasseri: Both ganglia are playing an important role in various pain syndromes, for example headaches as well as trigeminal and facial pain. Because of their hidden location the topography of those ganglia is of high relevance. First of all the general anatomical location of the ganglia will be presented. Thereafter histological as well as functional aspects will be discussed. Finally, relevant structures on the way to reach those ganglia shall be introduced.

Atypical Analgesics in the Pharmacotherapy of Chronic Pain: Let's Get Practical!

WIP-0244 SODIUM CHANNEL BLOCKERS IN THE PHARMACOTHERAPY OF PAIN: LET'S GET PRACTICAL

G.H. Hans
Multidisciplinary Pain Center, Antwerp University Hospital UZA, Edegem, Belgium

Background: Sodium channels are deemed to be important in the pathophysiology of neuropathic pain conditions.

Aims: During this presentation a overview will be presented of the available scientific evidence concerning the application of local anesthetics in the treatment of neuropathic pain conditions.

Results: In the past many studies have been performed investigating the analgesic efficacy and tolerability of local anesthetics in the treatment of acute and chronic neuropathic pain conditions. The results are somewhat contradictory due to the huge variability in studied patient populations, applied primary and secondary outcome parameters, evaluation of analgesic efficacy, duration of follow-up and dosages that were administered in the study protocol. However, lately some studies of high methodological quality have become available, and will be discussed during this presentation. In addition, long term results from our clinical practice will be presented.

Conclusions: On the basis of the available scientific evidence proper indications of application of local anesthetics in the treatment of neuropathic pain conditions will be discussed.

WIP-0583 ANTIDEPRESSANTS IN THE PHARMACOTHERAPY OF PAIN: LET'S GET PRACTICAL

B. Morlion
The Leuven Centre for Algology & Pain Management, KU Leuven - University of Leuven, Leuven, Belgium

Selected antidepressants have shown efficacy in many clinical pain syndromes. These include the "good old" tricyclic antidepressants (TCA): amitriptyline, desimipramine, nortriptyline and imipramine as well as selective serotonin and noradrenergic reuptake inhibitors (SNRI): duloxetine, venlafaxine, and milnacipran. The most commonly prescribed selective serotonin reuptake inhibitor (SSRI) antidepressants are less useful in pain management. The analgesic properties of antidepressants are independent of their antidepressant properties and arise through a number of mechanisms of action in the central and peripheral nervous systems, including: noradrenaline and serotonin neurotransmission by reuptake inhibition; actions on opioid, adrenergic, serotonin, GABA and NMDA receptors; ion channel activation; and effects on inflammatory cytokines. These multiple mechanisms of action are complementary to other analgesics but also responsible for the unique side effect profile. Adverse effects typically observed with TCAs are linked to their anti-cholinergic actions and include sedation, dry mouth, blurred vision, weight gain and urinary retention. Among the SNRIs the analgesic effects are more robustly established for duloxetine than for venlafaxine. In general, less adverse effects are observed with SNRIs than with the TCAs. Nevertheless, "Start low, Go slow" is a good advice on starting up all antidepressants. The prescribing information of TCAs and SNRIs warns for increased risk for suicide, especially in young patients. Importantly, the patient needs to be informed that onset of action can take days to weeks, no immediate effects can be expected.

Evidence-based Interventional Pain Medicine According to Clinical Diagnoses. Part 3: Facial and Occipital Pain

WIP-0479 TREATMENT OF CHRONIC POST-SURGICAL PAIN (CPSP) USING SPINAL CORD STIMULATION (SCS) OF THE DORSAL ROOT GANGLION (DRG) NEUROSTIMULATION: RESULTS FROM TWO PROSPECTIVE STUDIES

L. Liem[1], H. Nijhuis[1], F. J. P. M. Huygen[2], A. Gulve[3], M. L. Sharma[4], N. K. Patel[5], S. Love-Jones[6], A. L. Green[7], G. Baranidharan[8], D. Bush[8], S. ElDabe[3]
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Objectives: Chronic post-surgical pain (CPSP) is characterized by pain continuing at least 3–6 months post-surgery. While nerve blocks have been demonstrated to be effective in certain CPSP conditions, evidence of effectiveness of spinal cord stimulation (SCS) is limited to a few case series. We present preliminary results from two prospective studies using SCS of the dorsal root ganglion (DRG) stimulation to treat CPSP.

Methods: Subjects diagnosed with CPSP were implanted with a DRG neurostimulator following successful trial stimulation. At baseline and at follow-up visits, along with pain (visual analog scale [VAS]), quality of life improvements were also

captured (EQ-5D questionnaire). Results at three months are reported (median ± standard error).
Results: Twenty nine out of the thirty six subjects (ethics committee approved and completed informed consent) trialed (80.6% success rate) received a permanent implant. At 3 months, overall and segmental pain relief were 64.0% ± 8.3% (N = 16) and 76.4% ± 7.4% (N = 24), respectively. Significant improvement in the EQ-5D index score was also observed (0.722 ± 0.070 at 3 months vs. 0.364 ± 0.036 at baseline, $p < 0.0005$).
Conclusion: Although preliminary, data from prospective studies suggest that SCS of the DRG may be an effective intervention for CPSP. Long-term data, compared against a standard of care control treatment, is required to ascertain if this indeed is the case.
Conflict of interest

Cancer Pain: Management and Consequences of Management

WIP-0334 COMMUNITY BASED PROGRAMS TO IMPROVE PAIN IN CANCER: WHAT IS THE EVIDENCE?

M. Bennett
Academic Unit of Palliative Care, University of Leeds, Leeds, UK

Cancer pain remains prevalent and is often severe for many; patients based in the community report poorer pain control than those in hospital. Despite nearly 30 years since the WHO analgeisc ladder was widely adopted for cancer pain, strategies for improving cancer pain management are still required.
This lecture will discuss evidence-based approaches to improve cancer pain management, focusing on community based patients. Effective interventions are often non-pharmacological and may be delivered in isolation or combined with others as a more complex intervention. Although effective in research studies, the routine implementation of these interventions into clincial services remains poor. I will summarise the evidence to describe an ideal cancer pain service for patients.

WIP-0474 THE NEED FOR A NEW ALGORITHM FOR THE INTERVENTIONAL TREATMENT OF CANCER PAIN

K. Vissers
Pain and Palliative Medicine, Radboud University Nijmegen Medical Center, Malden, the Netherlands

The best known algorithm for the management of cancer pain is the WHO pain ladder. This algorithm has contributed to the recognition for the need of appropriate treatment schedules and techniques for the relief of pain in patients with cancer. Besides the pharmacological treatment, the interventional pain management techniques may be considered. Evidence on the importance of a multi-dimensional approach by a multidisciplinary team of cancer pain is starting to accumulate. Hence, the need for an innovative adapted algorithm including all potential treatment possibilities, for the management of cancer pain. The efficacy and the minimal invasive nature most interventions justifies to propose these techniques even as soon as opioid treatment is considered. In view of the long term outcome objectives and health economic considerations, these older techniques acquire a novel place in the treatment algorithm. The treatment selection should always be done considering the patient's general status and life expectancy. This algorithm will be presented during the lecture.
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Plenary Session 1

WIP-0585 WHAT WORKS FOR WHOM? DETERMINING THE EFFICACY AND HARM OF TREATMENTS FOR PAIN

A. Moore
Nuffield Division of Clinical Neurosciences, University of Oxford, Oxford, UK

Evidence Clinicians and researchers have to consider evidence: what works, for whom, in what setting, and at what cost. It is time to re-evaluate Evidence Based Pain in the light of major changes in how we understand and interpret clinical trials, looking for clinical practice effectiveness rather than clinical trial efficacy. We now have a better understanding of how to control bias in individual trials, and how to control bias in systematic review; several new sources of bias have been discovered, effecting chronic pain trials especially. Another major change is in outcomes, where the move is from average results in populations to patient defined outcomes of adequate treatment. Patients want high levels of pain relief and consider anything less than mild pain as a failure, and individual patient analyses give that much greater weight. We are now in a position to present data on interventions for the most common pain complaints, including acute pain, headache, migraine, post-operative pain, neuropathic pain. Equally important is addressing benefits versus risks of treatment, to empower patients and their carers in making the best decision for them.

Neuropathic Itch and Pain: New Preclinical Approach to Assessment and Implications for the Pain Physician

WIP-0242 FUNCTIONAL IMAGING OF PRIMARY SENSORY NEURONS TO REVEAL PAIN MECHANISMS

X. Dong
Neuroscience, Johns Hopkins University, Baltimore, USA

Small-diameter nociceptive neurons whose cell bodies reside in dorsal root ganglia (DRG) and trigeminal ganglia (TG) play essential roles in pain signal detection, transmission, and modulation. The peripheral axons of these pseudo-unipolar neurons innervate skin, muscle, and visceral organs to detect painful stimuli, while their central axons transmit these signals to the spinal cord dorsal horn. One major contributor to hyperalgesia is augmented sensitivity of primary nociceptive neurons. Therefore, monitoring the activities of these neurons and axons is crucial to understand pain mechanisms. Imaging neuronal activity in primary sensory neurons from tissue explants and slices has been a challenge given that their nerve endings and cell bodies are densely surrounded by other cells (e.g. keratinocytes in the skin, glia surrounding somas, intrinsic neurons in the spinal cord) and therefore difficult to selectively load with Ca^{2+} sensitive chemical dyes. By specifically expressing a genetically-encoded Ca^{2+} sensitive indicator in almost all DRG and TG neurons in Pirt-GCaMP3 mice, we successfully detected activation of primary sensory neurons in the trigeminal system at peripheral and central terminals as well as in their cell bodies, in tissue explant and slice preparation. The advantages of this method are manifold: simple tissue preparation and imaging procedures; excellent spatial resolution; sensitive, high-efficiency simultaneous imaging of multiple

neurons; preservation of somatotopic organization; and stable expression of GCaMP3 after nerve injury. Because of these advantages, we were able to visualize peripheral neuronal hypersensitivity in both injured and uninjured nerves corresponding to chronic pain from skin territories innervated by these nerves.

Evidence-based Interventional Pain Medicine According to Clinical Diagnoses. Part 5: DISC, CRPS, ANGOR

WIP-0416 DISCOGENIC PAIN

J.W. Kallewaard, M.A.M.B. Terheggen
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An estimated 40% of chronic lumbosacral spinal pain is attributed to the intervertebral disc. Degenerative changes following loss of hydration of the nucleus pulposus lead to circumferential or radial tears within the annulus fibrosus. Annular tears within the outer annulus stimulate the ingrowth of blood vessels and accompanying nocicepters into the outer and occasionally inner annulus. Sensitization of these nociceptors by various inflammatory repair mechanisms may lead to chronic discogenic pain.

The current criterion standard for diagnosing discogenic pain is pressure controlled provocative discography using strict criteria and at least one negative control level. The strictness of criteria and the adherence to technical detail will allow an acceptable low false positive response rate. The most important determinants are the standardization of pressure stimulus by using a validated pressure monitoring device and avoiding overly high dynamic pressures by the slow injection rate of 0.05 ml/s. A positive discogram requires the reproduction of the patient's typical pain at an intensity of >6/10 at a pressure of <15 psi above opening pressure and at a volume less than 3.0 ml. Perhaps the most important and defendable response is the failure to confirm the disc is symptomatic by not meeting this strict criteria. Various interventional treatment strategies for chronic discogenic low back pain unresponsive to conservative care include reduction of inflammation, ablation of intradiscal nocicepters, lowering intranuclear pressure, removal of herniated nucleus, and radiofrequency ablation of the nociceptors Unfortunately, most of these strategies do not yet meet the criteria required for our endorsement. In particular, single needle radiofrequency thermocoagulation of the disc are not recommended for patients with discogenic pain (2 B−). Interestingly a little used procedure, radiofrequency ablation of the ramus communicans, does meet the (2 B +) level for endorsement.

Diagnosis and Clinical Implications of Small Fiber Neuropathy

WIP-0359 SODIUM CHANNELOPATHIES AND PAINFUL NEUROPATHIES

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Painful neuropathies are a frequent cause of neuropathic pain. Voltage-gated sodium channels are responsible for the generation and conduction of action potentials in the peripheral nociceptive neuronal pathway where NaV1.7, NaV1.8 and NaV1.9 sodium channels (encoded by *SCN9A, SCN10A* and *SCN11A*) are preferentially expressed. Recently, gain-of-function *SCN9A* mutations in patients with small fiber neuropathy were described. In addition, painful neuropathies have been linked to *SCN10A* mutations. The emerging role of sodium channelopathies in painful peripheral neuropathies will be presented.

Neuropathic Itch and Pain: New Preclinical Approach to Assessment and Implications for the Pain Physician

WIP-0409 NEUROPATHIC ITCH AND PAIN: TWO SIDES OF THE SAME COIN?

M. Schmelz
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Specific neuronal pathways for itch have been discovered in man and rodents and thus it may be unexpected that similar mediators and mechanisms of neuronal sensitization in the periphery and the central nervous system exist in itch and pain including nerve growth factor (NGF), proteinase-activated receptors (PAR-2), lysophosphatidic acid (LPA) and endothelin on the peripheral level and identical patterns of sensitization on spinal level. Both sensory (such as TRPV1 or TRPA1) and axonal channels (such as NaV1.7 or NaV1.8) have been hypothesized as source of ongoing activity leading to pain. It appears mandatory to expand the same approach to patients suffering from chronic pruritus. A broad overlap exists between neuropathic itch and neuropathic pain for example in post herpetic neuralgia. In contrast, localized peripheral neuropathy may lead to primarily painful symptoms (meralgia paresthetica) or chronic itch (brachioradial pruritus). Our efforts to better understand the mechanism leasing to chronic pain will most probably also identify common mechanisms also underlying chronic itch.

Chronic Musculo-Skeletal Conditions and Pain

WIP-0397 HOW TO DEAL WITH PAIN IN ADOLESCENTS: NEW PATHWAYS

J. Verbunt
Rehabilitation Medicine, Maastricht University Medical Center, Maastricht, the Netherlands

Children and adolescents frequently complain about pain. Even up to 25% of schoolchildren, especially adolescents, report chronic pain. Musculoskeletal pain is one of the most reported pain complaints in adolescents. Although a broad array of medical diagnoses is involved in adolescent pain-conditions, in only 10–30% a specific medical disease is identified to explain their pain.

Unexplained musculoskeletal pain is not always as self-limiting as assumed: persistence rates up to 30–64% after 4 years have been reported. Recent studies identified children/adolescents at risk for getting pain as those aged 11 years or older, having depressive symptoms, or joint hypermobility, or being anxious, female, or being involved in vigorous physical activity. In about 20%, pain will have a disabling impact on daily functioning. In those with chronic musculoskeletal pain, with its effect on the loco motor system and the highest impact on physical functioning, pain can have a huge impact on daily life activities. Pain can interfere with developmental, school and leisure time activities, and causes serious psychological distress. Irrespective of this potential threat, the amount of knowledge on pain related disability in adolescent pain and potential rehabilitation treatment options is still scarce when compared to the evidence available on adult pain. Fortunately, recently, more studies

came available. In this presentation, we will discuss current evidence on underlying mechanisms for disability in adolescent pain and elaborate on consequences for rehabilitation practice.

Evidence-based Interventional Pain Medicine According to Clinical Diagnoses. Part 5: DISC, CRPS, ANGOR

WIP-0373 COMPLEX REGIONAL PAIN SYNDROME

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Center of Pain Medicine, Erasmusmc, Rotterdam, the Netherlands

Background and aim: To learn about the Complex regional pain Syndrome (CRPS).
Methods: A literature search is performed in Medline looking for papers that describe the pathophysiology of CRPS from inception to the present.
Results: CRPS is a syndrome occurring as a complication of surgery or trauma. The incidence is 26.2 per 100,000 person years. CRPS occurs slightly more often in the upper extremities. A fracture is the most common initial event. Women are affected 3.4 times more often than men. The mean age at diagnosis is 52 years. In literature there is still an ongoing debate about the pathophysiology. Afferent mechanisms like inflammation, efferent mechanisms like autonomic disturbances and central mechanisms like cortical reorganization are described. There is a clear crosstalk between the immune system (inflammation) and the nervous system (central sensitization and neuroplasticity). The diagnosis is based on signs and symptoms. Generally accepted are the diagnostic criteria of Harden and Bruehl. Recently these criteria are adapted as the official new IASP criteria. Laboratory tests are of limited value. The natural course of the disease is not always favorable. Serious impairment can be a result. Possibly due to a lack of understanding of the pathophysiology a variety of therapies is available and applied. Pharmacological pain management and physical rehabilitation of limb function are the main pillars of therapy.
Conclusions: An evidence based algorithm for diagnosis and treatment is proposed. This algorithm is based on a risk benefit evaluation.
Conflict of interest

Chronic Musculo-Skeletal Conditions and Pain

WIP-0286 INJECTIONS COMPLETED: "WHAT NEXT"?

E. Koshi
Rehabilitation Medicine Physiatry, Halifax Spine and Pain Institute, Halifax, Canada

Pain intervention techniques (injections) are only a small part of the treatment for individuals with chronic pain. What is the next step if the injections did not relieve the pain? What to do with the pain relief that the injections provide? Is the goal of the treatment the pain relief or improvement in function and getting back to a gainful activity? How to achieve these goals? This will be issues discussed in this presentation.

Evidence Based Interventional Pain Therapy According to Clinical Diagnoses. Part 6: Visceral and Cancer Pain

WIP-0522 VISCERAL PAIN

M. Puylaert
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Historically there was a misconception that there was no sensory innervation of the viscera. Visceral pain syndromes arise from different origins. Consequently there are a number of different chronic visceral pain syndromes relating to cardiac, gastrointestinal, urological, and gynecological systems. Despite the plethora of syndromes, they share one common feature: absence or poor understanding of the pathology causally related to the pain. As such, treatment of these pain problems is provider orientated, complicated and often leads to failure as most of the treatment options used, are similar to the treatment for somatic pain conditions.
When the syndrome is chronic, patients should be redirected to symptomatic pain management approaches. To further complicate the issue, the problem behaves as if it is a combination of neuropathic, inflammatory and somatic factors. Visceral pain syndromes are sometimes considered to be a form of visceral hypersensitivity to non-noxious stimuli. Secondary hypersensitization and central reorganization takes place.
As conservative treatment options become insufficient, more invasive treatment options can be considered. The use of neurolytic blocks in non-malignant states is controversial. For non-malignant visceral pain, treatment ladder would be helpful where criteria for advancing to radiofrequency techniques or spinal cord stimulation might be defined according to the evidence. Others have demonstrated benefits from a multidisciplinary approach of chronic pelvic pain.
After some general issues on visceral pain, we will take a closer look at chronic pancreatitis as one specific visceral pain syndrome and consider all treatment options available as such.

Latest and Groundbreaking Developments in CRPS

WIP-0372 NEW INSIGHTS IN THE PATHOPHYSIOLOGY OF COMPLEX REGIONAL PAIN SYNDROME

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Back ground and aims: Complex Regional Pain Syndrome (CRPS) is a collection of locally appearing painful conditions following a trauma, which chiefly occur distally and exceed in intensity and duration the expected clinical course of the original trauma, often resulting in considerably restricted motor function In literature dispute remains about the pathophysiology of CRPS.
Methods: A literature search is performed in Medline looking for papers that describe the pathophysiology of CRPS from inception to the present.
Results: In general, a differentiation can be made in afferent (e.g. inflammation), efferent (e.g. autonomic deregulation) and central mechanisms (e.g. cortical reorganisation). Several recent reviews give a comprehensive overview[1,2,3].
Conclusion: Although several mechanisms play a role in CRPS, the relationship between them is not completely understood. It is unclear what is underlying the development of CRPS. There is growing evidence that genetic or immune derived factors are playing a role.
The main challenge in treating CRPS patients is the fact that it is a multi mechanism disease which will react only in a limited way on a mono therapy.
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Conflict of interest

Post-Surgical Neuropathic Pain Syndromes

WIP-0587 PREDICTORS FOR POST-SURGICAL NEUROPATHIC PAIN

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Persistent pain after surgery affects a substantial number of people worldwide and has a large impact on people's quality of life. Prevalence estimates for persistent post-surgical pain (PPSP) have ranged from 10% to 50% or even higher, and depends on the type of the surgical procedure. Peri-operative nerve damage is assumed to be one of the main causes of PPSP although not all post-operative pain has well defined neuropathic characteristics.

In addition to nerve damage, several other pre- and peri-operative factors may increase the risk for PPSP. Longitudinal prospective studies have identified female sex, younger age, presence of preoperative pain, and a high level of acute post-operative pain as risk factors for PPSP. In addition, psychological factors such as anxiety and negative outcome expectancies seem to be associated with a higher incidence of PPSP. Most studies concerned PPSP in general, but a comparison of predictors of persistent pain after surgical procedures with a high likelihood of nerve injury (e.g. breast operations) with those after procedures with a low likelihood of nerve injury (e.g. knee arthroplasty) suggests that the risk factors may be similar. This is corroborated by the results of the few studies that specifically screened for (probable) neuropathic pain after surgery. Pre-operative risk factors, including pre-existing pain and negative psychological states may act conjointly with nerve damage to increase the risk of PPSP.

WIP-0330 IMPROVED SURGICAL TECHNIQUES TO REDUCE POST-SURGICAL NEUROPATHIC PAIN?

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The pathogenic mechanisms involved in the development of persistent postsurgical pain are multifactorial and needs to be divided into preoperative risk factors (genetic, anxiety, psychosocial, nociceptive function), intraoperative factors (nerve injury) and postoperative factors (analgesic management). There is a general agreement that persistent postsurgical pain predominantly is characterised as a "neuropathic pain state" which suggest that minimal invasive nerve-sparing surgical techniques may reduce the risk of persistent pain. Most data come from groin hernia repair, where laparoscopic surgery reduces pain and signs of nerve injury. In open surgery lightweight meshes and glue mesh fixation also reduce pain. In thoracic surgery, different nerve-sparing techniques during open thoracotomy are effective and minimal invasive thoracoscopic surgery (VATS) data suggest less signs of nerve injury (and pain). In breast surgery, the intercostobrachial nerve is at risk and preservation or intended clean transection is a major research focus but still with inconclusive data.

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Evidence based Interventional Pain Therapy According to Clinical Diagnoses. Part 6: Visceral and Cancer Pain

WIP-0588 INTERVENTIONAL CANCER PAIN MANAGEMENT

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Interventional pain management techniques are considered the fourth step on the WHO pain ladder. They may be performed in case of insufficient effect, or intolerable side effects from systemic analgesics. However, earlier use of interventional techniques, as soon as opioid analgesia is considered, is sometimes advised.

When considering these interventions, the condition of the patient, the type of pain, life expectancy and burden of treatment must be carefully and individually balanced. All necessary monitoring and equipment should be present to guarantee safe performance of the procedure. Generally, interventional pain management procedures can be considered when the life expectancy is between 1 month and 1 year.

Intrathecal therapy offers the benefit, besides an increased potency of delivered opioids, of the use of other medication, like clonidine and local anesthetics. These are useful in the treatment of neuropathic pain.

Celiac plexus block had been best described in literature. It is of benefit in upper abdominal pain due to cancer of the upper abdominal viscera, especially pancreatic cancer. The risk of serious complications is small. Therefore, it may be performed early in pain treatment.

Cordotomy is indicated for one-sided pain in parts of the body below the shoulder. Its benefits and risks are mainly described in case series. Because it is a technically challenging procedure, experience is important.

The hypogastic block, described in case reports as well, can be considered for the treatment of pain of the pelvic viscera.

Latest and Groundbreaking Developments in CRPS

WIP-0472 PHYSICAL AND PSYCHOLOGICAL RISK FACTORS FOR CRPS I

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Developments in the understanding of CRPS paint a picture of a multifactorial disease in which different pathophysiological mechanisms play a role in onset and maintenance.

A population-based approach using data from a longitudinal observational database of computerized-based patient records of a group of 150 GPs covering more than 500,000 patients in the Netherlands, revealed no associations between psychological comorbididty and CRPS onset. A prospective multicenter cohort study of fracture patients showed that psychological factors were not predictive for the development of CRPS. Similarly, in studies in patients with CRPS-I related dystonia, no unique disturbed psychological profile was found. Psychological profiles for severely affected patients with CRPS1 related dystonia were compared with two historical psychiatric control groups and with normative population data. Although the psychological profile of the patients with CRPS-I-related dystonia showed some elevations, there were no indications for a unique disturbed psychological profile on a group level.

Challenges remain for the treatment of this disorder, which was found to be progressive in 1 out of 6 patients up to six years after onset the condition, while 31% remains incapable to work. Evidence based guidelines following the AGREE methodology have become available in the UK and the Netherlands, whereby treatment evidence is placed in the context of current understanding of the pathophysiology and country specific

health care requirements. In this context, psychological assessment and intervention fits within the scope of a multidisciplinary approach.
Conflict of interest

Post-Surgical Neuropathic Pain Syndromes

WIP-0580 IMPROVING THE PERI-OPERATIVE PROGRAMS PREVENTS POST-OPERATIVE NEUROPATHIC PAIN

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Chronic pain prevalence after surgery varies between 5–80% due to study method, surgical procedure and patient factors. Understanding the mechanisms of the development of chronic postoperative pain is essential in making prevention programs. One of the most important mechanism for painchronification is nerve damage. Neuropathic pain is caused by a lesion or disease of the somatosensory nervous system [1]. An axillary lymph node dissection (ALND) is a surgical procedure where nerve damage is easily caused. The prevalence of chronic pain after breast cancer surgery doubles with ALND [2]. Thoracotomy, also linked with nerve damage, has a high prevalence of chronic pain after surgery (±50%) [3].
Nerve damage in particular is associated with irreversible maladaptive alterations in the peripheral and central nervous system (CNS) causing central sensitization and descending facilitation making the CNS more vulnerable for input leading to an exaggerated pain responsiveness and spontaneous pain activity.
The neuropathic element in chronic postsurgical pain differs after different procedures, with a neuropathic component of 68% after thoracic and breast surgery, 31% after groin hernia repair to 5% after total hip/knee surgery [4].
Prevention programs for reducing neuropathic pain starts with surgeons and anaesthesiologist to act as a team to preserve nerve-function. During the presentation evidence will be shown for different strategies to prevent chronic neuropathic pain especially after thoracotomy and breast cancer surgery such as; perineural and systemic local anaesthetics, gabapentinoids, ketamine, antidepressants, NSAIDs.

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Evidence Based Interventional Pain Therapy According to Clinical Diagnoses. Part 6: Visceral and Cancer Pain

WIP-0582 PHARMACOLOGICAL CANCER PAIN MANAGEMENT

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Despite considerable progress in the knowledge of pathophysiological mechanisms of pain, pharmacotherapy remains the cornerstone of cancer pain management and includes non-opioid analgesics, opioids and atypical analgesics. Nevertheless, during recent years, some new analgesic compounds were introduced (e.g. pregabalin, duloxetin and tapentadol), old drugs were reformulated to other routes of administration (e.g. lidocain, capsaicin, ultra fast acting opioids) and active strategies to reduce side effects (i.e. opioid induced constipation) were developed (e.g. PAM-OR and the combination of oxycodone/naloxone).
According to the WHO stepladder for the treatment of cancer pain step I includes non-opioid analgesics, step II weak opioids and step III strong opioids. Non-opioids (e.g. paracetamol, non-steroidal anti-inflammatory drugs (NSAID) including cyclooxygenase II (COX II) inhibitors) are effective against pain caused by soft tissue and muscle infiltration, while NSAIDs are particularly useful for treating pain caused by bone metastases. Updated clinical practice guidelines on the use of opioids for treating cancer pain have been issued by the European Association for Palliative Care (EAPC). Opioids are highly effective for treating moderate to severe cancer pain; for example, in conditions such as visceral cancer pain, as well as soft tissue and bone pain, and pain caused by neural compression. In addition, atypical analgesics or adjuvants such as antidepressants and anticonvulsants are used for specific clinical pain syndromes such as neuropathic pain, myofascial pain and chronic widespread pain. Recently, several authors request an update and validation of the classic WHO-stepladder approach to cancer pain.

Latest and Groundbreaking Developments in CRPS

WIP-0360 EFFECTIVENESS OF EXPOSURE IN VIVO FOR PATIENTS WITH CRPS-I, COMPARED TO PHYSICAL THERAPY BASED ON THE CURRENT DUTCH GUIDELINES

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Numerous studies in chronic musculoskeletal pain have shown that pain-related fear is one of the strongest predictors of disability, and there is evidence that this is also true for Complex Regional Pain Syndrome Type I (CRPS-I). An adapted version of Graded Exposure in Vivo, which is the preferred treatment in anxiety disorders, has been developed for patients with chronic pain and pain-related fear. Studies using a single-case experimental design confirmed that Graded Exposure in Vivo is effective in patients with CRPS-I, suggesting that pain-related fear associated with CRPS-I is a promising research direction in the understanding of neuropathic pain disability. According to the current Dutch guidelines on the treatment of CRPS-I, active - but pain contingent physical therapy is the recommended treatment of choice. This treatment has shown to be effective in reducing pain and the signs and symptoms of CRPS-I, but no clinically relevant effects on patient's disability levels were reported. In this presentation, results of a RCT comparing Graded Exposure in Vivo with pain contingent physical therapy will be presented.

EBM and CLINICAL Guidelines in Interventional Pain Therapy: Fact or Fiction?

WIP-0586 EVIDENCE, GUIDELINES, AND WISDOM: INFREQUENT BEDFELLOWS

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The trouble with evidence-based medicine is that most of it is wrong. If incorrect evidence is used for developing a guideline, then that guideline can result in all sorts of problems. Problems begin with clinical trials that can be subject to quite significant bias – randomisation and blinding are familiar to us in pain, but there are others, like inappropriate imputation method, or small size, or fraud, that can produce even larger biases than not randomising a trial. Unthinking production of evidence in the form of systematic reviews or meta-analysis just compound

the problems. There are many examples of meta-analyses that are just plain wrong.
We also overly rely on RCTs as a gold standard. Good RCTs and good observational studies give the same answers. Cohort studies, even case reports, are better than flawed RCTs and meta-analysis. There is much that can be done, and which needs to be done, by thinking sideways and not relying on simple levels of evidence.
We need a better understanding of evidence. The dynamic of understanding evidence is not yet stopping, and year by year we understand better what constitutes good evidence. If the "evidence" clashes with clinical wisdom, then it is the wisdom that is correct more often than not.
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Plenary Session 2

WIP-0471 WHO WILL BECOME A PLACEBO AND NOCEBO RESPONDER?

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Although placebos have long been considered a nuisance in clinical research, today they represent an active and productive field of research and, due to the involvement of many mechanisms, the study of the placebo and nocebo effect can actually be viewed as a melting pot of concepts and ideas for neuroscience. Indeed, there exist not a single placebo effect, but many, with different mechanisms and in different systems, medical conditions and therapeutic interventions. For example, brain mechanisms of expectation, anxiety and reward are all involved, as well as a variety of learning phenomena, such as Pavlovian conditioning, cognitive and social learning, and there is also some experimental evidence of the involvement of different genetic variants. The most productive model to better understand the neurobiology of the placebo effect is pain, in which the neural networks that are involved have been identified, and these involve both the opioid and cannabinoid systems. Overall, this recent research has revealed that these placebo-induced biochemical changes in a patient's brain are very similar to the biochemical changes induced by drugs. This new way of thinking may have profound implications both for medical practice and clinical trials, for they allow us to manipulate these mechanisms in the laboratory in order to create placebo responders and non-responders.

Headache and Facial Pain: Improvement of Diagnosis and Treatment

WIP-0335 CARE PATHWAYS FOR FACIAL PAIN

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Background: Once a diagnosis has been made care can be optimised by having comprehensive, evidence-based guidance, and clinical decision support at all points of care. This ensures that there is an integrated pathway from primary care to tertiary care. The UK Map of Medicine http://www.mapofmedicine.com/ has provided such care pathways for a variety of conditions including five for pain e.g Neuropathic Pain.
Methods: No published care pathways have yet been developed specifically for a wide variety of facial pain conditions. This seminar will discuss some care pathways developed by a large multidisciplinary facial pain unit over a five year period on temporomandibular disorders (TMD), trigeminal neuralgia, neuropathic pain and burning mouth.
Results: Care for these patients can often be provided solely in primary care settings e.g simple TMD or as shared between primary care and secondary care. Many of the more complex patients require medications and input from physical therapists as well as clinical psychologists either in groups or individually. As well as providing evidence based guidelines for health care professionals patients need to be provided with information that will enable them to both understands their condition and self-manage.
Conclusions: Participants will be encouraged to discuss pathways they use to determine if a consensus can be reached. Information provided to patients both written material and web based resources will be discussed and shared.

Use of Opioids in Chronic Pain

WIP-0581 OPIOID-INDUCED ADVERSE EFFECTS: BEYOND ABUSE AND ADDICTION

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Many medical societies have endorsed the use of opioids for chronic non-cancer pain (CNCP) as a legitimate medical practice and have published clinical practice guidelines for safe use. Importantly, chronic opioid therapy is known to be associated with dose-dependent short-term and longterm adverse effects affecting many organ systems. Common adverse effects include constipation, nausea, vomiting, sleep disturbance, pruritus and sedation, but potentially lethal outcomes such as respiratory depression have also been shown to occur. Opioid-induced endocrinopathy can include hypogonadism, sexual dysfunction and infertility. In addition, opioids may increase the risk of serious fractures via a combination of musculoskeletal sequelae (e.g. osteoporosis) and effects on the central nervous system (e.g. dizziness, sedation and cognitive dysfunction). Recent evidence also suggests that opioid therapy increases the risk of heart failure and myocardial infarction, as well as pneumonia in the elderly, possibly in association with opioid-induced immunosuppression. Immunomodulatory effects opioids have clearly been confirmed in cell culture and animal experiments. However, in humans, no firm conclusion can be drawn that opioids "per se" increase the rate of infectious complications. Some specific patient categories treated with opioids are prone to infections because of comorbidity (e.g. ICU) and lifestyle (e.g. drug abusers) issues. The indication for starting and continuing opioids for CNCP should be scrutinised and evaluated on a regular basis for each patient by weighing up the risk of co-morbidities and the potential for opioid-related adverse effects and substance abuse.

Outcome Indicators of Chronic Pain Treatment

WIP-0356 MULTIDIMENSIONAL OUTCOMES: HOW TO MEASURE BIO-PSYCHO-SOCIAL COMPONENTS OF CHRONIC PAIN

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Background and aims: Cancer prevalence increases worldwide and also chronic pain in this patient group. Often, patients with cancer don't tell the doctor that they suffer pain, and doctors don't systematically ask for it, implying that it remains unrecognized.

Good Clinical Practice guidelines provide information on how to assess cancer pain and how to manage it. Yet, despite these recommendations, pain management in patients with cancer is poor. A literature was performed to search for solutions for this problem.
Methods: Review of recent literature and improvement strategies.
Results: About 50% of patients with cancer suffer pain, of which 20% moderate to severe, and 19% has neuropathic pain. Interference with daily activities is high, and analgesic treatment mostly (62%) inadequate.
To improve cancer pain management, quality indicators (QIs) can be used as a starting point.
Such a set of QIs for cancer pain or for chronic pain does not exist yet. In an EU-funded FP7 project, IMPACT, QIs for the organization of palliative care were developed and used as an assessment and evaluation instrument in improvement projects in five countries. These improvement projects followed a predefined structure, based on the Plan-Do-Check-Act cycle. (Grol et al)
Conclusions: In this lecture, suggestions will be provided on how to develop and use QIs to assess and improve the quality of chronic cancer pain management, as well for internal as for external use.

WIP-0578 MEASURING LONG TERM OUTCOME IN DAILY PRACTICE: IS IT REALISTIC?

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Subject: Measuring long term outcome in daily practice: is it realistic?: Most physicians, pain clinics and even pain centers record the evolution in the patient's file only and do not use validated tools or questionnaires. It is often difficult from each patient's file to have a clear picture of the long term effect of a specific treatment. Even when a multidisciplinary approach is achieved, it is most of the time not possible to observe the evolution as no specific measurements exist from the beginning. With the contemporary available tools, computers, programs, validated questionnaires and web based information it becomes obvious that the « old fashionned » daily practice is not adequate anymore.
However, is it possible to change ? Will it improve patient care ? Is it worth the effort ? And finally do we have the choice ?
These questions will be covered in this presentation and we will try to clarify some aspects. Definitive answers do not exist but one thing is clear, we do not have the choice because if we do not change our practice and show at least semi-objective results, payers will enforce us to do it.
We have measured outcome and have used questionnaires in daily practice for 4 years in our institution. It has been the most important change in patient care and follow-up we have faced. It is possible and extremely useful.

Pain Treatment in the Elderly

WIP-0503 TREATMENT OF KNEE AND HIP OSTEOARTHRITIS IN THE ELDERLY

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Osteoarthritis (OA) constitutes a major health problem in the elderly imposing an increasingly heavy economic burden on the health care systems. Because there is no cure or truly special treatment for knee and hip OA, the goal of the treatment is the alleviation of pain as well as improvement of functional capacity. Guidelines on the management of knee and hip OA have been published by several expert committees. Optimal management of OA requires a combination of non-pharmacological and pharmacological treatment modalities. The combination of self-management support interventions, regular exercise (i.e. aerobic and/or strengthening land- or water-based exercises) and weight loss for those who are overweight or obese are generally used as primary therapeutic approaches. Also conservative biomechanics-based interventions, i.e. canes and braces, might be beneficial. Paracetamol is recommended as the first line medical treatment for mild-to-moderate OA pain. If pain relief with paracetamol is not adequate, topical NSAIDs (knee OA) and oral NSAIDs are recommended. NSAIDs should be used in the lowest effective dose for the shortest duration and the adverse effects and risks of NSAIDs should be considered. Opioid medication may be considered with moderate-to-severe pain, but possible side effects must be monitored. Intra-articular corticosteroids may be useful for the short-term management of acute pain flares. Treatments considered either not appropriate or uncertain appropriateness include acupuncture, TENS, intra-articular hyaluronic acid, glucosamine and chondroitin. Arthroplasty is considered if pain and functional disability are not otherwise manageable.

Advantages of Concurrent Physical and Psychological Approaches (Medical Rehabilitation) to the Management of Chronic Pain

WIP-0367 HOW REHABILITATION MEDICINE CAN HELP CHRONIC PAIN SUFFERERS TO INCREASE THEIR ACTIVITIES AND QUALITY OF LIFE

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Chronic musculoskeletal pain causes huge personal and societal problems. Many biomedical treatments are available to reduce pain, however, the effect sizes are at best small and for many even not effective. Many of these patients also experience moderate to severe levels of disability and strongly reduced quality of life, which are often not diagnosed, left alone addressed.
Potential reasons why biomedical treatments are often not the solution and even might cause more problems will be addressed and a plea for a proper biopsychosocial assessment will be held. The WHO-International Classification of Function, Disability and Health can be used to properly analyze all potentially factors that contribute to the patient and his pain and associated functioning in life and society. Examples how besides disease specific problems, other factors such as psychological, personal as well as environmental factors can influence the patient's life and participation will be presented.
Also evidence will be provided for the potential damaging role we as professionals can play in the development and persistence of chronic pain and disability will be provided.
Furthermore, examples of an easy to use questions and interview techniques to motivate patients to stop looking for diagnostic procedures and pain relief and start to think about what still can be achieved despite being in pain will be shared. Finally, the (overrated) role of physical deconditioning, how to deal with pain medication and central sensitization while increasing the level of physical activities will be discussed.

How to Create and Manage the Best Multidisciplinary Pain Center?

WIP-0579 DIAGNOSTIC AND LONG TERM TREATMENT STRATEGY: HOW TO STAY ON TRACK?

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Chronic pain frequently generates complex history and symptoms. Causes and consequences of the disease interweave. Although it is true in many medical situation, the first consultations in chronic pain medicine will pave the way. It is thus of utmost importance to focus on the main bio-psycho-social aspects of the pain syndrom.

Even experienced pain physician may miss the target(s) if they work alone or do not use the adequate tools. Moreover, at this particular time, during the first consult(s) it is time to establish a baseline considering all measurable variable to be followed later on.

Once a "clinical pathway" is established all measured parameters should be checked regularly.

A change of direction or even a continuity in the treatment should be justified and documented regularly. It should be when possible based on objective or at least on semi-objective measures.

Theoritically all this seems obvious. Practically things are much more difficult. It means collaboration, data collection and analysis and self-criticism. Tools and strategies are available to help us follow the « most adequate track ». These aspects will be discussed during the presentation.

Evolving Techniques

WIP-0415 SPINAL ENDOSCOPY: THE CURRENT STATE OF THE EVIDENCE

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Lumbosacral radicular pain is pain in the distribution area of one of the nerves of the lumbosacral plexus, with or without sensory and/or motor impairment. A major source of lumbosacral radicular pain is failed back surgery, which is defined as persistent or recurrent pain, mainly in the region of the lower back and legs even after technically, anatomically successful spine surgeries.

If lumbosacral radicular neuropathic pain fails to respond to conservative or interventional treatments, epiduroscopy can be performed as part of a multidisciplinary approach.

Epiduroscopy aids in identifying painful structures in the epidural space, establishing a diagnosis, and administering therapy. The novelty consists in the use of an epiduroscope to deliver therapies such as adhesiolysis and targeted administration of epidural medications. Clinical trials report favorable treatment outcomes in 30–50% of patients. Complications are rare and related to the rate or volume of epidural fluid infusion or inadvertent dural puncture. In patients with lumbosacral radicular pain, especially after back surgery, epiduroscopy with adhesiolysis may be considered (evidence rating 2 B+).

Mechanisms of Spinal Cord Stimulation and Future Directions for Research

WIP-0414 SPINAL STIMULATION FOR NEUROPATHIC PAIN: OPTIMAL TARGETS AND STIMULATION PARAMETERS?

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Electrical neuromodulation, such as spinal cord stimulation (SCS), is a useful treatment modality for certain neuropathic pain states resistant to non-interventional strategies. However, the optimal stimulation sites and stimulus parameters remain uncertain and has been the focus of our studies.

To determine the optimal target, we compared the effects of 50 Hz conditioning stimulation at dorsal column (DC), dorsal root (DR), and tibial nerve on spinal wide-dynamic range (WDR) neuronal excitability in neuropathic rats (L5 spinal nerve-ligation; SNL), using in vivo extracellular recordings. To determine the optimal frequency for SCS, we compared the effects of 50 Hz and 1 kHz DC stimulation on conduction properties of afferent Aα/β-fibers and WDR neuronal excitability in SNL rats.

Stimulation of DC and DR (50 Hz) attenuated spontaneous activity and evoked responses of WDR neurons to mechanical stimuli in SNL rats. Stimulation at DC and tibial nerve, but not at DR, also suppressed the windup of WDR cells to repeated stimulation in an intensity-dependent manner. Conventional DC stimulation at 50 Hz, but not at 1 kHz, significantly decreased windup in WDR neurons. Behaviorally, 1 kHz SCS attenuated mechanical hypersensitivity with a time course and stimulus intensity that differed from 50 Hz SCS.

Under neuropathic pain conditions, DC and tibial nerve stimulation at 50 Hz both inhibit short-term neuronal sensitization (windup). Different frequencies and sites of stimulation may differ in their spinal segmental mechanisms for pain inhibition. Further studies are required to define the optimal combination of sites and frequencies of stimulation.

Conflict of interest

Evolving Techniques

WIP-0353 CRYO THERAPY

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Cryoneuroablation or cryoanalgesia is an old technique, developed in the 1970's, that is returning into the modern pain physician's tool kit. As peripheral nerve pathology becomes a more recognized etiology of conditions such as headaches, low back pain, and CRPS, treatment of the peripheral nerves has come back into the forefront. Cryoneuroablation is a unique treatment for myelinated nerves, killing the nerve but leaving the myelin sheath intact, which allows the nerve to regrow normally. We will discuss the new and improved technology, the pathophysiology of nerve entrapments and the use of cryoneuroablation in the treatment of a variety of painful conditions.

Basic Research: Molecular and Cellular Biology

WIP-0590 THE ROLE OF PAIN CATASTROPHISING IN THE DISTORTING EFFECT OF NEGATIVE EXPECTANCY ON PAIN-POSITIVE MESSAGES

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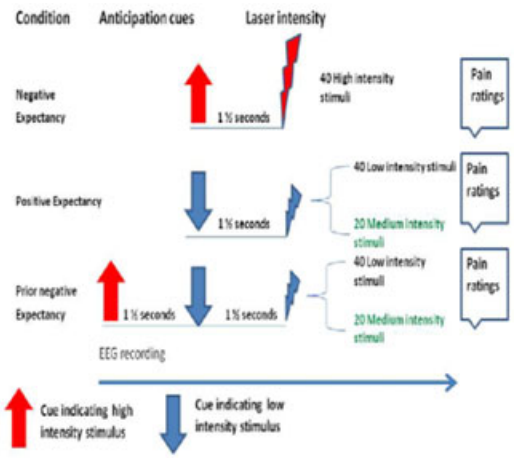
Objectives: In our previous work, we found that having prior negative expectancy reduces the pain-relieving effect of positive suggestions (1). In this study, we aim to investigate the role of pain catastrophising in this effect.

Methods: Thirty-three healthy participants were divided into two groups of pain catastrophisers (high vs. low) based on an initial screening on Pain catastrophising scale. In the first part of the experiment, participants received laser stimuli under two main conditions. During each trial, subjects were presented with anticipation cues, followed by a laser pulse. Condition 1 was a positive expectancy condition in which a single cue predicted a non-painful stimulus. Condition 2 was a prior negative expectancy condition in which the first pain cue predicted 'high', while the second cue predicted a non-painful stimulus. In the second part of the study, the same conditions were repeated again but with a pain catastrophising manipulation task just after the cue and prior to the stimulus. In both conditions, two-thirds of the stimuli were predicted correctly by the cue just preceding the stimulus, while one-third of the trials actually used 'medium' stimuli. Only the latter, however, were used for analysis. An EEG recording was obtained during the experiment.



Study Methodology

Results: EEG results: In the low-pain catastrophising group there was no difference between the two conditions before and after the task, while in the high-pain catastrophising group there was a reduction in the LEP peak (n^2), particularly in the prior negative expectancy condition after applying the pain catastrophising manipulation task.

Conclusion: Conclusion:

WIP-0457 TAKING PAIN OUT OF NGF: A "PAINLESS" NGF MUTANT, LINKED TO HEREDITARY SENSORY AUTONOMIC NEUROPATHY TYPE V, WITH FULL NEUROTROPHIC ACTIVITY

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Objectives: The neurotrophin Nerve Growth Factor (NGF) sensitizes nociceptors, thereby increasing the response to noxious stimuli. The relationship between NGF and pain is supported by genetic evidence: mutations in the NGF TrkA receptor in patients affected by an hereditary rare disease (Hereditary Sensory and Autonomic Neuropathy type IV, HSAN IV) or a mutation in *NGFB* gene, leading to the aminoacid substitution R100W in mature NGF, determines a similar loss of pain perception. The aim of this study is to clarify the effects of the R100 mutation of the biological function of NGF

Methods: Human NGF mutants, produced in *E. coli*, were assayed by a number of biochemical, biophysical and cellular assays. Moreover, we validated *in vivo* the pain sensitizing effect of hNGF mutants.

Results: We show that the R100 mutations induces a decrease in binding affinity of NGF for the p75NTR receptor and selectively alters some of the signaling pathways activated downstream of TrkA NGF receptors. However, NGFR100 mutants maintain identical neurotrophic activity *in vitro*, while displaying a significantly reduced pain-inducing activity *in vivo*. We also show that proNGF has a significantly reduced nociceptive activity, with respect to NGF.

Conclusion: Both sets of results jointly contribute to elucidating the mechanisms underlying the clinical HSAN V manifestations, and to clarifying which receptors and intracellular signalling cascades participate in the pain sensitizing action of NGF.

WIP-0153 INTERACTIONS BETWEEN TRPV4 AND AN INTERMEDIATE IN THE MEVALONATE METABOLISM LEAD TO NOCICEPTION AND INFLAMMATION

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Objectives: TRP ion channels expressed in nociceptor sensory neurons and epidermal keratinocytes serve an important role as pain sensor molecules. TRP channel interactions with substances generated from our body may regulate the pain pathology. Here, we show that an intermediate molecule produced by the mevalonate pathway activates TRPV4 and results in TRPV4-mediated pain and inflammation.

Methods: We examined the effects of metabolic intermediates in the mevalonate pathway on sensory TRPs using Ca^{2+} imaging and whole-cell electrophysiology experiments with HEK293T cell heterologous expression system, cultured sensory neurons and keratinocytes. We then evaluated nociceptive behavioral and inflammatory changes upon the administration of the TRPV4 activator found above in mice in vivo.

Results: In the heterologous expression system, cultured sensory neurons and keratinocytes, millimolar concentrations of dimethylallyl pyrophosphate activated TRPV4. Agonistic and antagonistic potencies of the substance for other sensory TRPs were examined and activation of TRPV3 was found to be inhibited by the substance. Subplantarly injection of DMAPP evoked nociceptive flinches that were prevented by pretreatment with TRPV4 inhibitors, suggesting that the substance is a novel pain-producing molecule through TRPV4 activation. It also induced acute inflammation and noxious mechanical hypersensitivities in a TRPV4-dependent manner.

Conclusion: We found a novel sensory TRP acting metabolite and suggest that their interactions may help to elucidate the physiological role of TRPV4 in nociception and associated inflammation.

WIP-0424 EFFECTS OF METHYLPREDNISOLONE ACETATE WITH AND WITHOUT PRESERVATIVES ON RAT'S DORSAL ROOT GANGLION SENSORY NEURONS

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Objectives: We previously showed that methylprednisolone acetate (MPA) could be rendered 85% free of polyethylene glycol (PEG) by physical separation of elements in the suspension. The objective of the present study was to explore possible cytotoxic effects that MPA (with intact or reduced preservatives) might have on rat sensory neurons.

Methods: We exposed primary dissociated rat dorsal root ganglia (DRG) sensory neurons to the commercial MPA for 24 hours or to MPA fractions after separation, containing different concentrations of preservatives. Cells were stained with the TUNEL assay kit for apoptosis detection or assessed for caspase-3 expression by Western blotting.

Results: Increasing concentrations of MPA revealed dose response in TUNEL assay and increased percentage of apoptotic cells, with 1.5–2 times higher caspase-3 expression in treated neurons than in control group (ANOVA, $p = 0.001$). MPA with reduced preservatives caused significantly less apoptosis (p caspase-3 expression ($p \leq 0.001$) than neurons exposed to MPA from the commercial vial or 'clear phase' with higher preservative concentration. Even though MPA with reduced preservatives caused 12.5% more apoptosis, post hoc analysis showed no difference between these two groups.

MPA with reduced preservatives caused significantly less apoptosis in TUNEL assay labeling (p caspase-3 immunoblotting ($p \leq 0.001$) than neurons exposed to commercial MPA vial or a 'clear phase'.

Conclusion: Our study showed a cytotoxic effect of MPA containing preservatives on rat sensory DRG neurons and no significant differences between the vehicle and MPA with reduced preservatives, confirming that either PEG, myristylgamma-picolinium chloride (MGPC) or their combination have harmful effects.

WIP-0223 THE ANTIGLUTAMATE ACTION OF ANTIDEPRESSANTS HAVING ANALGETIC AND ANTIPRURITIC POTENCIES

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Objectives: The aim was to check the hypothesis on antiglutamate mechanisms of analgesic and antipruritic action of antidepressants.

Methods: Electrophysiological measurement of antidepressant acting on the ionic currents through NMDA and AMPA channels in rat brain neurons by methods of membrane potential fixation in the whole cell configuration.

Results: Micromolar concentrations of desipramine, amitriptyline, fluoxetine, atomoxetine, chlorpromazine, and clozapine inhibited NMDA receptors at holding potential −80 mV. The action of desipramine, amitriptyline, atomoxetine, and chlorpromazine having analgesic and antipruritus effectiveness was strongly voltage-dependent, while that of fluoxetine and clozapine no having such effectiveness was almost voltage-independent. The presence of physiological concentration of magnesium ions (1 mM) in extracellular solution attenuated the blocking effect of voltage-dependent compounds measured at −30 mV by 2–3 times. Importantly, taking into the consideration the voltage-dependence of block and influence of magnesium significantly changes the structure-activity relationships as compared with the data obtained at −80 mV without magnesium. None of the compounds showed significant blocking ability against AMPA receptors in physiologically reasonable concentrations. Only fluoxetine was also able to inhibit Ca(2 +)-permeable AMPA receptors of giant striatal interneurons with IC50 of 51 ± 3 μM at holding potential −80 mV. The action was uncompetitive and voltage-dependent.

Conclusion: Voltage- and magnesium-dependent blocking of NMDA receptor is the important element for analgesic and antipruritic mechanisms of antidepressants.

Supported by RFBR grant N 12-04-00454.

WIP-0401 THE 118A>G POLYMORPHISM OF OPRM1: LACK OF ASSOCIATION WITH PAIN SENSITIVITY AMONG OPIOID NAIVE INDIVIDUALS IN MALAYSIA

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Objectives: To investigate the influence of the 118A>G polymorphism of *OPRM1* on pain responses among opioid naive individuals.

Methods: Pain threshold, pain tolerance and pain intensity in response to the cold pressor test (CPT) were measured in Malay male opioid naive subjects (n = 152). Subjects were evaluated at 0 hour, and at 2, 4, 8, 12, and 24 hours after the first CPT. DNA was extracted from blood and subjected to PCR-genotyping. The difference of CPT responses between the 118A>G genotypes were analysed using repeated measure ANOVA with covariates including IVS2 + 691G>C and IVS2 + 31G>A polymorphisms of *OPRM1*, age, body mass index, systolic blood pressure, diastolic blood pressure, blood oxygen saturation and the global Pittsburgh Sleep Quality Index (PSQI) scores.

Results: The *118G* allele carriers (n = 117) exhibited shorter pain thresholds [adjusted mean (95% CI) = 48.04 (35.94, 60.14) seconds] than *118A* allele carriers (n = 35) [59.67 (35.08, 84.28) seconds], but the 12 seconds (25%) difference did not reach statistical significance ($p = 0.420$). Pain tolerance in the *118G* allele carriers was 11 seconds shorter than that of *118A* allele carriers [58.20 (44.92, 71.47) seconds versus 69.53 (42.56, 96.51) seconds], but again the difference did not reach statistical significance ($p = 0.474$).Pain intensity scores of the *118G* allele carriers was 63.82 (61.00, 66.64) seconds, whereas that of the *118A* allele carriers was 66.54 (60.81, 72.27) seconds ($p = 0.418$).

Conclusion: The results suggest that 118A>G polymorphism of *OPRM1*was not associated with pain sensitivity among opioid naive individuals. However, further investigations are required to confirm these findings.

WIP-0523 SUBSTANCE P CAN ACTIVATE PRIMARY CULTURED SPINAL MICROGLIA IN VITRO

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Objectives: Activated spinal microglia play an important role in the generation of chronic pain. But mechanism of microglia activation is not very clear yet. Substance P is an important neurotransmitter in the spinal nociceptive signals transmission. The present study aimed to explore whether substance P could activate spinal microglia in vitro.

Methods: 1. Primary cultured spinal microglia were prepared from the spinal cord of 0–1 day postnatal Wistar rats and incubated with substance P.

2. The morphologic changes of microglia and the phosphorylation of p38 MAPK in microglia were analyzed by immunocytochemistry.

3. The release of TNF-α and IL-1β were determined by ELISA assay to observe the functional changes of microglia.

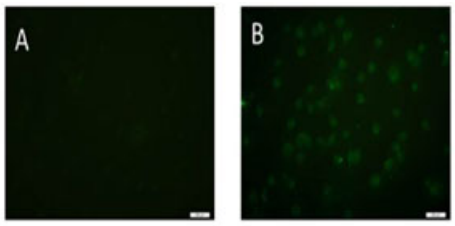

Fig 1. Resting microglia (A) and substance P induced reaction of microglia (B); Scale bars: 200μm.

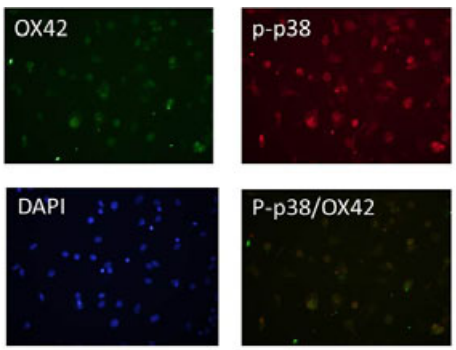

Fig 2. 15 minutes after substance P incubation, p38 MAPK in microglia was phosphorylated.

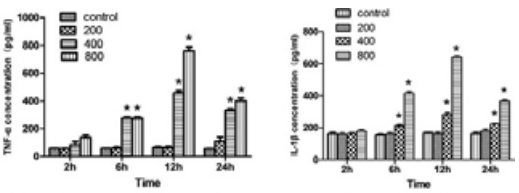

Fig 3. Substance P can induce the releases of TNF-α and IL-1β from microglia.

Results: 1. Substance P could induce the microglia reaction (fig 1).

2. 15 minutes after Substance P incubation, the p38 MAPK was phosphorylated in microglia (fig 2).

3. The TNF-α and IL-1β concentrations in supernatant increased significantly after substance P (400 μM or 800 μM) incubation. 6 hours after substance P incubation, the TNF-α and IL-1β release started to increase and peaked at 12 hours (fig 3).

Conclusion: 1. Substance P can activate microglia in vitro.

2. P38 MAPK phosphorylation and the followed TNF-α and IL-1β released from substance P activated microglia may play an important role in the chronic pain.

Basic Research: Pharmacology

WIP-0199 SINGLE-DOSE PHARMACOKINETICS AND RELATIVE BIOAVAILABILITY OF THE NOVEL STRONG ANALGESIC CEBRANOPADOL

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Objectives: Explore single-dose pharmacokinetics and relative bioavailability of cebranopadol (strong centrally active analgesic that acts as an agonist at nociceptin/orphanin FQ and classical opioid peptide receptors) in 3 randomized single-center Phase I trials in healthy male and female subjects.

Methods: One double-blind, placebo-controlled, first-in-man dose escalation trial investigated cebranopadol doses between 0.8 and 800 mcg (N = 32, oral solution). Two open-label, crossover, trials (total N = 48) investigated the relative bioavailability of cebranopadol oral solution, liquid-filled capsule, and tablet formulations in 2 different doses (200 and 400 mcg). All 3 trials were approved by the responsible independent ethics committees. All subjects signed the informed consent form as proof of consent. Analyses were performed on log-transformed pharmacokinetic data using analysis of variance models.

Results: Cebranopadol doses ≥100 mcg yielded quantifiable plasma concentrations that increased with dose and peaked between 4 and 6 h post-dose (median t_{max}) and median terminal half-life was 62 to 95 h. The operational half-life for cebranopadol was 24 h suggesting that once daily dosing of cebranopadol can be used. Plasma concentrations showed moderate to high interindividual and low intraindividual variability. The mean apparent volume of distribution (10842 L) and the mean apparent clearance (102 L/h) were high. Relative bioavailability of cebranopadol for the tested formulations was similar with 90% confidence intervals for relevant parameters within the 0.8 and 1.25 range. Cebranopadol was safe; no serious adverse events were reported.

Conclusion: Exposure parameters of cebranopadol suggest dose proportionality. Relative bioavailability of cebranopadol was similar for the tested formulations, suggesting bioequivalence.

Conflict of interest

WIP-0259 MECHANISMS INVOLVED IN THE HYPERALGESIA INDUCED BY PLATELET RELEASATE

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Objectives: Previous studies developed by our group demonstrated a critical role of platelets in the genesis of inflammatory hyperalgesia. In this study, the mechanisms involved in the hyperalgesia induced by platelet releasate (PR) were evaluated.

Methods: After intraplantar injection of PR in the hindpaws of rats, edema was evaluated byplesthismography, and hyperalgesia by the paw pressure test. Hyperalgesia mediation induced by PR was determined by treating animals with anti-rat platelet antibody, fucoidin (selectin inhibitor), methysergide (antagonist of serotonin receptor), indomethacin (COX inhibitor), atenolol and ICI118,551 (antagonists of β_1 and β_2-adrenergic receptors, respectively). Cell migration in footpads was analyzed histologically.

Results: Platelet releasate did not induce a concentration-effect curve for hyperalgesia, and the effect lasted 4 h, and evoked a slight edema. Prostanoids, and β_1 and β_2-adrenergic receptors participate in this effect, but not serotonin. Using the anti-rat platelet antibody, circulating platelets were demonstrated to participate synergistically in this process. In addition, fucoidin abolished the hyperalgesic effect induced by PR. However, histological analysis of footpads demonstrated that PR induced a discrete inflammatory reaction, with a mild neutrophylic infiltrate.

Conclusion: Once platelets are the first cells to respond to endothelium damage, these data propose that platelets are primordial to the installation of inflammatory pain and that prostanoids and adrenergic receptors mediate this effect.

Financial support: PIBIC/CNPq and FAPESP (Proc: 2012/24621-1).

WIP-0216 THE EFFECTS OF PHALFA1BETA, A SPIDER TOXIN, CALCIUM CHANNEL BLOCKER, IN A MOUSE FIBROMYALGIA MODEL

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Objectives: Clinical studies demonstrate the efficacy of alpha-2-delta ligands for calcium channels (gabapentin, pregabalin) pin fibromyalgia (FM). Phα1β a high-voltage calcium channel blocker exhibits high affinity for N-type calcium channels preventing neuropathic pain (Souza et al., 2008). This study investigated the effects of Phα1β, pregabalin and diclofenac using Nagakura animal model of FM.

Methods: Reserpine was injected in mice subcutaneously (0.25 mg/kg) for three consecutive days (Nagakura et al. 2009). Mechanical allodynia thresholds were measured using the up-down paradigm (Dixon, 1980). The thermal stimulation measured by Hargreaves et al. 1988. Forced swim tests by the method of Porsolt et al. (1977). Biogenic amine content in the brain using LC-MS.

Results: Repeated administration of reserpine (0.25 mg/kg sc) once daily for three consecutive days significantly decreased thermal hyperalgesia, mechanical allodynia, and dopamine and serotonin content in the brain on the 4th day. Phα1β and pregabalin treatment completely reverted the mechanical allodynia and thermal hyperalgesia induced by reserpine treatment on the 4th day, but diclofenac was ineffective. Reserpine treatment increased the immobility time in the forced swim test, which is indicative of depression in the animals. Phα1β, but not pregabalin, reduced the immobility time (56%). Drugs treatments did not affect reserpine-induced reductions of dopamine and serotonin in the brain.

Conclusion: The study suggests the potential of Phα1β to control persistent pathological pain in FM.

WIP-0455 TARGINACT: AN EFFECTIVE OPIOID COMBINATION, WITHOUT THE ASSOCIATED BOWEL PROBLEMS

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Objectives:

- Assess the efficacy of targinact as an analgesic
- Compare the bowel function index of patients on targinact to traditional opioid analgesics

Methods: 26 patients, struggling with their current opioid treatment, commenced targinact. Baseline brief pain inventory and bowel function index were recorded. Weekly data was collected by telephone at week 1, 2, 3, 5, 6, 7, 9, 10 and 11. Data was recorded in the clinic at 4, 8 and the end of the trial (11/12 weeks). Data was collected over 18 months. All data was tested for normality and analysed using a paired T test on SPSS 20®.

Results: 21 patients had 4 and 8 weeks data for analysis. The pain severity score dropped from baseline 6.9($\pm$1.2) to 6.0 ($\pm$1.9) at week 4 ($p < 0.05$) and 5.6($\pm$2.2) at week 8 ($p < 0.05$). The pain interference score dropped from 7.0 ($\pm$1.5) to 6.2($\pm$2.1) at week 4 ($p = 0.104$) and 5.6($\pm$2.3) at week 8 ($p < 0.01$). The bowel function dropped from baseline 69.7($\pm$25.6) to 42.8($\pm$31.9) at week 4($p < 0.001$) and to 46.6 ($\pm$35.2) at week 8 ($p < 0.01$).

Of 26 patients 18 completed the trial. At trial end the pain severity score dropped from baseline 6.9($\pm$1.4) to 5.4($\pm$2.5) ($p < 0.05$), the pain interference score from baseline 7.1($\pm$1.7) to 5.5($\pm$2.3) ($p < 0.05$) and the bowel function index from a baseline of 73.1($\pm$26.8) to 35.6($\pm$39.1) ($p < 0.001$).

Conclusion: Targinact in selected patients leads to improvement in pain severity and pain interference with significant improvement in Opioid Induced Bowel Dysfunction.

WIP-0292 CEBRANOPADOL IS A NOVEL POTENT ANALGESIC WITH HIGH AFFINITY AND POTENT FUNCTIONAL ACTIVITY AT NOCICEPTIN/ORPHANIN FQ AND OPIOID RECEPTORS

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Objectives: Analysis of affinity, potency and efficacy of the novel, potent analgesic cebranopadol (trans-6′-fluoro-4′,9′-dihydro-N,N-dimethyl-4-phenyl spiro[cyclohexane-1,1′(3′H)-pyrano[3,4-b]indol]-4-amine) at human nociceptin/orphanin FQ (NOP) and human μ-, δ- and k-opioid (MOP, DOP, and KOP) receptors.

Methods: Human NOP, MOP, DOP, and KOP receptor binding assays were performed as scintillation proximity assays (SPA-assays) with 0.5 nM [^{3}H]nociceptin, 1 nM [^{3}H]naloxone,1 nM [^{3}H]deltorphine II, and 1 nM [^{3}H]Ci-977 as ligands, respectively. Potencies and efficacies of cebranopadol at human NOP, MOP, DOP, and KOP receptors were tested in

^{35}S-GTPgS binding assays in comparison with the selective full agonists nociceptin, DAMGO, SNC80, and U-69,593, respectively.
Results: Cebranopadol was found to have subnanomolar affinities to human NOP (Ki 0.9 nM) and MOP receptors (Ki 0.7 nM) besides somewhat weaker affinity to human KOP (Ki 2.6 nM) and DOP receptors (Ki 18 nM). Cebranopadol has full agonistic efficacy at the human MOP (104%) and DOP receptors (105%), almost full efficacy at the human NOP receptor (89%), and partial efficacy at the human KOP (67%) receptor, yielding EC_{50} values of 13, 1.2, 110, and 17 nM, for NOP, MOP, DOP and KOP receptors, respectively.
Conclusion: Cebranopadol binds with high affinity to human nociceptin/orphanin FQ (NOP) and opioid receptor subtypes and showed full agonistic efficacy at the human MOP and DOP receptors, almost full efficacy at the human NOP receptor, and partial efficacy at the human KOP receptor.

WIP-0272 SIGMA-1 RECEPTOR ANTAGONIST BD1047 REDUCES ZYMOSAN INDUCED HYPERALGESIA THROUGH BLOCKAGE OF CHEMOKINES INDUCED MICROGLIA ACTIVATION IN RATS

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Objectives: Our series of studies demonstrated that intrathecal injection of sigma-1 receptor (Sig-1R) antagonist, BD1047 produced a potent anti-nociception through neuronal mechanisms in several pain models. Here we examine the potential inter-relationship between Sig-1R and chemokines (as a messenger from neuron to microglia) at the spinal level using zymosan induced hyperalgesia model, since it is closely related with human immunogenic disease.
Methods: The present study was evaluated (i) the anti-nociception of BD1047 (ii) the regulatory role of BD1047 on chemokine-microglia activation, and (iii) its underlying mechanisms in both neuron and microglia following intraplantar zymosan injection in rats.
Results: Either systemic or intrathecal injection of BD1047 reduced zymosan evoked thermal and mechanical hyperalgesia. Moreover, systemic injection of BD1047 revered hyperalgesia mediated elevation of Fos, protein kinases (PKA and PKC) and phosphorylations (NR1, ERK1/2 and p38) in spinal dorsal horn. Sig-1R immunoreactivity was detected in TRPV1 positive primary afferent fiber and spinal lamina III-IV neuron but not in microglia. Systemic injection of BD1047 blocked zymosan induced chemokine (CCL2) elevation and microglia proliferation at spinal dorsal horn.
Conclusion: The anti-nociception of BD1047 by systemic injection is closely related with the blockage of zymosan induced chemokine-microglia interaction through neuro-modulatory effect of Sig-1R in the spinal cord.

WIP-0530 ULTRA-LOW DOSE NALOXONE INHIBITS NEUROINFLAMMATION IN CHRONIC MORPHINE-INFUSED RATS: THE ROLE OF IL-10-P38 MAPK-HO1 SIGNALING PATHWAY

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Objectives: We previously showed that intrathecal co-administration of ultra-low dose naloxone with morphine inhibition of the expression of pro-inflammatory cytokines TNFα, IL-1β, and IL-6. The present study is explored the underlying mechanism of the anti-inflammatory effect of ultra-low dose naloxone in chronic morphine-infused rats.
Methods: Male Wistar rats were implanted with two intrathecal catheters, one for continuous infusion of saline (control), ultra-low dose naloxone (15 pg/h), morphine (15 μg/h), p38 MAPK inhibitor SB203580 (0.5 μg/h), morphine plus ultra-low dose naloxone, or morphine plus ultra-low dose naloxone plus SB203580 for 5 days, while the other was used for a single daily intrathecal injection of anti-IL-10 antibody for 5 days.
Results: The results showed that ultra-low dose naloxone /morphine co-infusion up-regulated IL-10 protein expression, it was not obviously seen in morphine-infused rats. Neutralization of anti-IL-10 antibody effectively blocked the ultra-low dose naloxone induced IL-10 expression in morphine-infused rats. In addition, ultra-low dose naloxone co-infusion restored the antinociceptive effect of morphine and injection of anti-IL-10 antibody or co-infusion of SB203580 partially reversed the effect of ultra-low dose naloxone on the antinociceptive effect of morphine in morphine-infused rats. ERK and JNK expression was unaffected by any of the treatments, but anti-IL-10 antibody and SB203580 significantly inhibited the ultra-low dose naloxone -induced p38 MAPK activation and HO-1 expression and the associated anti-inflammatory effect of ultra-low dose naloxone.
Conclusion: These results suggest that the anti-inflammatory effect of ultra-low dose naloxone on morphine tolerance, possibly acting by increasing IL-10 expression, was mediated by a p38 MAPK-HO1 signal transduction cascade.

WIP-0312 CEBRANOPADOL, A NOVEL POTENT ANALGESIC NOCICEPTIN/ORPHANIN FQ AND OPIOID RECEPTOR AGONIST, DISPLAYS A MARKEDLY IMPROVED TOLERABILITY COMPARED TO STANDARD OPIOIDS

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Objectives: Characterization of the side effect profile of cebranopadol (trans-6′-fluoro-4′,9′-dihydro-N,N-dimethyl-4-phenyl-spiro[cyclohexane-1,1′(3′H)-pyrano[3,4-b]indol]-4-amine), a novel nociceptin/orphanin FQ (NOP) and opioid receptor agonist. The study focused on typical opioid-type side-effects within the CNS and the respiratory system.
Methods: Potential effects of cebranopadol on motor coordination and respiratory function were investigated after intravenous (i.v.) administration using a rota-rod model and whole-body plethysmography in rats. The results were compared to the effects of morphine.
Results: Cebranopadol was tested at i.v. doses of 4, 8, and 16 μg/kg, thereby covering the analgesic dose range up to a fully effective anti-nociceptive dose. Within this dose range, cebranopadol did not affect motor coordination or respiratory parameters, like respiratory frequency, tidal volume, minute volume, inspiratory and expiratory flows and durations, and airway resistance in rats. These results were in clear contrast to the effects of equi-analgesic doses of morphine (0.9–8.9 mg/kg i.v. or 0.9–26.6 mg/kg s.c.). As expected for an opioid, morphine induced dose-dependent impairment of motor coordination within the analgesic dose range as well as dose-dependent alterations in respiratory parameters that resulted in profound respiratory depression at higher analgesic doses.
Conclusion: Cebranopadol is a novel potent analgesic that even after high analgesic doses did neither impair motor coordination nor respiratory function. It thus displayed a markedly better tolerability profile in rats than standard opioids such as morphine suggesting an increased therapeutic index.
Conflict of interest

WIP-0544 SCINTIGRAPHIC STUDY OF CEREBROSPINAL FLUID DISTRIBUTION USING RADIOLABELLED TRACER ADMINISTERED AT LOW FLOW RATE BY AN IMPLANTED PUMP

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Objectives: Intrathecal drug administration for chronic pain by implanted pump involves low flow rate infusion (50–100 μL/h) making drug CSF distribution difficult to predict. Scintigraphy has been used to evaluate pump or catheter patency using bolus administration. This pilot study aimed to analyze CSF distribution of technetium-99 m-DTPA infused under low flow rate conditions.

Methods: A 43 year-old man implanted with a programmable pump for multiple sclerosis was investigated because of lack of pharmacological effect despite adequate drug concentration. Tc-99 m-DTPA (150 MBq in 3 mL) was injected in the pump reservoir already containing 3 mL of baclofen and clonidine. The 70 μL/h pump flow rate was expected to clear the catheter dead space in 15 h. The patient was scanned from 16–40 h after pump filling.

Results: At 16 h, the radiotracer was seen in catheter with CSF activity extending cranially 10 cm above catheter tip. Radioactivity progressed to 4th-/3rd- and lateral ventricles at 24 h. Hybrid SPECT/CT imaging allowed confirming catheter tip position in the spinal canal and excluded pump dysfunction as source of lack of patient pain control, without pinpointing a reason, however.

Conclusion: Scintigraphic study of CSF distribution of drug is possible even at the lowest flow rate commonly used. This allows verifying pump function and might be useful in case of lack of pain control to visualize CSF distribution up to 24 h after pump filling.

WIP-0445 CHEMICAL MEDIATION OF THE ANALGESIC EFFECT OF CROTOXIN IN THE EXPERIMENTAL AUTOIMMUNE ENCEPHALOMYELITIS (EAE) MODEL

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Objectives: Multiple sclerosis (MS) is an inflammatory demyelinating disease that induces chronic pain in 50% to 80% of patients. However, locomotors impairments difficult the pain mechanisms evaluation in animals. Recently, it was demonstrated that in the MOG_{35-55}-induced EAE, an animal model of MS, the hypernociception appears before the onset of motor disability, allowing the study of both phenomena. Then, our aim is to evaluate the effect of crotoxin, a neurotoxin isolated from *C.d. terrificus* snake venom that displays antinociceptive, anti-inflammatory and immunomodulatory effects, in the pain and in symptoms progression of EAE.

Methods: EAE was induced by immunization of C57BL/6J mice with MOG_{35-55} peptide (150 μg), *Mycobacterium tuberculosis* (400 μg) in incomplete Freund's adjuvant and pertussis toxin (150 ng, on days 0 and 2). Pain threshold was determined using an electronic pressure-meter test. Clinical signs were assessed according to scores from 0 to 5 (0-no signs of disease; 5-moribund).

Results: The pain threshold of the animals decreased at day 4. The first sign of disease appeared at days 11–12. Crotoxin (40 μg/kg, s.c.) administered 5 days after imunization induced antinociception that was blocked by Boc2 (10 μg, i.p.), by NDGA (30 μg/kg, i.p.), and by atropine sulfate (10 mg/kg, i.p.). When injected for 5 days, crotoxin reduced EAE progression.

Conclusion: Crotoxin induces a potent analgesic effect and interferes with the progression of EAE. Formyl peptide receptors and muscarinic receptors are involved in this antinociceptive effect.

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WIP-0461 GENISTEIN MODULATES ANALGESIC AND ANTI-INFLAMMATORY EFFECT OF COX INHIBITORS IN OSTEOPOROTIC RATS

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Objectives: To investigate the effect of genistein on carrageenan-induced inflammation and effects of COX inhibitors in rat model of osteoporosis.

Methods: Six months after ovariectomy Wistar rats were divided into three groups: sham-operated control (Ko), ovariectomized (OVX) and ovariectomized supplemented with genistein (2.5 mg/kg, for 2 months; OVX+G). At the beginning of the experiment and end of treatment with genistein, bone mineral density (BMD) and bone mineral content (BMC) were assessed. Serum IL-6 was determined by ELISA. Analgesic and anti-inflammatory effects of metamizol (100 mg/kg) and ibuprofen (20 mg/kg) were determined.

Results: Compared with the Ko animals the BMD and BMC of rats in OVX group was reduced remarkably in 6 and 8 months ($P < 0.01$). OVX rats showed significant increase of serum IL-6 and these changes were reversed by long term genistein. Carrageenan induced a more pronounced inflammatory reaction in OVX rats ($P < 0.01$) in comparison to Ko and OVX+G groups. Treatment genistein enhanced the analgesic effect of metamizol and ibuprofen in paw pressure test. In heat plantar test the analgesic effect of metamizol in OVX+G rats was comparable to that in control group.

Conclusion: Data demonstrate that long term treatment with genistein decreases the level of IL-6 and reduces born resorption of osteoporotic rats. Genistein enhances the analgesic and anti-inflammatory activity of some COX inhibitors.

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WIP-0170 ANTINOCICEPTIVE EFFECT OF BERBERINE AGAINST CCI INDUCED NEUROPATHIC PAIN IN LABORATORY RATS

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Objectives: Present study was designed to evaluate the antinociceptive efficacy of berberine on CCI induced neuropathic pain condition.

Methods: Male Wistar rats (180–200 g) were operated under pentobarbital (60 mg/kg i.p.) anesthesia for chronic constriction injury (CCI). Animals were inspected every day and were tested on 28th day. Saline (3 ml/kg), berberine (10 and 20 mg/kg) were administered intraperitoneally from 15th to 28th day after surgery. The animals were sacrificed on day 29th and sciatic nerve was isolated for estimation of NFkβ, IL1β, IL6 and TNFα. The behavioural assessment using neutral plate, cold plate, von-frey, actophotometer was carried out on 0, 3, 7, 14, 21 & 28th day.

Statistical Analysis: All the data were analysed by GraphPad Prism 5.01 (Demo) for Windows. The results were expressed as means ± SEM. P value of

Results: CCI induced animals displayed significant hyperalgesia, allydonia (p
Conclusion: Berberine (10 and 20 mg/kg) was found to reduce the pain threshold by inhibiting NF-κB and reducing the expression of pro-inflammatory cytokines (TNF-α, IL-1ß and IL-6) in a dose dependent manner.

WIP-0294 ANALGESIC PROFILE OF CEBRANOPADOL, A NOVEL POTENT NOCICEPTIN/ORPHANIN FQ AND OPIOID RECEPTOR AGONIST, IN RAT MODELS OF INFLAMMATORY, BONE CANCER-INDUCED AND POLYNEUROPATHIC PAIN

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Objectives: Characterization of pharmacological potency and efficacy of cebranopadol (trans-6'-fluoro-4',9'-dihydro-N,N-dimethyl-4-phenyl-spiro[cyclohexane-1,1'(3'H)-pyrano[3,4-b] indol]-4-amine) in rat models of inflammatory pain, bone cancer pain and diabetic polyneuropathic pain.
Methods: Cebranopadol was tested after intravenous (i.v.) administration to rats in the intra-articular Complete Freund's Adjuvant (CFA) model using weight bearing, in a MRMT-1 model of bone cancer pain using an electronic von Frey filament and in the streptozotocin (STZ, 75 mg/kg) -induced model of diabetic neuropathy using a paw pressure test.
Results: CFA induces a decrease in in weight bearing of about 50–60% after 5 days, this spontaneous pain behavior is dose-dependently reversed by cebranopadol reaching >60% MPE with an ED_{50} (95% CI) value of 5.5 (3.2–21.0) μg/kg, 30 min after administration. In bone cancer pain, cebranopadol reached full efficacy on tactile hyperalgesia/allodynia with an ED_{50} (95% CI) value of 3.6 (1.6–7.0) μg/kg, 60 min after administration. Cebranopadol showed dose-dependent inhibition of mechanical hyperalgesia reaching full efficacy in STZ animals with an ED_{50} (95% CI) value of 0.5 (0.2–0.8) μg/kg, 30 min after administration.
Conclusion: Cebranopadol is highly potent and efficacious in rat models of inflammatory pain and bone cancer pain. Furthermore cebranopadol was especially potent (10-fold more) in a rat model of diabetic polyneuropathy. Cebranopadol displays broad analgesic activity in various pain states.
Conflict of interest

WIP-0295 CEBRANOPADOL, A NOVEL POTENT ANALGESIC NOCICEPTIN/ORPHANIN FQ AND OPIOID RECEPTOR AGONIST, INHIBITS EVOKED NOCICEPTIVE AND NEUROPATHIC PAIN READOUTS IN THE RAT

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Objectives: Analysis of potency and efficacy in rat models of evoked nociceptive and neuropathic pain of cebranopadol (trans-6'-fluoro-4',9'-dihydro-N,N-dimethyl-4-phenyl-spiro [cyclohexane-1,1'(3'H)-pyrano[3,4-b]indol]-4-amine), a novel nociceptin/orphanin FQ (NOP) and opioid receptor agonist.
Methods: Cebranopadol was tested after intravenous (i.v.) and oral (p.o.) administration in the tail flick test of acute heat nociception and after i.v. administration in the spinal nerve ligation (SNL) model with an electronic von Frey filament.
Results: Cebranopadol showed a dose-dependent and potent increase in tail withdrawal latency reaching full efficacy at ED_{50} (95% CI) values of 5.6 (4.4–7.0) μg/kg i.v. and 25.1 (20.7–30.4) μg/kg p.o.. Equi-efficacious i.v. doses (>80% MPE) of cebranopadol and MOP receptor-selective opioids were compared and resulted in different durations of action for cebranopadol (7 h), fentanyl (30 min) and morphine (60 min). Ipsilateral paw withdrawal threshold in SNL was increased with full efficacy and an ED_{50} (95% CI) value of 0.8 (0.5–1.1) μg/kg i.v.. In SNL rats, cebranopadol was antagonized by the MOP receptor antagonist naloxone and by the NOP receptor antagonist J-113397.
Conclusion: Cebranopadol is a novel potent long-lasting analgesic which inhibits evoked nociceptive and neuropathic pain readouts in the rat. Nociceptin/orphanin FQ and μ-opioid receptors contribute to anti-hypersensitivity as demonstrated by selective antagonism. SNL-induced mechanical hypersensitivity was reduced with higher potency as compared to heat-induced nociception.
Conflict of interest

WIP-0293 LOCAL PERIPHERAL NOCICEPTIN/ ORPHANIN FQ RECEPTOR AND μ-OPIOID RECEPTOR AGONISM SELECTIVELY INHIBITED MECHANICAL HYPERALGESIA IN RATS WITH DIABETIC POLYNEUROPATHY

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Objectives: In the present study, we analyzed the effect of local peripheral injection of the nociceptin/orphanin FQ (NOP) receptor agonist Ro65-6570 and compared it with the effect of the μ-opioid peptide (MOP) receptor agonist morphine in a rat model of diabetic polyneuropathic pain.
Methods: Two weeks after streptozotozin injection, paw pressure test in diabetic rats revealed mechanical hyperalgesia as compared to citrate-buffer injected control rats. Ro65-6570 and morphine were injected intraplantarly into a hindpaw of diabetic rats and the mechanical withdrawal thresholds were determined in both hindpaws ipsi- and contralateral to the injection site before and after injection of the drugs. In antagonism studies, the NOP receptor antagonist J-113397 and the MOP receptor antagonist naloxone were given by the intraplantar route simultaneously to the agonist.
Results: Ro65-6570 in the dose range from 0.003 to 0.03 mg/animal showed antihyperalgesic effects with maximal efficacy of 57.1 ± 15.4% MPE at the dose of 0.01 mg/animal. Intraplantar administration of morphine showed dose dependent antihyperalgesic effects in the dose range from 0.01 to 0.1 mg/animal with a maximal efficacy of 76.0 ± 12.1% MPE at the dose of 0.1 mg/animal. J-113397 and naloxone selectively and completely inhibited the antihyperalgesic action of the respective NOP and MOP receptor agonist.
Conclusion: These results indicate that peripheral administration of NOP and MOP receptor agonists are able to selectively inhibit mechanical hyperalgesia in a rat model of diabetic polyneuropathy.
Conflict of interest

WIP-0164 NOVEL AGONIST OF NICOTINIC RECEPTOR REDUCES HYPERALGESIA AND ALLODYNIA IN RATS WITH NEUROPATIC PAIN

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Objectives: Among a number of novel approaches currently under investigation to relief pain, the nicotinic receptors hold considerable potential as therapeutic target. This work describes the treatment of neuropathic pain with a new agonist

of nicotinic receptor which has high affinity for α_4 ß$_2$ named as Cris-104.
Methods: Neuropathic pain was induced in male Wistar rats by a tight ligation of L5 segmental spinal nerve (SNL). The behavioral signs of heat hyperalgesia and mechanical allodynia were observed before and 14 days after surgery using a plantar analgesia meter and an electronic algometer, respectively. Sedative activity was investigated by recording spontaneous locomotor activity
Results: The paw withdrawal latency (PWL) and the paw withdrawal threshold (PWT) were significantly reduced from 11.0 ± 0.5 s to 7.6 ± 0.1 s and from 39.8 ± 0.7 g to 18.2 ± 1.7 g indicating the installation of neuropathic pain. After 7 days of oral administration, Cris-104, at doses of 32.2 and 96.6 μmol kg^{-1}, increased significantly PWL from 7.4 ± 0.4 s and 7.8 ± 0.3 s to 9.1 ± 0.4 s and 11.8 ± 0.6 s, respectively. Similar results were observed when animals were treated with amitriptyline used as reference. At 96.6 μmol kg^{-1}, PWT was increased significantly from 16.0 ± 0.9 g to 22.3 ± 0.9 g and 21.4 ± 2.5 g after 3 and 7 days of treatment, respectively. No sedation was observed because motor acitivity was not altered by Cris-104.
Conclusion: Cris-104 effectively reduced thermal hyperalgesia and mechanical allodynia in animal model of neuropathic pain.

WIP-0142 HYPERALGESIA IN OPIOID DEPENDENT PATIENTS ON METHADONE MAINTENANCE THERAPY (MMT) IN MALAYSIA

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Objectives: Opioid maintenance therapy may alter sensitivity to pain. Previous studies on pain perception in opioid dependent patients have yielded contradictory results. This study compared opioid naive subjects and patients on MMT in terms of their cold pressor test (CPT) responses.
Methods: Subjects comprised Malay male opioid naive subjects (n = 152) and patients (n = 148) from MMT clinics. Pain threshold, tolerance and intensity in response to CPT were measured. Subjects were evaluated at approximately 30 minutes before taking their morning doses of methadone (0 hour), and at 2, 4, 8, 12, and 24 hours after the first CPT. The mean difference of CPT responses between groups were analysed using repeated measure analysis of variance (RM-ANOVA).
Results: The opioid dependent patients exhibited shorter pain thresholds (adjusted mean (95% CI) = 25.72 (17.50, 33.93) seconds) than opioid naive group (51.58 (43.55, 59.60) seconds) (RM-ANOVA; F (1) = 19.63, $p < 0.001$). The adjusted mean pain tolerance to the CPT in the patients was shorter than that of opioid naive subjects (34.24 (24.87, 43.61) seconds versus 61.03 (51.88, 70.18) seconds) (F (1) = 16.20, $p < 0.001$). The adjusted mean pain intensity scores of the opioid dependent patients was 65.37 (63.00, 67.73) seconds, whereas that of the opioid naive subjects was 64.21 (61.90, 66.52) seconds (F (1) = 0.47, p = 0.492).
Conclusion: This study confirmed hyperalgesia among patients on MMT. It provides further evidence that opioid dependent patients on MMT represent a pain-intolerant subset of clinical patients.

WIP-0168 PHARMACOLOGICAL EVALUATION OF NEW AGONIST OF ADENOSINE RECEPTOR (LASSBIO-1359) IN RATS WITH MONOARTHRITIS

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Objectives: The new N-acylhydrazone (LASSBio-1359) was characterized as an agonist of A_{2A} adenosine receptor. The present work investigates the antinociceptive effect of LASSBio-1359 on monoarthritis model.
Methods: Protocols used were approved by the Animal Care and Use Committee at Universidade Federal Rio de Janeiro. The two typical phases of nociceptive behavior induced by formalin were evaluated after intraperitoneal administration of LASSBio-1359 (5, 10 and 20 mg/kg) in male *Swiss* mice. Chronic inflammation was observed in the monoarthritis model which was induced by subcutaneous injections of complete Freund adjuvant in the tibio-tarsal joint of the mice under 2% sevoflurane anesthesia. After seven days, the animals were treated by oral gavage during 21 days with LASSBio-1359 (50 and 100 mg/kg) and thermal and mechanical hyperalgesia were analyzed in the paw immersion test and paw pressure test.
Results: LASSBio-1359 (10 and 20 mg/kg) reduced the time of liking/biting from 56.3 ± 6.0 to 32.7 ± 2.2 and 23.8 ± 2.6 s in the neurogenic phase of the formalin test. In the inflammatory phase, the response was reduced from 305.0 ± 39.1 to 128.8 ± 20.5 and 140.0 ± 16.0 s. Oral treatment with LASSBio-1359 (100 mg/kg) induced in the mice with monoarthritis an increase of the threshold from 6.4 ± 0.5 to 11.2 ± 0.7 s and from 96.7 ± 11.2 to 195.4 ± 14.8 s when submitted to the paw immersion and pressure tests, respectively.
Conclusion: LASSBio-1359 which is an agonist of adenosine receptor promoted antinociceptive effect in the chronic inflammatory pain.

Basic Research: Physiology, Anatomy, Animal Models

WIP-0279 NERVE INJURY TRIGGERS TRANSITIONAL HYPERACTIVITY OF GLUTAMATERGIC NEUROTRANSMISSION IN THE PERIAQUEDUCTAL GRAY OF NEUROPATHIC PAIN

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Objectives: We previously found hypofunction of glutamatergic neurotransmission in the ventrolateral periaqueductal gray (vlPAG) of rats 3–10 days after nerve injury, which may contributes to nerve injury-induced neuropathic pain. However, the progress of this hypo-glutamatergic activity after nerve injury remains unclear.
Methods: We examined changes in the glutamatergic transmission, spontaneous excitatory postsynaptic currents (sEPSCs) and miniature EPSCs (mEPSCs), in vlPAG slices isolated from neuropathic rats 1 day (NP1) after L5/L6 spinal nerve ligation (SNL).
Results: As compared with sham-operated group, vlPAG slices in the NP1 group exhibited higher frequency of sEPSCs, but no change in sEPSCs amplitude. The NP1 group also had depressed paired-pulse ratio, suggesting glutamate release is increased. However, there was no difference in AMPA/NMDA ratio and membrane excitability between sham and NP1

groups. Moreover, sham and NP1 groups had similar expression levels of GluR1 and GluR2.
Conclusion: At 1 day after SNL, the glutamatergic neurotransmission was increased in the PAG although it was decreased at 3–10 days. This transitional elevation of glutamatergic transmission in the PAG can lead to antinociceptive and may be a protection mechanism in the midbrain against peripheral nerve injury induced ectopic discharges in the primary afferents.

WIP-0467 SPINAL CORD STIMULATION (SCS) IN ANIMALS WITH NON-INFLAMMATORY MUSCLE PAIN REVERSES PAIN BEHAVIORS IN A FREQUENCY-DEPENDENT MANNER

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Objectives: Chronic pain mechanisms can include sensitization of the central nervous system. For example, chronic musculoskeletal pain (CMP) conditions have strong central components. This study tested the effects of SCS in an animal model of chronic muscle pain that mimics the symptoms of CMP.
Methods: Animals in this IACUC-approved study were used in accordance with National Institutes of Health guidelines. An SCS lead was implanted into the epidural space (L_3-L_4) of Sprague-Dawley rats. Ten days later, CMP was induced by two injections of pH 4 saline into one gastrocnemius muscle, 5 days apart. Experiment 1 delivered daily SCS (6 h/day) for 4 days at 4 Hz, 60 Hz or 100 Hz and compared to sham SCS. Experiment 2 delivered a single SCS treatment (6 h) at either 60 Hz or 100 Hz. The effect of SCS on chronic muscle pain was assessed by paw withdrawal threshold (PWT), muscle withdrawal threshold (MWT) and physical activity in an open field test.
Results: Intramuscular acid injection decreased PWT and MWT bilaterally. Compared to sham SCS, 60 Hz SCS and 100 Hz SCS, but not 4 Hz SCS, significantly reversed the decreased PWT and MWT. 60 Hz SCS and 100 Hz SCS delivered daily showed a persistent reversal of PWT and MWT in this pain model. A single SCS treatment with 60 or 100 Hz reversed the hyperalgesia for 24 h. During 60 Hz SCS, the distance traveled and the number of crossings in the open field test increased significantly when compared to sham.
Conclusion: These findings show SCS frequency ranges may be optimized for treatment of conditions with CMP components.
Conflict of interest

WIP-0520 FIBROBLAST TRANSPLANTATION RESULTS TO THE DEGENERATED RABBIT LUMBAR INTERVERTEBRAL DISCS

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Objectives: Background: The apoptosis of the cell is one of the factors at the disc degeneration process. Fibroblasts may act as mesenchymal stem cells at the tissue to which they are injected and they may replace the apoptotic cells.
Aims: To show the viability of the fibroblasts injected to the degenerated discs, and observe their potential for further studies.
Methods: The nucleus pulposus of the discs from eight rabbits were aspirated under scopic guidance to induce disc degeneration. One month later, cultured fibroblasts, which had been taken from the skin, were injected into the disc. The viability and the potential of the injected cells for reproduction were studied histological and radiological.
Results: Cellular formations and organizations indicating to the histological recovery were observed at the discs to which fibroblasts were transplanted. The histological findings of the discs to which no fibroblasts were transplanted, did not show any histological recovery. Radiological, no finding of improvement was found in both groups.
Conclusion: The fibroblasts injected to the degenerated discs are viable. The findings of improvement, observed in this study, suggests that fibroblast transplantation could be an effective method of therapy for the prevention or for the retardation of the degenerative disease of the discs.

WIP-0374 THE EFFECT OF VITAMIN C IN A CHRONIC POST-ISCHEMIC PAIN MODEL

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Objectives: The pathophysiology of CRPS is complex and increased free radical and oxidative stress is one of the major causes. We tested the hypothesis that vitamin C has dose-related treatment effect in chronic post-ischemic pain (CPIP) model.
Methods: A total 49 male-rats which have weight from 250 to 350 g were used. The withdrawal threshold was investigated for 48 hours and CPIP model was confirmed in 28 rats. There are 4 groups: control (no medication), group 1.0 (vitamin C 1 mg/day for 5 days), group 2.5 (vitamin C 2.5 mg/day for 5 days) and group 7.5 (vitamin C 7.5 mg/day for 5 days). Fifty percent mechanical withdrawal threshold was checked and total blood antioxidant status (TAS) and uric acid concentration (UAC) were measured from blood sample of the tail.
Results: Fifty percent mechanical withdrawal threshold of group 2.5 was higher that of control and group 1 after the administration of vitamin C ($P < 0.05$). But there are no difference between group 2.5 and group 7.5.
One day after the administration of vitamin C, blood level of TAS and UAC were different between control and group 7.5 ($P < 0.05$). One day and 12 days after the administration, the blood TAS was different between control and group 2.5 ($P < 0.05$).
Conclusion: The administration of proper dose of vitamin C can reduce the oxidative stress and increased antioxidants and recover the mechanical threshold. It is suggested that vitamin C has treatment effect in early stage of CRPS.

WIP-0166 NEURAL MOBILIZATION AND NEUROPATHIC PAIN: EFFECTS IN SIGNALING MOLECULES

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Objectives: The aim of this study was to analyze if NM can change the expression of Substance P, transient receptor potential channels of the subfamily vanilloid type 1(TRPV1) and mu-opioid receptor (MOR) in dorsal rot ganglia (DRG) and its influence on relief of pain, after sciatic nerve chronic constriction injury (CCI) in rats (behavioral test publish in Santos et. al. (2012).
Methods: The CCI was performed on adult male rats, submitted thereafter to 10 sessions of NM, each other day, starting 14 days after the CCI injury. At the end of the sessions, the

DRG (L4-L6) were analyzed using Western blot assays for Substance P (SP), TRPV1 and opioid receptor MOR.
Results: We observed a marked decrease of SP and TRPV1 expression (48% and 35%, respectively) and an important increase of MOR expression (200%) in DRG after NM treatment.
Conclusion: These data provide evidence that NM is facilitating the relief of pain by increase of opioid receptor and decrease of SP and TRPV1.

WIP-0413 DRY NEEDLING OF COLLAGENASE DAMAGED RAT PATELLAR TENDON SPEEDS REGENERATION

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Objectives: Chronic tendinosis is a major contributor to movement induced joint pain. Various treatment modalities have been advocated to speed up recovery of injured tendons. Regenerative treatments include injection of platelet rich plasma, glucose concentrate and other irritants that purportedly act as proliferants which stimulate healinig. But despite widespread adoption of such techniques there is scant experimental evidence of their comparative efficacy. It is the aim of this study to evaluate whether dry needling provides salutary effects on tendon healing in a rat model.
Methods: Lewis rats (over 300 g) were injectded with collagenase in their patellar tendons to induce degeneration. Animals in Group A were given dry needling one week later, whereas Group B animals were left untreated after injection.
All animals were sacrificed three weeks after collagenase and their patellar tendons harvested for strain measurement at the point of rupture. A control group of rats was used for measurement in normal knees.
Results: Group B (N = 9) without needling: mean failure force=63.76N, SD=9.24; Group A (N = 10), with needling: mean failure force=76.06N, SD=9.69. Normal intact tendons mean failure force=76.16N, SD=10.91.
Conclusion: 1. Dry needling appears to have a salutary effect on regeneration of collagenase-induced patellar tendon damage in rats.
2. Further study is needed to elucidate the apparent beneficial healing mechanism of dry needling in this particular model of tendon degeneration.

WIP-0217 ANALGESIC EFFECTS OF OLIGONOL, ACUPUNCTURE AND QUANTUM LIGHT THERAPY IN CHRONIC NON-BACTERIAL PROSTATITIS

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Objectives: Chronic prostatitis (CP) /chronic pelvic pain syndrome (CPPS) accounts for 90–95% of prostatitis cases. The analgesic effects of oligonol, quantum light, and acupuncture were compared in a rat model of estradiol-induced prostatitis.
Methods: Adult male rats were grouped (n:10) as follows: Group 1, controls; Group 2, chronic prostatitis; Group 3, oligonol; Group 4, acupuncture; Group 5, quantum; Group 6, oligonol plus quantum; Group 7, acupuncture plus oligonol; Group 8, quantum plus acupuncture; Group 9, acupuncture plus quantum plus oligonol. In order to compare the level of neuropathic tail pain at baseline and end-point quantitatively, a PAM device was used with the following parameters: peak force (grams), the latency time of the animal response in seconds (T1) and the total length of the measurement in seconds (T2).
Results: The peak force was significantly lower in all groups as compared to baseline ($p = 0.005$). Combination treatments involving the quantum therapy appeared to have a greater analgesic effect in comparison with oligonol and acupuncture. Within-group comparisons for T1 and T2 between pre- and post-treatment phases showed a decrease in the oligonol group, while an increase was observed in the quantum group.
Conclusion: Although all approaches were effective for the treatment of neuropathic pain, a synergistic effect was observed in the quantum plus oligonol plus acupuncture combination, while quantum monotherapy appeared to provide higher analgesic efficacy as compared to oligonol and acupuncture monotherapies.

WIP-0442 DETERMINATION OF MOTOR ENTRY POINT AND INTRAMUSCULAR MOTOR POINT OF FLEXOR DIGITORUM LONGUS FOR EFFECTIVE MANAGEMENT OF SPASTIC FOOT PAIN

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Objectives: Botulinum toxin injection for management of spastic foot pain is commonly used.
This study was conducted to determine the anatomical position of the intramuscular motor point and motor entry point of the flexor digitorum longus muscle for effective motor point block.
Methods: 14 specimens from 8 adult Korean cadavers (5 males and 3 females, age ranging from 52 to 79 years) are used for study. Two bony landmarks were selected as reference points. The proximal reference point was defined as most medial proximal point of tibia plateau. And the distal reference point was defined as most distal tip of malleolus. Motor entry point was defined as the location where the motor nerve penetrate the muscle belly. Intramuscular motor point was defined as the location where the motor nerve end. We measured distance from proximal reference point to MEP and IMP.
Results: The mean length of the reference line was 333.96 ± 25.20 mm. Mean of MEP was 158.03 mm ± 37.39 mm (46.78% ± 9.65%).
Most MEP was located within 40–60% on X-coordinate. Mean of distance on Y-Coordinate was 17.83 ± 2.82 mm. Most proximal IMP was located at 117.64 ± 13.24 mm (35.00 ± 3.72%) on X-coordinate. Most distal IMP was located at 264.64 ± 25.90 mm (78.57 ± 4.15%) on X-coordinate.
Most IMP was located within 30–60% from proximal reference point.
Conclusion: For effectiveness and safety of motor point block in FDL to manage spastic foot pain, optimal insertion site of needle is 40–60% from proximal reference point. And optimal depth of needle from skin is 1.8 cm.

WIP-0357 SPINAL OXIDATIVE STATUS IN EXPERIMENTAL MODELS OF NEUROPATHIC PAIN

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Objectives: Spinal oxidative stress is involved in neuropathic pain (NP) pathophysiology, although the specific mechanisms remain unclear. Here, we aimed at evaluating spinal redox status during NP development and correlating it with animals' pain behavior.
Methods: We used spared nerve injury (SNI) and chronic constriction injury (CCI) models of neuropathy, comparing

lesioned, sham and naïve rats. On post-surgical days 3, 7 and 14, responses to mechanical and cold stimuli were evaluated and spinal oxidative and nitrosative damage were assessed immunohistochemically. Experiments conformed to European Directive 2010/63/EU and approved by local ethics committee.
Results: Until 14 days post-surgery, SNI rats developed mechanical and cold allodynia and hyperalgesia. However, their levels of oxidative and nitrosative damage in lumbar spinal segments was similar to sham animals' and lower than naïve controls'. Conversely, mechanical allodynia was accompanied with higher oxidative damage in 14-day CCI rats, as compared to naïve controls. In both models, no differences in oxidative status were detected between ipsi- and contralateral sides.
Conclusion: Unlike CCI, SNI seems to elicit an increase in antioxidant defenses in the initial stages of NP. Since the latter model affects distal branches of the sciatic nerve, as compared with the proximal region affected in CCI, we hypothesized that nerve lesion site could interfere with the temporal development of redox dysfunction mechanisms associated with NP. We are currently evaluating later timepoints in the SNI model, in order to ascertain whether spinal redox dysfunction occurs only at later stages.
Funding: PTDC/SAU-NEU/101090/2008; PEst-C/SAU/LA0002/2013 (FCT/COMPETE).

WIP-0342 EVALUATION OF SCIATIC NERVE DAMAGE FOLLOWING INTRANEURAL INJECTION OF BUPIVACAINE, LEVOBUPIVACAINE AND LIDOCAINE IN RATS

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Objectives: The local anaesthetics may cause neurotoxicity. We aimed to compare the neurotoxic potential of different local anaesthetics, local anaesthetic induced nerve damage and pathological changes of a peripheral nerve.
Methods: Sixty Whister rats weighting 200–350 g were studied. Rats were assigned in to 3 groups (n:20 in each) and 25-gauge needle inserted under magnification into the left sciatic nerve and 0.2 mL of 0.5%bupivacaine, 5%levobupivacaine, 2%lidocaine were injected intraneuraly with an automated infusion pump (0.2 mL/minute). Somebody who was blind to the specifics of the injection monitorized neurologic function on postoperative 1stday, and daily thereafter. Neurologic examination included assessment for presence and severity of nociception and grasping reflexes. At the end of the experiment (day7) evaluation of neuropathologic changes was performed.
Results: There was no abnormality for nociception reflex in the groups. The statistical difference was not detected in groups about grasping reflex and histopathologic evaluation. In bupivacaine group 2, levobupivacaine group 1, and lidocaine group 2 cases had slight grasping, also in lidocaine group 1 case had no grasping reflex on the seventh day. Severe axonal degeneration was observed in all groups, respectly in bupivacaine group 4(20%), levobupivacaine group 3(15%), and lidocaine group 6(30%).
Conclusion: We concluded that lidocaine is more toxic than bupivacaine and levobupivacaine. In all groups, histopathologic damage frequency and severity was more than the motor deficiency.

WIP-0162 LONG-TERM EVALUATION OF NOCICEPTION IN NEUROPATHIC PAIN RATS AND IMPORTANCE OF NERVE GROWTH FACTOR LEVELS IN DORSAL ROOT GANGLION AFTER INJURY

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Background and Aims: Neuropathic pain is characterized by hyperalgesia and allodynia accompanied by chemical mediators with pro-nociceptive effects. However, the assessment of these behaviors and mediators in the long term is unknown. Our goal is to evaluate the nerve growth factor (NGF) in dorsal root ganglion (DRG) through induction of sciatic nerve chronic constriction (CCI) and to evaluate the possibility of long term nociceptive threshold in rats.
Methods: Male *Wistar* rats weighing 170–190 g with approximately 2 months were submitted to CCI injury, sham and *Naive* animals were used as control. The nociceptive threshold was determined by mechanical and thermal hyperalgesia tests and allodynia during period of 56 days, assessed every 2 weeks. After 56 days, the DRG (L4 -L6) were removed and processed by *Western Blot* for NGF detection.
Results: CCI animals showed a reduction in the nociceptive threshold when compared to control groups and remained constant during the 56 days. Regarding *Western Blot*, we observed an increase in NGF expression in CCI group compared to control animals.
Conclusion: NGF is an important mediator for the induction and maintenance of neuropathic pain, since it was possible to observe it increased 56 days post-surgery. Furthermore, we emphasize the importance of this mediator as a future therapeutic target.

WIP-0277 ANTINOCICEPTIVE PROPERTIES AND THE STRUCTURE-ACTIVITY RELATIONSHIP OF SEMISYNTHETIC TERPENES OBTAINED FROM PTERODON GENUS: A BRAZILIAN SOURCE OF NEW ANALGESICS

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Objectives: Pterodon genus fruits are commercially available at the Brazilian medicinal market and the crude alcoholic extracts are used in folk medicine as anti-inflammatory, analgesic, and anti-rheumatic. Previous studies have demonstrated that furanditerpenes possessing vouacapan skeleton contribute for the antinociceptive activities of this genus, becoming a promising template for the development of new analgesics. Through animal models, we proposed the evaluation of the antinociceptive properties of 6α,7β-diidroxivouacapan-17β-oate acid (ADV), 6α-hidroxivouacapan-7β-17β-lactone (HVL) and 6α-oxovouacapan-7β-17β-lactone (POL), analogues of the 6α,7β-dihydroxyvouacapan-17β-oate methyl ester (Spindola et al. 2010, 2011).
Methods: Swiss mice were used in the following experimental models of acute pain and inflammation: the open-field, acetic acid-induced writhings, formalin, tail flick, hot-plate, and carrageenan tests (ethics protocol number 2191-1).
Results: No differences in the ambulatory behavior of animals in the open-field, validating the next results. Writhing test: neither i.p. nor p.o. administration of ADV showed significant activity; only i.p. administration of HVL and POL reduced abdominal constrictions (30 mg/kg; $p < 0.001$). Formalin test: significant reductions of the reaction time in the inflammatory phase for both i.p. HVL and POL (10, 30, and 100 mg/kg; $p < 0.001$). Carrageenan test: i.p. HVL and POL significantly reduced edema with 3, 10, and 30 mg/kg ($p < 0.001$). Negative results in the tail-flick and hot-plate.

Conclusion: Results showed herein provided consistent data to support the potential activity of this class of compounds to be used against pain disorders.
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WIP-0440 BOLUS VERSUS CONTINUOUS INFUSION FOR EPIDURAL BLOCKS: A CADAVERIC STUDY

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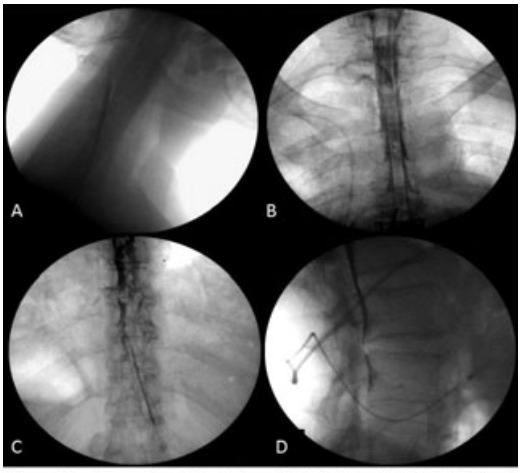
Objectives: Continuous infusion or intermittent boluses of local anesthetic are used for epidural anesthesia and analgesia. It is not clear how the different methods of local anesthetic administration affect efficacy and safety. In clinical practice, malfunctioning epidural blocks are often 'fixed' with bolus injections. Hogan's cryomicrotome spine section studies showed that intermittent boluses of anesthetic may succeed in providing uniform block over comparable volume delivered by continuous infusion.
Aims: To compare the epidural spread of bolus and continuous flow injections in cadavers.
Methods: Eighteen fresh frozen cadavers received a 19G epidural catheter at T8-9 using loss of resistance to identify the epidural space. Catheters were threaded 2 cm beyond the needle tip. Ten ml iohexol 300 was injected at 1500 ml/h in the 12 cadavers of the bolus injection group (BIG), and at 10 ml/hour in the 6 cadavers of the continuous injection group (CIG). Contrast distribution was compared after injection, and at 1 hour with fluoroscopy.
Results: There was no difference in cephalad spread between the groups. The injectate in 16 cadavers spread to C1, two cadavers in the CIG had spreads to C2 and C4. Caudad spread reached L5-S1 in the BIG among shorter cadavers (<165 cm) and L1-2 in CIG and the taller cadavers (>174 cm) in BIG. All injections spread equally bilaterally after the entire volume was injected.



The epidural spread of 10 ml Iohexol 300 injected at the T8-9 level. A: Cervical level, lateral view, B: Cervico-thoracic level, AP view, C: Thoracic level, AP view, D: Lumbar level, lateral view

Conclusion: Irrespective of the rate of infusion, 10 mL injected into the epidural space spreads from T8-9 to C1 in fresh cadavers. Continuous infusions spread less far caudad than boluses. These results are consistent with prior studies by Hogan.

WIP-0519 SPINAL GLIAL ACTIVATION IN RAT MODELS OF NEUROPATHIC PAIN

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Objectives: The aim was to evaluate and compare the quantitative and qualitative changes microglia and astrocytes undergo in different models of peripheral neuropathic pain.
Methods: Male Wistar rats underwent chronic constriction injury (CCI) and streptozotocin (STZ) induced diabetes. Nociceptive thresholds were measured using plantar heat and von Fray filament tests to determine the development of neuropathic pain. Lumbar spinal microglial and astrocyte activation was evaluated using Iba-1 and GFAP immunoreactivity. Computer assisted image analysis of the preparations was carried out. NGF and IL-1β levels were measured by ELISA in culture medium from rat cortical astrocytes. Animal care and experiments were carried out in accordance with the animal care guidelines of the Ethics Committee of Medical University, Sofia.
Results: Both CCI and STZ groups demonstrated development of tactile and thermal allodynia compared to the control. Robust microglial and significant astrocyte activation was observed in the dorsal horn ipsilaterally of CCI. In diabetic rats Iba1 immunoreactivity significantly increased, but cell density was not relevantly different compared to control. In both groups the dorsal funiculus was involved in glial activation. Preincubation with IL-1β stimulated NGF secretion from isolated astrocytes. Immunohistochemical analyses demonstrated upregulation of IL-1β-positive cells dominantly in CCI rats.
Conclusion: Our results suggest that spinal glial expression has a more important role in the development of neuropathic pain in CCI model than in diabetic neuropathic pain model. IL-1β stimulates NGF secretion leading to increase in glial activation.
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WIP-0264 ENDOTHELIN-1 OVER-EXPRESSION IN ASTROCYTE ATTENUATES PERIPHERAL NEUROPATHIC PAIN BY UP-REGULATING THE EXPRESSION OF ASTROGLIAL GLUTAMATE TRANSPORTER TYPE 1 IN LUMBAR SPINAL CORD

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Objectives: The astroglial glutamate transporter type 1 (EAAT2) is responsible for the rapid clearance of glutamate from synaptic cleft in the spinal cord. In spite of its importance in modulating both physiological and pathological pain, endogenous modulator has not been identified yet. Recently, a beneficial role of central endothelin-1 (ET-1) has been demonstrated in a transgenic mouse model targeting ET-1 over-expression in astrocytes (GET-1) in pathological pain. The present study aimed to investigate whether astrocytic ET-1 serves as an endogenous modulator of glutamate transporters in neuropathic pain.
Methods: Partial ligation of the sciatic nerve in male homozygous GET-1 and non-transgenic mice was employed as a neuropathic pain model. All animals were tested for thermal hyperalgesia/allodynia and mechanical allodynia before and after four days administration of EAAT2 agonist

ceftriaxone (CEF) at 200 mg/kg/day. C6 rat astrocyte cells with/without ET-1 over-expression were in-house derived and treated with ET-1 receptor antagonists BQ-123 and BQ-788 at 10 ng/ml. RNA and protein were extracted from the L4-L6 spinal cord of mice and cells for real-time PCR and western blot analysis.
Results: GET-1 mice exhibited less neuropathic pain and CEF produced synergestic effect in pain suppression. Both mRNA and protein expression of EAAT2 were significantly up-regulated in the spinal L4-L6 regions in sham GET-1 mice. Furthermore, over-expressed ET-1 in C6 cells up-regulated both mRNA and protein expression of EAAT2 which could be partially reversed by ET-1 receptor antagonists.
Conclusion: Taken together, these results indicate that the astrocytic ET-1 may exert pain suppression by modulating spinal EAAT2 expression and its glutamate clearance activity.

WIP-0379 STRUCTURAL CHANGES IN RESTING-STATE EEG ACTIVITY IN CHRONIC PAIN?

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Objectives: Experiments with noxious stimuli suggest that gamma activity is correlated to pain perception. The aim of this study was to investigate whether resting-state EEG differences exist between chronic pain subjects and pain-free controls.
Methods: This study was approved by the local ethical committee (NL40284.068.12). Nine subjects with chronic pain complaints were matched for age and gender with nine pain-free controls. After written informed consent was obtained, a 14-leads 5-min resting-state EEG (eyes open) was measured at t = 0 and t=six months. In addition, pain status and depressive complaints were assessed. After filtering, segmentation (2048 ms), and FFT computing, six EEG bands were calculated: delta, theta, alpha, beta1, beta2 and gamma. A three-level mixed regression analysis was performed for each EEG band. Fixed effects were modeled for pain status, as variable of primary interest, and the covariates age, gender, ocular activity and session. Random intercepts were both modeled for subject and time segment within each session.
Results: Groups did not differ in depressive complaints ($p = 0.592$). The chronic pain group was heterogeneous: back pain (n = 5), irritable bowel syndrome (n = 1) and fibromyalgia (n = 3). The analyses showed significantly increased gamma activity for Fz ($p = 0.003$), Cz ($p = 0.015$), C4 ($p = 0.037$) and marginal significance for C3 ($p = 0.061$). No significant effects were found for the other frequency bands.
Conclusion: The results may be indicative for a structural change in resting-state EEG activity in chronic pain. These findings may provide a clue for future research in the chronification of pain.

WIP-0145 A HISTOPATHOLOGICAL AND ELECTROPHYSIOLOGICAL ASSESSMENT OF THE TOXIC EFFECTS OF DEXMEDETOMIDINE PERINEURALLY ADMINISTERED TO THE SCIATIC NERVE OF RATS

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Objectives: To make a histopathological and electrophysiological assessment of the toxic effects of dexmedetomidine that is perineurally administered to the sciatic nerve of rats.
Methods: 15 rats from the Sprague Dawley race were divided into three groups: in Group D (n = 7), 40 μg (0.2 mL) dexmedetomidine was administered to the right sciatic nerve, in Group SF (n = 6), saline (0.2 mL) was administered to the right sciatic nerve and in Group S (n = 2), the right sciatic nerve was explored in a way similar to other groups, then closed.
Results: In Group 1, the RoRR duration was statistically longer than in other groups. ($p < 0.001$) The PWL values returned to the baseline values in a longer time in Group 1 as compared to the other groups, which was a statistically significant difference. ($p < 0.001$) The PWL values returned to the baseline values in a longer time in Group 1 as compared to the other groups, which was a statistically significant difference. ($p < 0.001$) In the post-procedural EMG recordings, the CMAP amplitude rates achieved in the right and left side in Group 1 were lower than the Grup 2 at a statistically significant level. ($p = 0.009$)
Conclusion: The 40 μg (0.2 mL) dexmedetomidine perineurally administered in the sciatic nerve of the rat prolongs RoRR duration in rats, causes a delay in PWL durations and causes axonal damage of the sciatic nerve. On the other hand, the change in sciatic nerve has to be histologically supported, as well.

Cancer Pain

WIP-0191 MULTIPLE LEVEL INTERCOSTALS BLOCK VERSUS PARAVERTEBRAL NERVE BLOCK FOR MANAGEMENT OF CHRONIC THORACIC PAIN

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Objectives: Chronic malignant thoracic pain is a common problem. There are different interventional techniques for management of this pain. The aim of work is to evaluate the analgesic effect of paravertebral block versus multiple level intercostals block in management of chronic malignant thoracic pain, study the radiological spread of the dye in both techniques, the effect on pulmonary function and haemodynamics, and the sympathetic block.
Methods: This study was conducted in pain clinic in National Cancer Institute on 60 patients of both sexes having chronic malignant thoracic pain on oral opioid therapy. patients randomly allocated into 2 groups 30 patients each.Group A received paravertebral single injection, whereas group B received three level intercostals blocK.Each group further subdivided into 2 subgroups to receive either 8 or 12 ml of bupivacaine 0.25%.
Results: The study showed that in group A spread of dye was to 2–4 intercostal spaces with epidural and contralateral spread

whereas in group B the dye restricted to each intercostal space. Sympathetic blockade in group A lasted 16–17 hours and was absent in group B. Systolic, diastolic blood pressure and heart rate were the same in both groups. Pulmonary function was moderetly higher in group A.There was low VAS score In group A.

Conclusion: Paravertebral is better than intercostals block in response to chronic thoracic pain as the injected drug spread for more than one intercostal space with both epidural and contralateral spread and with sympathetic blockade. Paravertebral technique cannot be used as a sole technique for management of this pain.

WIP-0182 ANTERIOR APPROACH TO COELIAC PLEXUS BLOCK FOR PANCREATIC PAIN MANAGEMENT - OUR EXPERIENCE

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Objectives: Celiac plexus neurolysis is adjunct modality to relieve intractable pain caused by carcinoma of pancreas, liver, stomach. Its use without imaging modalities- computerized tomography/ultrasound has numerous complications. New Imaging modalities improve visualization of celiac plexus and spread of neurolytic solution, provide greater comfort. The use of CT and ultrasound allow accurate needle placement for celiac injection. But CT guidance is more expensive and time consuming. We report our experience with sonographically guided approach in patients with upper abdominal malignancy pain.

Methods: Patients with abdominal malignancy pain VAS≥3 were included. A prognostic celiac plexus block was performed with sonographic guidance using 22G, 15 cm long Chiba needle advanced through biopsy guide to preaortic zone above celiac artery. Thirty to forty ml of 50% alcohol was injected. VAS scores, analgesic consumption, duration of complete and partial pain relief were assessed at one hour, 24 hours, one week, first, second and third months.

Results: There was statistically significant decrease in mean preblock VAS score at 1st hour, 24th hour, 1st week, 1st, 2nd and 3rd month($p < 0.05$). The analgesic consumption was statistically significant at all time intervals from baseline ($p < 0.05$). Quality of block was graded as excellent by eleven patients. Eleven patients had complete pain relief and four had partial pain relief.

Conclusion: Ultrasound is an attractive technique for celiac plexus neurolysis. Use of color doppler sonography helps in real time positioning of needle in relation to celiac trunk and avoids complications related to inability to visualize the needle.

WIP-0337 QUALITY OF LIFE IN CHILDREN WITH CANCER: SELF-REPORT AND PROXY-REPORT

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Objectives: This study was intended to describe the quality of life of children with cancer and their parents and how they correlate with each other.

Methods: A descriptive cross-sectional study was conducted in two pediatric oncology wards using a sample composed of 36 children and their parents. Children aged between 8 and 18 years were consecutively selected during 6 months. In the first day of hospitalization, both the child and one of the parents filled in, simultaneously and independently, the self-report (child) and the proxy-report (parents) versions of the PedsQL 3.0 Cancer Module.

Results: Children's median age was 13.5 (8 – 17) years, while the parents' median age was 42.9 (29–59) years. The highest scores of perceived quality of life were found, with regards to children, in the dimensions 'communication', 77.5 (±20.6), and 'physical appearance', 70.6 (± 26.5); and, with regards to parents, in the dimensions 'anxiety in treatments', 83.1 (±25.8), and 'physical appearance', 79.2 (±23.5). The lowest scores were found in the dimension 'nausea' both for children, 52.8 (±3.0), and parents, 51.3 (±19.1). The quality of life that was reported by children, 61.4 (±15.6), and their parents, 66.2 (±14.8), was correlated ($r = 0.405$; $p < 0.05$).

Conclusion: This study shows that the quality of life perceived by both children and their parents is correlated, thus confirming the engagement of both in the search for better solutions for potential problem sources. Health professionals should pay more attention to pain and discomfort (dimension 'nausea').

WIP-0498 ENDOSCOPIC ULTRASOUND GUIDED CELIAC PLEXUS BLOCK V/S PERCUTANEOUS FLUOROSCOPY-GUIDED PLEXUS BLOCK IN PANCREATIC CANCER

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Objectives: In our study wecompared patient satisfaction, time consumption and economical aspect betweentwo technics: the percutaneous technique under fluoroscopy in the pain clinic andthe endoscopic ultrasound (EUS) guided celiac plexus block guided technique.

Methods: First group of 17 patientswere treated in the OR under general anesthesia with EUS-guidedceliac plexus block under the guidance of linear array endosonography with the injection of 10 cc bupivacaine 0.25% followedby injection of 10 cc of 98% dehydrated alcohol on each side of the celiac plexus.

A second group of 14 patients were treated with percutaneous fluoroscopy-guided plexus block inthe pain department under mild sedation with Midazolam (2 mg IV). A 15 min procedure with 5 ml of 1% lidocaine injected atthe needle insertion; Under radiographic guidance from the left side, a single needle is insertedthrough the aorta so that the final needle-tip is anterior to the aorta at thelower portion of L1; then we inject 10 cc of bupivacaine 0.25% followed by injection of 10 cc of 98% dehydrated alcohol

Results: VAS scale showed improvement of pain in both group.

Conclusion: When both technics provided excellentpain relief, we compared which technique is more practical for thesegroup of patients with an extremely low survival rate.

Percutaneousfluoroscopy-guided plexus block is a 15 min procedure which provides ambulationrapidly, It also provided relief and comfort for this group of patients withoutthe need for hospitalization nor the need of General anesthesia and its sideeffects with the best cost to benefits results.

WIP-0376 NOVEL COMBINATION OF OXYCODONE/ NALOXONE AND PREGABALIN PROVES EFFECTIVE CONTROL OF CNP (CANCER-RELATED NEUROPATHIC PAIN) AND BTCP

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Objectives: The prevalence of neuropathic pain in patients with cancer has been estimated at 19–39%. The CR oxycodone

plus pregabalin show usefulness in CNP (Gatti, Eur Neurol 2009; Garassino, PLoS ONE 2013). The gabapentin with alpha-lipoic acid is effective in neuropathic pain (Chaparro, Cochrane Database of Systematic Reviews 2012). We set out to investigate the efficacy and safety of Targin® combined with pregabalin and alpha-lipoic acid (Tiobec®, Laborest, Italy).
Methods: It was conducted one observational study on pts with advanced NSCLC, with moderate to severe CNP treated with Targin® plus pregabalin and Tiobec at dose 800 mg bid for 28 days. Daily doses were titrated at scheduled clinical visits on days 7, 14, 21 to achieve optimal efficacy and tolerability.
Results: From January 2013 to Dicember 2013 were taken 46 pts with advanced NSCLC which showed moderate-severe CNP and BTcP in 40 pts (87%). The combination therapy was effective for alleviating neuropathic pain (reduction in NRS value: 32%), in quality of life and HADS score. The majority (92.3%) of pts found that the treatment had been 'effective'. Combination therapy also allowed pain relief in 64.5%, a reduction of 70% of BTcP occurrence. Effectiveness of combination treatment was at low doses of Targin® plus pregabalin probably due to Tiobec® adjuvant therapy, and had a favorable safety profile.
Conclusion: This study find a innovative correlation between CNP and emerging BTcP in a model of combination therapy that integrates Targin® plus pregabalin and Tiobec® for cancer pain management, and allow an effective control of CNP and BTcP.

WIP-0542 CAN SPINAL INFUSION DEVICE MODIFY BREAKTHROUGH PAIN IN ONCOLOGICAL PATIENTS?

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Objectives: Spinal infusion (SI) is usually required to manage cancer pain. As there are different kind of devices, we want to expose if device type may allow a better control on breakthrough pain (BP).
Methods: A retrospective observational study was carried out with 37 cancer pain patients treated with SI in the last five years. Two groups were made: patients with completely implantable fixed flow rate device (CID) and those with partially externalized fixed flow rate device (PED), based on the estimated survival time. Data were analysed with SPSS 16.0.
Results: All patients had breakthrough pain prior to implant, with an average of 4,51 episodes per day (e.p.d.). After implant, 29,7% of patients stopped their BP episodes. Remaining patients had an average of 2,73 BP episodes per day.
Patients with CID had lower incidence of BP (59,1% vs 86,7%, p = 0,072) than those with PED.
BP after infusion was better controlled with oral transmucosal fentanyl citrate (OTFC), requiring less proportional doses than morphine group (2,11 vs 3,64, p = 0,4). Doses to control BP was higher in the PED group (40% vs 18,8%, p = 0,099).
Conclusion: Breakthrough pain is better controlled with spinal infusion therapy. CID allows better control of BP, appearing in less patients, needing fewer doses to control it and with better development with OTFC.

WIP-0532 THE EFFICACY OF USING TAPERING DOSE OF ETORICOXIB 120MG, 90MG, 60MG PLUS OXYCONTIN IN CANCER PAIN MANAGEMENT

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Objectives: About half of all cancer patients experience moderate or severe pain that diminishes their quality of life by adversely affecting sleep, social relations and activities of daily living. Pain is more common in the late stages of malignancy. Cancer pain can be eliminated or well-controlled on 80 to 90 percent of cases by the use of appropriate drugs. The purpose of the study is to evaluate the effectiveness of using tapering dose of etoricoxib plus oxycontin in the pain treatment of cancer patients.
Methods: 60 patients were evaluated in Pain Center, International Medical Center, KSA. They all have received an order of tapered etoricoxib plus oxycontin, as follows: 120 mg for 6 days; 90 mg for 14 days; 60 mg for 7 days. And patient was then sustained to 60 mg as per medical condition. Oxycontin: 10 mg per oral two times daily as needed, for a period of 6 months. Inclusive criteria: 28 females, 32 males; ages 36 to 76 years and mean of 56. Exclusive criteria: pregnant women, children, anyone who is allergic to any medication ingredient, history of low blood pressure, patients who has liver or kidney disease or significant cardiac and respiratory depression.
Results: Average improvement of about 65% was appreciated, as per numeric pain scale, within 7 days and sustained for at least 3 months or more.
Conclusion: Using tapering doses of Cox-2 inhibitor plus narcotic help in establishing pain relief and decrease breakthrough pain and eventually result in less centralized pain and allodynia.

WIP-0328 HEALTHRELATED QUALITY OF LIFE AMONG CHRONIC PAIN CANCER PATIENTS AND ITS PSYCHOLOGICAL AND SOMATIC DETERMINANTS

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Aims: Aim of this study was to assess the relationship between health-related quality of life (HRQoL) and its determinants, psychological (i.e. negative emotions: anxiety, depression, and anger) and somatic (i.e. pain and severity of physical symptoms) among cancer patients.
Methods: The subjects were 61 (25 female, 36 male) chronic pain (lasting more than 3 months) cancer patients, average age 57, with the following types of cancer: breast – 18%, head and neck – 16%, lymphatic cancer – 15%, blood cancer – 13%, testicular cancer – 11%, others – 27%. They were treated in Chronic Pain Clinic of the Maria Sklodowska-Curie Institute of Oncology in Warsaw. Patients were asked to fill out the questionnaires by their first visit to the Clinic.
There following questionnaires were used:
- QLQ-C30 to measure HRQoL and severity of physical symptoms,
- Visual-Analogue Scale to measure pain intensity,
- HADS-M to measure negative emotions.

Results: Better global HRQoL is associated with less severity of physical symptoms (fatigue, nausea, dyspnea, insomnia, lack of appetite, constipation, diarrhea) and less severity of anxiety and depression.
Conclusions: Physical symptoms are the main predictor of HRQoL among chronic pain cancer patients and reducing them should be the first priority. However assessing psychological condition should be also taken into consideration and addressed during medical treatment.
Conflict of interest

WIP-0329 EMOTIONAL, PHYSICAL, SOCIAL AND FUNCTIONING IN DAILY ACTIVITIES OF PATIENTS WITH CHRONIC CANCER PAIN AND THEIR DETERMINANTS

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Aims: Aim of this study was to compare two group of chronic pain patients with high and low health-related quality of life (HRQoL) and to identify its determinants.

Methods: The subjects were 61 (59% male) chronic pain (lasting more than 3 months) cancer patients, average age 57, with the following types of cancer: breast – 18%, head and neck – 16%, lymphatic cancer – 15%, blood cancer – 13%, testicular cancer – 11%, others – 27%. While admitting to the Chronic Pain Clinic of the Maria Sklodowska-Curie Institute of Oncology in Warsaw they filled out the following questionnaires:

- QLQ-C30 to measure HRQoL: emotional, physical, social and every day functioning and severity of physical symptoms,
- Visual-Analogue Scale to measure pain intensity,
- HADS-M to measure negative emotions: anxiety, pain, anger.

Patients were split into two groups, their results were compared using Pearson's *r*.

Results: Patients who rated their physical, emotional and social HRQoL higher, assessed their pain and physical symptoms as less severe, and reported less symptoms of anxiety, depression and anger (but only for emotional HRQoL). Patients who rated their daily functioning higher, assess their physical symptoms as less severe.

Conclusions: The results indicate that factors like physical symptoms, pain, and emotions can influence patients assessment of their current medical situation. Therefore it is crucial to work on improving more areas of functioning, what can improve the global HRQoL.

Conflict of interest

WIP-0546 CANCER PAIN IN THE OUTPATIENT SETTING: DEVELOPMENT OF A TECHNOLOGY SUPPORTED SELF-MANAGEMENT INTERVENTION

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Objectives: Cancer pain is inadequately controlled in the outpatient setting. Actively involving patients, by providing self-management support and innovative care technologies, seems promising in overcoming current barriers. Using an iterative process, researchers and technical experts closely collaborated with patients and health professionals to develop a multicomponent technology supported self-management intervention.

Methods: Intervention development was divided into three consecutive phases (exploration of context, specification of content, organisation of care). In each phase, five iterative steps were adressed (research, ideas, prototyping, evaluation, documentation). User requirements and technical requirements were formulated, specified and prioritized alongside the development process.

Results: The intervention includes an iPad application for patients that is connected to a web application for health professionals, both embedded in a multidisciplinary organisation of care. Patients monitor their pain, symptoms, and medication use daily. Based on these registrations, they are provided with graphical feedback information and education sessions. Nurses specialized in pain and PALLIATIVE CARE remotely monitor data and advise patients, while collaborating with the treating physician and pharmacist.

Conclusion: The iterative development process resulted in a multicomponent intervention that corresponds with requirements for effective self-management and fits within daily routines and restrictions of patients and health professionals. This approach, to be tested in a pilot study and randomized controlled trial, is believed to positively affect pain control and quality of life in cancer outpatients.

WIP-0178 THE RELATIONSHIP BETWEEN ETHNICITY AND THE PAIN EXPERIENCE OF CANCER PATIENTS: A SYSTEMATIC REVIEW

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Objectives: In the literature studies have shown there are variations in pain outcomes amongst different ethnic groups. Our aim was to examine the effect of ethnicity on the pain experience of cancer patients.

Methods: A systematic search in October 2013 using the keywords (1n2n3) was conducted in five online databases (1) Medline (1946–2013) (2) Embase (1980–2012) (3) The Cochrane Library (4) Pubmed (5) Psycinfo (1806–2013). Following established protocol, a total of 11 suitable studies were identified.

Key words:

1. Cancer
2. Pain, Pain Measurement, Analgesic, Analgesia
3. Ethnicity, Ethnic Groups, Minority Groups, Migrant, Culture, Cultural background, Ethnic background

Results: Two main themes were identified from the included quantitative and qualitative studies, ethnic differences were found in (1) The management of cancer pain and (2) The pain experience. Six studies showed that ethnic groups face barriers to pain treatment and one study did not. Three studies showed ethnic differences in symptom severity and one study showed no difference. Interestingly two qualitative studies highlighted cultural differences in the perception of cancer pain, as Asian patients tended to normalise pain compared to Western patients who engage in active health seeking behavior.

Conclusion: There is evidence to suggest that the cancer pain experience is different between ethnicities. Minority patients face potential barriers for effective pain management due to problems with communication and poor pain assessment. Cultural perceptions of cancer may influence individual conceptualization of pain and affect health seeking behavior.

WIP-0183 BARRIERS TO CONTROLLING CANCER PAIN IN SUB-SAHARAN AFRICA

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Objectives: Pain is one of the most common and devastating symptoms in cancer patients and misunderstandings on the patient's part can cause major obstacles in pain management.

Methods: This review evaluates factors associated with patient's high barrier score to managing cancer-associated pain.

Results: Cancer pain is one of the most devastating symptoms in cancer patients and has negative effects on patient's quality of life. Despite efforts to standardise and establish guidelines for pain treatment, cancer pain has been reported to be undermanaged (1), especially in sub-Saharan Africa.

Numerous patient-related (2), systematic,and professional barriers are encountered in managing cancer pain. One type of patient-related barrier that may be a major contributor to poor pain control is the patient's perspective about addiction, adverse effects, drug tolerance, the harmful effects of opioids, and distracting physicians from providing cancer treatment (3). Depression is a significant independent predictor for high total barrier scores to cancer pain management, patients who are more depressed tend to report high barrier scores to pain management.

Conclusion: Management of cancer pain should include screening for depression, and could reduce patient-reported barriers to pain management.

WIP-0485 THE EFFECT OF AEROBIC EXERCISE ON QUALITY OF LIFE AMONG BREAST CANCER SURVIVORS: A RANDOMIZED CONTROLLED TRIAL

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Objectives: To determine the effect of moderate- intensity aerobic exercise on quality of life (QOL) and physical functioning in breast cancer survivors.

Methods: We randomly assigned 62 breast cancer survivors to an exercise (N = 30) or control group (N = 32). The exercise group trained at a moderate intensity progressing from 25 to 40 minutes over a 10 week period. The control group did not train. Outcomes were assessed at baseline and post intervention. The primary outcomes were overall QOL – as assessed by the Functional Assessment of Cancer Therapy-Breast (FACT-B) scale. Secondary outcomes were changes in various subscales of overall QOL, and changes in body composition outcomes; body weight, body mass index, and changes in performance in a 12 minute walk test.

Results: Sixty-two of 73 women randomized (84.9%) completed the study. There were no significant differences amongst the two groups at baseline for any variable. In the exercise group significant improvements was demonstrated for the FACT-B, Functional Assessment of Cancer Therapy-General (FACT-G), the functional well-being subscale, and the emotional well-being subscale compared to the control group. No significant changes in body weight or BMI were observed. Exercise group reported a significantly greater increase in walking distance in 12 minutes than did control group ($p < 0.009$).

Conclusion: We conclude that 10 week of moderate-intensity aerobic exercise program significantly improves QOL and physical functioning in breast cancer survivors. Future studies are needed to evaluate the effectiveness of similar exercise programs over longer periods of time and involving a greater number of breast cancer survivors.

WIP-0552 HOW IMPORTANT IS PAIN CONTROL IN THE QUALITY OF LIFE OF CANCER PATIENTS? – PROSPECTIVE STUDY OF 120 CASES

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Objectives: The influence of pain in the quality of life (QOL) of cancer patients is difficult to analyze due to its complexity because a vicious cycle is created by chronic pain, sleep disturbances and changes in activities of daily living (ADL). The aim of this study was to determine the impact of an uncontrolled chronic oncologic pain in 120 outpatients of our Chronic Pain Unit, expressed by QOL described through SF-36v2 values and its correlation between BPI (Brief Pain Inventory) values.

Methods: The inquiry phase of this study occurred from February 2013 to February 2014 including a total of 120 oncologic outpatients who completed validated questionnaires that evaluated pain, interference on ADL and QOL (BPI and SF-36v2) when introduced in a randomized prospective study that evaluated the importance of pain management in QOL. Pearson product moment correlation coefficients were calculated to examine the relationships among the different variables with a 99% confidence interval. This study was approved by the Institutional Ethics Committee. All subjects have signed written informed consent.

Results: Pearson product moment correlation coefficients had a $p < 0.01$ in all studied variables being this result of important statistical significance. Pain determined in BPI is associated to particular and global results in SF-36v2 predicting QOL. All correlation coefficients were superior to 0.5 (moderated correlation).

Conclusion: A moderated correlation was found between variables analyzed in BPI and SF-36v2, determining the importance and impact of non-controlled pain in QOL in a population of oncology outpatients.

WIP-0556 DEPRESSION AND ANXIETY IN ONCOLOGIC PATIENTS CONSIDERING MARITAL STATUS AND SELF-SUFFICIENCY DIFFERENCES FOR COMPARABLE PAIN STATES

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Objectives: Several studies have determined the importance of good social support and preservation of individual autonomy in the development of psychological distress which interferes with pain perception and overall evolution of the main disease. The aim of this study was to understand the importance of marital status and self-sufficiency in the prevalence of psychological distress (anxiety and depression) in an oncologic population.

Methods: A total of 120 patients completed BPI and HAD in a chronic pain centre between February 2013 and February 2014 in a multifactorial randomized prospective study. Data were analyzed with SPSS 20.0. A Kruskal-Wallis test was performed to relate HAD with marital status and a Mann–Whitney test was performed to relate HAD with self-sufficiency. This study was approved by the Institutional Ethics Committee. All subjects have signed written informed consent.

Results: The majority of the inquired (N = 84) was married (69.4%) and 63.6% considered themselves self-sufficient (N = 77). A statistically significant relation was found between the absence of self-sufficiency and depression but not with anxiety ($P = 0.001$ vs. $P = 0.125$). Depression is also related with a divorced status although with less significance ($P = 0.042$). There isn't any statistically relevant relation between marital status and anxiety ($P = 0.653$).

Conclusion: The absence of self-sufficiency is one of the variables which determines high risk of depression. Social support in these patients must not be forgotten and a pro-active attitude enclosing social services must be encouraged by health providers. Marital status should also be considered in the social evaluation of the patient.

WIP-0559 IS MORTALITY ASSOCIATED WITH THE PRESENCE OF ANXIETY AND DEPRESSION IN A CHRONIC PAIN CANCER POPULATION? – ONE YEAR PROSPECTIVE STUDY

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Objectives: It has been identified an increased risk of death in cancer patients who reported more depressive symptoms, but the impact of psychological variables in cancer patients need much more clinical studies and becomes an intricate issue. Aims of the study: to determine the relation between depression and mortality and anxiety and mortality in an outpatient chronic pain cancer population; to reinforce the importance of a rigorous approach to psychological variables in a first consultation at a Chronic Pain Unit.

Methods: The study was approved by the Hospital Ethics Committee and all subjects signed the informed consent. A total of 120 completed the questionnaires of Hospital Anxiety and Depression Scale (HADS) and Quality of Life (SF-36v2) in their first appointment of the Chronic Pain Unit. The inquiry phase occurred between February 2013 and February 2014 in a multifactorial randomized prospective study. Data were ana-

lyzed with SPSS 20.0. A Mann–Whitney test was performed to relate the results of HADS and SF-36v2 with the mortality rate reported.
Results: One year mortality was 24.8%. Clinically elevated levels of anxiety and depression were more prevalent in those who died. Mortality is related to depression with more significance than anxiety (P = 0.02 vs. P = 0.037). In SF-36v2 a relation was found with Social Function (P = 0.002) and Mental Health (P = 0.039).
Conclusion: Depression and anxiety were more prevalent in the cancer population with higher mortality. An association between depression and cancer mortality was detected. Early diagnosis and treatment of depressive symptoms and mental component on an ongoing basis throughout the course of the pathology are crucial.

WIP-0205 PAIN IS NOT SYSTEMATICALLY REGISTERED IN DUTCH OUTPATIENTS WITH CANCER

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Objectives: Systematic pain registration and assessment with a visual analogue scale (VAS) or numeric rating scale (NRS) at each visit is a key recommendation in the Dutch national guidelines on cancer pain management. It is unclear whether this recommendation is applied. Therefore, pain registration in medical records of Dutch medical oncology outpatients was studied.
Methods: In a multi-centre study in six Dutch hospitals, data were extracted from medical records of 380 outpatients with cancer. Data of the first three visits at the outpatient clinic were studied.
Results: In 23% of all 987 visits at the outpatient clinic, pain or absence of pain was registered and in an additional 15% a non-specific symptom description was given. Regarding all other visits (62%) pain or absence of pain was not documented. Pain measurement using a VAS or NRS was documented in only one visit. Pain was more often registered in medical records of patients with metastasis, as well as in those of patients with urogenital tumors.
Conclusion: Pain is not systematically registered in medical records of medical oncology outpatients. With one exception, pain was not registered with a VAS or NRS. Yet, registration and assessment of pain in order to monitor pain are essential to evaluate and adapt pain treatment over time. Unfortunately, despite a specific recommendation in the national guideline, since 2001 pain registration has not improved. Therefore, better implementing strategies of such recommendations regarding systematic monitoring of pain should be studied.

Chronic Pain

WIP-0156 SPINAL CORD STIMULATION AT INTRACTABLE ANGINAL PAIN: EXPERIANCE AT FIRST TWO CASES

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Introduction: Angina pectoris, cardiac pain associated with ischemia, is considered refractory when optimal anti-anginal therapy fails to resolve symptoms.. SCS is considered a reasonable treatment option for patients with chronic angina not responsive to more conservative therapies and who are not able to performed coronary revascularization surgery.
Technique of the procedure: The T12–L1 vertebral level is identified by means of a C-arm. A Tuohy needle is inserted under X-ray guidance to find the epidural space, and a eight-contact paddle electrode is placed at the T1–T4 level left of midline. Test stimulations are performed; and overlap the areas that are painful during angina attacks.
Case (I): A 70-year-old female presented with anginal pain at rest despite previous surgical revascularization, cardiac stenting. Angiography showed no lesions amenable to repeat surgery or cardiac stenting. The patient was treated with maximum medical therapies, but she was unable to walk more than 20 m. She also wokes up with chest pain during sleep.
Case (I): A 65-year-old male were also presented with anginal pain. Pain radiating to chest, neck, arm. He had also previous surgical revascularization, cardiac stenting and was treated with medical therapies. He had pain during rest.
After procedures pain relief was 80% at each patient.
Conclusion: The patient had marked improvement in symptoms at 24 hours. In the following 3 months, the patient was able to reduce his nitrate consumption by 80%. SCS could be considered as a valid treatment alternative after all medical and invasive managements have failed.

WIP-0163 PULSED RADIOFREQUENCY TREATMENT IN EAGLE'S SYNDROME

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Objectives: Eagle's syndrome, or stylohyoid syndrome, is caused by an elongated styloid process and/or calcified stylohyoid ligament. The elongated styloid process presses on the internal carotid artery and adjacent structures, including branches of the glossopharyngeal nerve, and this pressure results in OROFACIAL PAIN.
Methods: The skin was prepared with antiseptic solution and infiltrated with local anesthetic. A 22-gauge, 1.5-inch needle was inserted through the mandibular notch of the mandible and advanced through the infratemporal fossa, with the lateral pterygoid plate serving as a bony endpoint, at a depth of approximately 2.5–4 cm from the skin. After bone contact was obtained, the needle was walked backwards off the lateral pterygoid plate, maintaining the same depth as the plate, until paresthesia of the lower lip, lower jaw, or ipsilateral tongue was obtained. Sensory stimulation was carried out at 50 Hz up to 1 V, using a 0.25- to 0.5-msec pulse width. PRF lesioning was then performed at 42°C for 240 seconds for two cycles.
Results: We report a male patient with symptoms of neuralgia, who was diagnosed with Eagle's syndrome on the basis of diagnostic imaging. Treatment was performed using Pulsed Radiofrequency (PRF) applied to the styloid process with satisfactory results.
Conclusion: We conclude that PRF can be a safe and effective intervention for neuralgia caused by elonged styloid process, when drug treatments do not achieve adequate analgesia.

WIP-0204 TO EVALUATE THE EFFICACY OF ULTRASOUND GUIDED LATERAL APPROACH TO STELLATE GANGLION BLOCK IN CHRONIC SYMPATHETIC PAIN PATIENTS

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Objectives: To study the efficacy of ultrasound guided stellate ganglion block via lateral approach in chronic pain patients.
Methods: Twenty patients with chronic pain conditions of head, neck and upper extremity were administered ultrasound

guided stellate ganglion block via lateral approach with injection bupivacaine 0.25% 6 ml + injection triamcinolone 40 mg.
Results: All the patients showed immediate onset of Horner's syndrome, rise in axillary temperature and decrease in pain scale post block. Improvement in range of motion of upper extremity joints, resolution of edema and decreased frequency of paresthesias were seen at the end of first week. Hoarseness of voice was seen in three patients immediately after the block.
Conclusion: Ultrasound guided stellate ganglion block via lateral approach is safe to treat chronic pain conditions of head, neck and upper extremity.

WIP-0505 OBSERVATIONAL STUDY OF BURNS IN CHRONIC PAIN

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Objectives: Burn is defined as the tissue damage secondary to contact with excessive heat, chemicals, electricity or radiation. Around 250,000 of UK population experience a burn. The extent of injury is determined by the type of the agent, duration of exposure and part of the body exposed.
Methods: Heat therapy is used by many patients who suffer with chronic pain. Mainly used in lower lumbar axial spinal pain, it is accessible, widespread and cheap. It is advised by GPs. It causes vasodilatation, has effects on neurological tissue and bio-psychosocial mechanisms.
Hot water bottles are mostly rubber based and the maximum temperature recommended is 50°C. However the burns can occur within 15 minutes of contact and the chances are further increased if it is covered by towel or any other clothing.
Results: Over the last six years, I have observed 29 cases of skin burns which presented to the operating theatres. My colleague reported 6 cases last year. The degree of the burn varied from superficial to deep, where the patient was referred to Plastic Surgery. An estimated 1200 accidents worldwide occur annually with the use of hot water bottles in chronic pain.
Conclusion: Heat therapy is an efficient form of analgesia used widely but should be used with caution. We should raise awareness amongst colleagues who should educate patients about the cautious use of hot water bottles. There should also be warning that its usage may lead to significant burns.

WIP-0510 AUDIT ON QUALITY OF REFERRALS FOR CHRONIC PAIN CLINIC

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Objectives: Given the absence of electronic patient records, referral letters from GPs serve as the main source of information when patients are seen in hospital. Letters with appropriate information facilitate triage and resource allocation. We decided to audit the quality of referrals to our pain clinic.
Methods: We analysed 30 consecutive referrals to our pain clinic using a data capture form as specified in SIGN* guidance.
Results: Majority of referrals were from GPs (40%). Most of the referrals contains the demographic details and presenting complaint, however they lack about information on pattern of pain, past medical history, current treatment, investigations, psychological issues.
Conclusion: Currently standard of referrals is very variable. General details are included most of the time; however specific information relevant to pain clinic is completed poorly. GPs report past medical history and current treatment better than hospital consultants; however the majority of the time these details are automatically computer generated, so we were unsure of the accuracy of information it contained. Resource allocation and triage would improve if more details were provided in referrals.
Recommendation: To Implement standardized form on Trust homepage for referral including mandatory PMH, DH, current treatment boxes, Educate GPs – possibility of information leaflet, Re-audit once implemented.

WIP-0562 TRANSVERSE ABDOMINUS PLANE (TAP) BLOCK WITH PULSED RADIOFREQUENCY (P-RF) IN CHRONIC PAIN SYNDROME ASSOCIATED TO SURGERY: TWO CASES

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Background and Aims: TAP block is a peripheral nerve block designed for nerves supplying the anterior abdominal wall (T6 to L1). Radiofrequency (RF) lesioning is used in treatment of severe chronic pain and works creating thermal injury in selected nerves. A variation of this technique is pulsed-RF (p-RF) which avoids thermal injury and instead induces electromagnetic changes within targeted nerves to achieve its effect.
Methods: In 2 female patients 80 and 57 years old, with chronic pain síndrome associated to surgery; across a blind landmark technique using (Petit) lumbar triangle: (convergence of axilar midline, and infraumbilical midline), in the convergence point at skin level, local anesthetic is infiltrated in order to puncture with a RF needle. Nerves are located through a 100 mA neuroestimulation, 20 ml. 0.25% Levobupicaine is administered, and 40 mg Triamcinolone is then injected between the internal and transverse abdominis muscles, deep in the fascial plane (between the plane through which the sensory nerves pass). Afterwards p.RF is applied for 6 min, 45 V.
Results: With the infiltration and p-RF pain dissapered 100% and after 3 months the patients reported an 80% improval.
Conclusions: TAP block and p-RF is a valid alternative option in chronic pain síndrome associated to surgery.

WIP-0391 SLEEP DISTURBANCE AMONGST CHRONIC PAIN PATIENTS – A PROSPECTIVE AUDIT

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Objectives: Sleep disturbance is frequent occurrence in patients with chronic pain. Lack of quality sleep interferes with management strategies. Pittsburgh Sleep Quality Index (PSQI) was used to assess quality of sleep in new patients attending this multi-disciplinary pain clinic. The aim of this audit was to emphasise the importance of assesment of sleep and its implications in chronic pain patients.
Methods: Data was collected prospectively by using PSQI. This is a self-rated questionnaire was given to 50 patients attending first time at the clinic. The patient responses were analysed to assess the quality of sleep and level of motivation.
Results: Fifty PSQI forms were returned, 46 had complete data. Scores >5 (poor quality sleep) were found in 41/46 (89%) patients. Enthusiasm was affected severely in 22/46 patients. All of these patients had overall high index of sleep disturbance. Severe pain affected sleep in 84% of patients. Of these, 56% patients had their enthusiasm affected.
Conclusion: Sleep disturbances is a frequent problem in chronic pain patients. Lack of sleep is associated with anxiety,

depression, increased pain and influences compliance with therapeutic strategies. It also affects enthusiasm and coping with the pain. Enthusiasm is an important factor for patient's engagement and compliance with rehabilitation. The results of this audit emphasises the importance of assessment of sleep which will be useful in implementing focused treatment strategies.

References:

Pittsburgh Sleep Quality Index (PSQI)- a new instrument for psychiatric practice and research- *D Buysse, C Reynolds, T Monk*- Psychiatry research 28, 193–213, 1988.

WIP-0151 INVESTIGATING THE EFFECTIVENESS OF TRANSDERMAL FENTANYL MATRIX IN RELIEVING PAIN AND IMPROVING FUNCTION IN PATIENTS WITH OSTEOARTHRITIS OF THE KNEE OR HIP

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Objectives: This study was to investigate the utility of transdermal fentanyl matrix (TDF) for pain relief and functional improvement in patients with osteoarthritis (OA) of the knee or hip.

Methods: This study was a multicenter, prospective, 8-weeks observational study which was carried out at 34 sites. It was conducted from August 2008 to February 2009 in patients who satisfied the diagnosis criteria of American College of Rheumatology for osteoarthritis in knee or hip and complaining of severe pain (NRS 7 or higher) despite previous medications.

Results: A total of 742 subjects were enrolled, and 483 subjects (65.09%) were analyzed for efficacy in the study. The initial dose of TDF was 12.54 ± 2.59 μg/h, the last dose was 13.20 ± 3.80 μg/h. It was indicated that the percentage of subjects with a decrease in pain intensity of 30% or more was 73.50% and mean reduction in pain intensity was 45.00% ($p < 0.0001$). It was shown that, mean changes in the pain, stiffness and physical function subscale scores of K-WOMAC index were 27.98 ± 19.43, 26.45 ± 22.90 and 25.84 ± 18.62, respectively ($p < 0.0001$). Among 742 subjects who received at least one dose of TDF, 82 subjects (11.05%) experienced 94 adverse events: nausea, vomiting, etc.

Conclusion: It was suggested that the treatment of chronic pain caused by OA of the knee and hip with TDF was effective for improving pain as well as function which was not adequately controlled by previous analgesics.

WIP-0451 THORACIC POST HERPETIC NEURALGIA: A PROMISING TREATMENT STRATEGY

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Objectives: Post Herpetic Neuralgia (PHN) is a complication of shingles, caused by the HZV. It appears as chronic pain that can be severe enough to interfere with sleeping and appetite. It has no definite treatment till today. This study seeks to find a new strategy of treatment for this matter.

Methods: Between 2002 and 2013, 40 patients complaining of thoracic PHN, presented to our clinics. Sixty percent of them were males and 40% were females. On presentation, most of them were under Acyclovir with an anti-convulsant and/or an anti-depressant along with various other pain killers. Pain scores on the numeric scale were ≥8/10 for all patients and it was ongoing for about 1 to 9 months.

An intercostal nerve block using 2 cc of Bupivacaine 0.25% + 10–15 mg of Methylprednisolone was performed in each space depending on the pain's localization. Patients were then discharged on Lidocaine Patch 5% (once per day for 12 h) for 1 week then readmitted for another infiltration and then discharged again on Lidocaine Patch, followed by a 3rd and final infiltration.

Results: After a 6 months follow up, it was noticed that the consumption of pain killers had reduced and up to 40–50% of the patients stopped using anti-convulsants and anti-depressants.

Conclusion: Intercostal nerve blockade using steroids and local anesthetics looks promising for the treatment of this type of chronic pain with a clear reduction in pain killers, anti-convulsants and anti-depressants.

WIP-0268 PAIN INHIBITION IS UNRELATED WITH AUTONOMIC RESPONSES TO PAIN IN PATIENTS WITH ACUTE AND CHRONIC WHIPLASH ASSOCIATED DISORDERS

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Objectives: Patients with acute whiplash associated disorders (WAD) demonstrate an inefficient endogenous pain inhibition and possibly a dysfunction in autonomic nervous system. The goal of this study was to compare the autonomic response to painful stimuli between patients with acute WAD to chronic WAD and healthy controls. And to explore the role of the autonomic parameters in the inefficient endogenous pain inhibition in acute WAD together with the possible role of post-traumatic stress response.

Methods: Seventeen patients with acute WAD, thirty patients with chronic WAD and thirty-one healthy controls were subjected to an experiment evaluating the autonomic nervous system at rest and during experimental painful stimuli. Skin conductance, heart rate and heart rate variability (HRV) parameters were monitored continuously during the evaluation of conditioned pain modulation. The paradigm of heterotopic noxious conditioning stimulation was used to assess this conditioned pain modulation effect.

Results: A significant autonomic response to pain was present for skin conductance and two heart rate variability parameters in all experimental groups. There was an interaction effect of the skin conductance response to pain, but no difference in HRV responses to pain in any of the groups. In patients with acute WAD, no significant correlations were present between pain, pressure pain thresholds, pain inhibition and any of the autonomic parameters.

Conclusion: Results of this study refutes autonomic dysfunction in response to pain in both acute and chronic WAD. The dysfunctional conditioned pain modulation as typically seen in patients with acute and chronic WAD, appears unrelated to autonomic responses to pain.

WIP-0266 ABNORMAL PAIN RESPONSE TO VISUAL FEEDBACK AT REST AND DURING NECK MOVEMENT IN CHRONIC WHIPLASH

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Objectives: If the somatosensory input and the predicted motor output are in conflict, it causes a sensorimotor incongruence and this may serve as an ongoing source of nociception inside the central nervous system. Sensorimotor incongruence exacerbates symptoms in patients with chronic whiplash associated disorders (WAD). This study aimed to evaluate whether visually feedback and visual mediated incongruence between motor output and sensory input of the neck region influences the pain thresholds in chronic WAD.

Methods: Thirty patients with chronic WAD and 30 healthy controls were subjected to an experiment with four phases of a visual feedback test in random order. They watched a monitor with real-time visual feedback of the neck-shoulder region without movement or with simultaneous lateroflexion of the neck. Modified visual feedback was used to create sensorimotor incongruence. Pain pressure thresholds (PPT) at the neck/shoulder and thigh were measured during each of the phases.

Results: Real-time visual feedback triggered a significant increase in PPT in healthy controls. In contrast, feedback of the neck and shoulder region did not alter PPT's in chronic WAD. The sensory and sensorimotor conflict did not result in a different PPT response as compared to the correct visual feedback.

Conclusion: Contrary to healthy controls, visual feedback was not able to influence the pain thresholds in the neck/shoulder region or the thigh in chronic WAD. These findings indicate an abnormal pain response to visual feedback at rest and during neck movement in chronic WAD. Experimentally-induced sensorimotor incongruence did not alter pain thresholds in chronic WAD.

WIP-0441 PULSED RADIOFREQUENCY LESIONING OF THE C5 DRG FOR CHRONIC SHOULDER PAIN

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Objectives: Chronic shoulder pain is difficult to treat, and the efficacy of most interventions is limited. This retrospective study evaluated the efficacy of pulsed radiofrequency (PRF) lesioning of the C5 dorsal root ganglion (DRG) for treating chronic shoulder pain.

Methods: Twenty patients suffering from shoulder pain of at least three months' duration, and with no response to systemic or physical therapy, were included in this study. PRF lesioning of the C5 DRG (8 minutes) was performed to the patients. Patients' charts were evaluated and data about the pain scores (VAS 0–10), range of motion (abduction, adduction, external rotation of shoulder measured by goniometer)), and analgesic medication before the procedure and after 1 hour and 1 month after the procedure were recorded.

Results: Twenty patients (18 F/2M, age 51.5 years) were evaluated. Pain scores at 1 hour and 1 month were significantly lower than the pain scores before the procedure ($p < 0.05$). Range of motion (abduction, adduction, external rotation of shoulder measured by goniometer) was also increased significantly after the procedure at 1 hour and 1 month compared to the pre-procedure values ($p < 0.05$). The need for analgesic medication was decreased after the procedure and 90% of the patients were satisfied with their treatment at 1 month.

Conclusion: PRF lesioning of the C5 DRG is a potential treatment option for patients suffering chronic shoulder pain. It provided short-term pain relief and increased shoulder joint function. Future studies are needed to evaluate the long-term efficacy of this treatment.

WIP-0143 CERVICOGENIC HEADACHE; CHRONIC AXIAL NECK PAIN, CHRONIC CERVICAL RADICULAR PAIN

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Objectives: Chronic Axial Neck Pain, Chronic Cervicogenic Headache,and Chronic Cervical Radicular pain are syndromes characterized by chronic pain that is referred to the head and neck and upper extremities from either bony structures or soft tissues of the neck. Diagnostic criteria have been established for cervicogenic headache, and cervical radiculopathy but these syndrome presenting characteristics occasionally may be difficult to distinguish from primary headache disorders such as migraine, tension-type headache, or hemicrania continua. On the other hand most of the patients were going under cervical spine surgery with no benefit.

Methods: I describe the clinical presentation of chronic axial neck pain, chronic cervical radicular pain and cervicogenic headache. I will proposed diagnostic criteria, pathophysiologic mechanisms, and methods of diagnostic evaluation using nerve blocks and I will present my treatment strategies in these under-treatment or poorly managed group of patients.

Results: Guidelines for developing a successful multidisciplinary pain management program using medication, physical therapy, other nonpharmacologic modes of treatment, and anesthetic interventions will be presented. I will review the role of radiofrequency nerve ablation and nerve stimulation by presenting multiple case study. I will review the.

Conclusion: Diagnostic anesthetic blockade for the evaluation of the syndromes can be directed to several anatomic structures. Comprehensive history, review of systems, and physical examination including a complete neurologic assessment will often identify the potential for an underlying structural disorder or systemic disease. The differential diagnosis in cases of suspected syndromes could include a wide variety of conditions.

WIP-0388 A REVIEW ON OUR PRIVATE MANAGEMENT PAIN CONSULTATION

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Objectives: Conducting retrospective study applied to private consultation, characterizing the approach to the patient in the treatment of acute and chronic pain, analgesic medication and proper resolution of the pathology. To assess the prevalence of acute pain (AP) and chronic (CP) in the private practice of Internal Medicine; evaluate pain control with medication to our clinic (AM) and prescribed in our outpatient pain consultation (OPC); pain comparison with the registered nursing staff (NS).

Methods: Application to the patients of a questionnaire adapted from the Brief Pain Inventory. Evaluation of demographic data. knowledge of medication, disease and evaluation of recorded pain; query on clinical processes. We excluded patients with confusional syndrome and dementia.

Results: 82 patients analyzed, 37 were excluded. Age: 75 years. Most female, married, with schooling up 4th year, reformed. 33% of patients had AP, 38% CP and 29% reported no pain. The most widely used non-opioid analgesics (61%). The OPC on CP was 72%. On average, maximum pain 7/10. The reported pain had higher impact on the overall activity

(OA) (5.8/10) was found with increasing age; greater interference of pain in the patient OA ($r = 0.35$, $p = 0.048$).
Conclusion: Pain has considerable impact on patients. The most commonly used drugs were analgesics non opióides. Older patients are undermedicated, conditioning that reduces their autonomy.

WIP-0172 THE PREVALENCE OF CHRONIC PAIN AMONG ADULT PATIENTS ATTENDING OUTPATIENT CLINICS IN TRINIDAD

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Objectives: To estimate the prevalence and impact of chronic pain among adult patients in outpatient clinics in Trinidad.
Methods: Adult patients at the medical and surgical outpatient clinics of the three major General Hospitals of Trinidad were administered questionnaires with responses in a Likert scale that captured patients suffering from chronic pain, intensity of pain and their perceptions of pain. Other data such as demographics (age, sex, race and monthly income), nature and location of pain, methods of treatment were recorded.
Results: 622 patients were studied. The overall prevalence of chronic pain was 56.5%. 21.3% of patients ranked their pain severity '10' on the Pain Rating Scale. Most commonly affected anatomical locations were back and lower limbs. Females and people of East Indian descent had a higher prevalence of pain compared to males and persons of African descent. Educational level and monthly income did not have a statistically significant influence. Although 89% were treated with medication there was dissatisfaction with the pain management. 37% strongly agreed that the pain had a financial impact on their life. 35.6% of chronic pain patients sought alternative treatment such as herbal remedies.
Conclusion: There is a high prevalence as well as severity of chronic pain in patients attending hospitals. Chronic pain is not receiving enough attention and there is a need for establishing pain clinics in this country.

WIP-0289 THE EFFECT OF ACUTE EXERCISE ON COGNITIVE PERFORMANCE IN PATIENTS WITH CHRONIC WHIPLASH-ASSOCIATED DISORDERS

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Objectives: Besides self-reported cognitive complaints, sufficient evidence exists to support the presence of performance-based cognitive impairments in individuals with chronic whiplash-associated disorders (WAD). While it is well known that exercise can have positive effects on cognitive performance in healthy persons, these effects are still unclear in chronic WAD patients.
This study aimed at examining the effect of an acute exercise bout on chronic WAD patients' cognitive performance.
Methods: Twenty-seven patients with chronic WAD and 27 healthy controls completed two performance-based cognitive tests assessing selective and sustained attention, cognitive inhibition, and simple and choice reaction time (RT). Tests were performed immediately before and after an acute submaximal exercise on a cycle ergometer. All participants signed written informed consent.
Results: There was no significant difference among chronic WAD patients and healthy controls for selective attention, cognitive inhibition, and choice RT ($p > 0.05$). However, chronic WAD patients displayed significant deficits in sustained attention and simple RT compared with healthy controls ($p < 0.001$). After the exercise bout both groups showed significantly improved selective attention, choice RT, and cognitive inhibition ($p < 0.05$), while simple RT significantly increased in both groups ($p < 0.05$).
Conclusion: This is the first study examining the effect of exercise on cognitive performance in chronic WAD. The results indicate subtle cognitive deficits in terms of impaired vigilance in chronic WAD patients compared with healthy controls. However, our data suggest a similar response to acute submaximal exercise in terms of cognitive performance in chronic WAD patients and healthy controls.

WIP-0427 DO WE ADEQUATELY ADDRESS THE CONSTIPATION PROBLEM IN PATIENTS USING PAIN MEDICATIONS FOR CHRONIC NON-CANCER PAIN?

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Objectives: The purpose of this study was to analyze the necessity of using specific questionnaires to identify constipation problem in chronic non-cancer pain patients.
Methods: After IRB approval, we included three groups of subjects: patients regularly taking opioid medications (>30 days); patients regularly taking non-opioid medications; and the general population (subjects not talking any pain medication regularly).
Results: We assessed 1661 subjects in this preliminary study, and found no difference between these groups with respect to gender, age, race or type of pain. 169 out of 538 patients who were taking opioids (31.4%), and only 95 out of 559 patients who were taking non-opioid medications for their chronic pain (17%) had constipation. In the general population 57 out of 564 subjects (10.1%) had constipation. The difference in prevalence of constipation was highly statistically significant ($p<0.001$), as well as the patient assessment of constipation. Patients who experienced constipation used twice as many opioids as did patients from the same study group who had regular bowel movements (51.57 vs. 26.35). There was a negative correlation between the number of bowel movements and dosage of opioids (morphine equivalents) ($\rho = -0.288$; $p = 0.01$). Furthermore, chart review of the same patients showed that only 32% of patients had self-reported constipation problems.
Conclusion: This preliminary data showed a much higher prevalence of constipation in patients using opioid medications for the treatment of chronic non-cancer pain than what was self-reported, requiring us to spend more time, using more specific targeted questions to these patients.

WIP-0428 REGULAR QUANTITATIVE URINE TOXICOLOGY ANALYSIS CAN ASSIST IN PATIENT COMPLIANCE AND OPIOID DOSE ADJUSTMENT

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Objectives: The purpose of this study was to assess patients' compliance and evaluate whether repeated quantitative urine analyses can be used as a tool to adequately control pain and adjust opioid dosage.
Methods: After IRB approval, 153 patients taking opioid medications were asked to provide supervised urine specimens, and samples were analyzed by an outside lab. The results were cross-referenced with the patient's medical chart for prescribed medications, and with the Illinois Prescription Monitoring Program (IPMP) seeking compliance.

Results: The most common reason for clinic visits was low back pain (79%). Sixty-nine percent of patients (105) were completely compliant for prescribed medications; 7 patients (4%) received controlled substances from another physician; 12 (8%) patients tested positive for medications that were not prescribed in clinic, and which could not be verified by the IPMP; and 29 patients (19%) tested positive for illicit drugs. Six patients tested positive for cocaine, and 1 for heroin resulting in immediate discharge, as per our opioid agreement contingency. Most patients that tested positive for marijuana (18) had disclosed use of marijuana for medicinal purposes. Repeated quantitative urine toxicology analyses and opioid urine concentration monitoring allowed enhanced adjustment of doses in 22 out of 32 patients (69%) which improved pain control and compliance in 9 out of 12 patients (75%).
Conclusion: Results of this pilot study demonstrated that repeated quantitative urine toxicology analyses could be a relevant tool to accurately adjust the dosing of opioid medication, enhance proper management of pain and improve patient compliance.

WIP-0426 THE IMPORTANCE OF PROPER PATIENT SELECTION FOR SPINAL CORD STIMULATION FOR RELIEF OF NON-MALIGNANT CHRONIC PAIN

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Objectives: The aim of this study is to emphasize the importance of patient selection for spinal cord stimulation (SCS) to improve outcome and relief of non-malignant chronic pain.
Methods: After obtaining IRB approval, we included all patients that received trial or/and permanent SCS treatment at our hospital between January 2012 and March 2013.
Results: We included 26 patients; 76% of them had lower extremity pain, 54% of them were diagnosed with FBSS, and 27% of patients had CRPS. All patients had undergone multiple steroid injections, >50% had failed physical therapy, and >85% were using opioids prior to the SCS trial.
All patients had a positive response to the trial, average 78% of improvement in pain, during 3 to 9 days of trial (average 6 days). The average numeric rating pain score (NRS) before trial was 7.9/10, and was reduced to 3.0/10 by the end of trial period. All patients proceeded to a permanent SCS implantation. The average daily pain after receiving permanent SCS was 4.0/10 on the NRS. On average, patients used the stimulator from 22.5 h/per day. Interference of pain with general daily activity was reduced from 8.2 to 4.9 and sleep difficulties improved from 8.8 to 5.6.
Conclusion: Results of this retrospective study showed that SCS therapy could be an effective treatment option for many patients with strict selection criteria. Besides the aforementioned recommended indications and benefits for SCS treatment; this treatment is still underutilized and further studies are recommended to measure benefits and possible new indications.

WIP-0253 HYPOVITAMINOSIS D IN CHRONIC WIDESPREAD PAIN: ITS EFFECT ON PAIN, QUALITY OF LIFE AND NERVE CONDUCTION STUDIES

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Objectives: The aim of the study was to investigate the effects of hypovitaminosis D on pain, quality of life (QoL) and nerve conduction studies in patients with chronic widespread pain (CWP).
Methods: We randomly selected 44 female patients with CWP according to their vitamin D levels in this cross-sectional study. Patients were divided into two groups as sufficient vitamin D level (above 20 ng/ml) and deficient vitamin D level (below 20 ng/ml, hypovitaminosis D). Various pain scales (visual analog scale, numeric pain scale and Wong-Baker FACES pain rating scale) to determine pain intensity and Nothingham Health Profile (NHP) to assess QoL were used. Electrophysiological tests were also done.
Results: In patients with hypovitaminosis D there were significantly higher pain scores for all scales (p value range: 0.006–0.05). The subscale and total NHP scores were significantly higher in hypovitaminosis D group ($p = 0.05–0.001$) except social isolation subscale ($p = 0.468$). Vitamin D levels were in negative correlation with bilateral median motor nerve amplitudes ($r = -0.422$, $p = 0.004$; $r = -0.445$, $p = 0.002$ respectively), left tibial motor amplitudes ($r = -0.442$, $p = 0.009$; $r = -0.421$, $p = 0.013$ respectively) and left peroneal motor distal latency ($r = -0.417$, $p = 0.018$).
Conclusion: In this preliminary study, we found that hypovitaminosis D is related with higher pain intensity and lower QoL scores in patients with CWP when compared with control group. Additionally, we identified for the first time that there were negative correlations between vitamin D levels and some findings of nerve conduction studies.

WIP-0133 CENTRAL SENSITIZATION IN PATIENTS WITH OSTEOARTHRITIS PAIN: A SYSTEMATIC LITERATURE REVIEW

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Objectives: The goal of the present study was to systematically review and evaluate the existing evidence from the literature addressing central sensitization (CS) in patients with osteoarthritis (OA).
Methods: Electronic databases Pubmed and Web of Science were searched to identify relevant articles using predefined keywords regarding central sensitization and osteoarthritis

Figure 1. Flowchart study selection

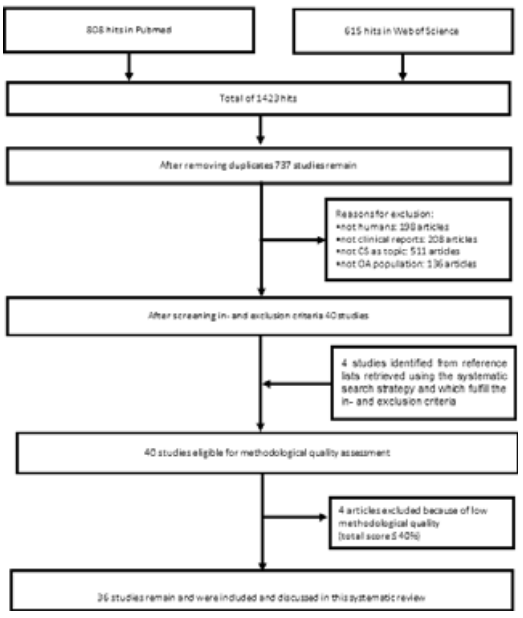


Table 1. Evaluation scores on methodological quality

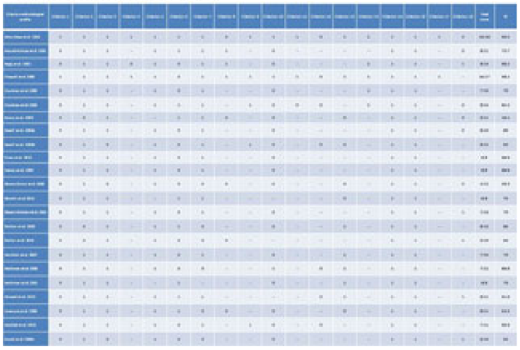
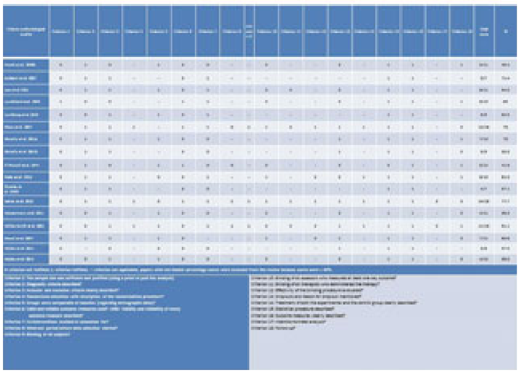


Table 1 (continued)



(Figure 1). Full text clinical reports addressing studies of central sensitization in human adults with chronic complaints due to osteoarthritis were included and screened for methodological quality by two independent reviewers.

Results: From the 40 articles which were initially eligible for methodological quality assessment, 36 articles achieved sufficient scores and therefore were discussed (Table 1). The majority of these studies were case-control studies and addressed OA of the knee joint. Different subjective and objective parameters considered manifestations of CS, which have been previously reported in other chronic pain conditions such as whiplash or rheumatoid arthritis, were established in subjects with OA pain. Overall results suggest that, although peripheral mechanisms are involved in OA pain, hypersensitivity of the central nervous system plays a significant role in a subgroup of subjects within this population.

Conclusion: Although the majority of the literature provides evidence for the presence of CS in chronic OA pain, clinical identification and treatment of CS in OA is still in its infancy, and future studies with good methodological quality are necessary.

WIP-0574 MULTIMODAL MANAGEMENT OF PAIN IN A PATIENT WITH EHLERS DANLOS SYNDROM

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Objectives: The genetic disease "Ehlers Danlos syndrom" (EDS) causes inter alia, high intensity pain, and hyperalgesia. Analgesic treatment, even opioids, is often inefficient with major side effects. Genetic and epigenetic factors combined, alter both gene expression and drug responses. We describe one of the cases of EDS managed at our pain clinic.

Methods: In patients with EDS we apply a multidisciplinary biopsychosocial evaluation, cognitive and systemic, acupuncture treatment close to the pharmaco-nutritional strategy focused on liver and gastrointestinal mucosis.

Results: Patients usually report pain reduction within 3 days after the first acupuncture session. The pharmaco-nutritional strategy helps restoring the liver function and ganstrointestinal mucosis. After 4 acupuncture sessions the patients have reduced the analgesic intake.

Conclusion: The need for a multidisciplinary evaluation and treatment with a focus on the drug metabolism is highlighted. Genetic variations may modulate the answer to treatment as does the inter-individual differences in the bacterial flora of the human digestive tract.

Acupuncture was shown to increase blood flow via local vasodilation and increasing collagen proliferation. Functional MRI studies showed activation of brain activity that is subject to considerable modulation by a variety of stimulus parameters, contextual factors and clinical conditions. Cortical and subcortical brain regions, including the sensorimotor cortical network are activated and limbic-paralimbic-neocortical network is deactivated. These distributed brain areas are closely associated with a wider pain matrix that is responsible for modulating both the sensation of pain and affective pain perception.

The use of an integrative treatment strategy should be further assessed for the management of complex conditions.

WIP-0129 NARRATIVE APPROACHES TO CHRONIC PAIN MANAGEMENT FOR REDUCING OPIATE USE

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Objectives: Misuse of opiate medication is a significant problem worldwide. Contemporary research has shown that opiates are not effective in reducing chronic pain so much as they are effective in reducing the pain of social isolation. In the United States, common practice has been to prescribe opiates. In this paper, we report the results of a chronic pain management program aimed at reducing the use of opiates in this population.

Methods: Patients presented on chronic opiates for non-malignant pain. Opiates were continued at their current dose with the caveat that patients must attend a pain management group twice monthly and must do something physical (exercise, walk, yoga, etc.) at least once during the week. Data was collected on the My Medical Outcomes Profile, Version 2 (MYMOP2) and the McGill Pain Inventory. Data was analyzed using hierarchical modeling procedures. A total of 60 patients participated in this program for a minimum of 3 months. Another 76 patients were not able to join for a minimum of three months.

Results: The average duration of participation was 7.6 months. Twenty-four percent of patients eliminated opiates altogether. Twenty percent of patients reduced their use of opiates. Only one patient increased his use of opiates. Despite this dose reduction, scores did not change on the MYMOP2 or the McGill Pain Inventory.

Conclusion: A mandatory, comprehensive pain management group resulted in reduction in opiate use despite no increase in reported pain levels.

WIP-0177 MEDICATION ASSISTED STEP SCHEME WITH ACUPUNCTURE, THERAPEUTICAL LOCAL ANALGESIA AFTER TRANG, SYNOVIAL FLUID ALTERNATIVE FOR TREATMENT OF SHOULDER JOINT ARTHROSIS

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Church Circle, Herne, [6]specialist for General Medicine Nature Treatments and Particular Pain Therapy, Practice, Bochum, [7]Specialist for Anaesthesiology, Practice, Berlin, [8]Specialist for Anaesthesiology Naturopathic, Former Boss Doctor, Freiburg, Germany

Objectives: A shoulder joint arthrosis generally means end of career or professional enhancement because the conservative treatment with cortisone injections, immobilization or surgery does not always bring the expected relief, and the pain, especially strain and POSTOPERATIVE PAIN, are severe and the recurrence rate is high. It is therefore of utmost importance that a medication assisted step scheme treatment with acupuncture, therapeutic local analgesia (TLA) after Trang, TENS, physiotherapy, and synovial fluid alternative be carried out to result in total healing of the shoulder joint arthritis.

Methods: A 100% healing could be achieved in a large number of patients with TLA after Trang, like PDA in the C5-C7-Th1 region, spinal nerve blockage, Plexus brachialis blockage, local infiltration, acupuncture and exact intra articular injection with Procain, synovial, TENS, ointments, anti-inflammatory medication after Trang can improve the healing further so that surgery is not necessary.

Results: The mentioned causal therapy has been administered for the first time worldwide with synovial fluid alternative in the shoulder joint region in patients with recurring pain after shoulder joint surgery for rotator cuff rupture and impingement syndrome and acute arthritis with almost 100% healing.

Conclusion: Therefore the correctly carried out therapy, as mentioned above after Trang, should be preferred over the conservative form for shoulder joint arthrosis, post operative recurring pain. It is more economical and less strenuous for the patient. The shoulder joint injection technique, acupuncture analgesia after Trang, TLA after Trang without x-ray radiography where the therapeut does not need to touch the shoulder, will be accurately demonstrated.

WIP-0534 CHRONIC PAIN TREATMENT NATURAL METHODS-WILL OFFICIAL MEDICINE HAVE TO ADMIT DEFEAT?

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Objectives: Chronic pain is that lasts more than 12 weeks. He no longer has a protective role, and undermines the quality of life. Study efficacy of natural plant products Pavlov Pain Buster Herbal (in the form of gel or spray) in the elimination of chronic pain.

Methods: Examined 975 patients (527 women, 448 men, mean age 60.7 ± 12) with chronic rheumatic (degenerative or inflammatory)pain. Assessment of pain intensity was done through a questionnaire numerically from 0 to 10. Painful area treated according to the protocol PAVLOV PAIN BUSTER HERBAL SPRAY® or GEL®, natural products containing 35 species of plants. The efficacy was evaluated by surveying after five, 30 and 90 days.

Results: None of the subjects after five days of application had pain. The average time of disappearance of pain was 2.6 ± 1.9 days. Pain is stopped faster in females than in males (2.1 ± 1.6 vs. 2.8 ± 1.9), rapidly stopped in patients with degenerative rheumatism (2.6 ± 1.6 vs. 3.4 ± 1.6). Examing after 30 and 90 days showed that the pain does not return.

Conclusion: Pavlov pain buster herbal spray® and gel® proved to be a fast-acting and highly effective for eliminating chronic rheumatic pain. Positive effects is time-consuming and the pain does not have tendency of repetition.

WIP-0298 INCIDENCE AND PREDICTORS OF CHRONIC PAIN AFTER MUSCULOSKELETAL TRAUMA

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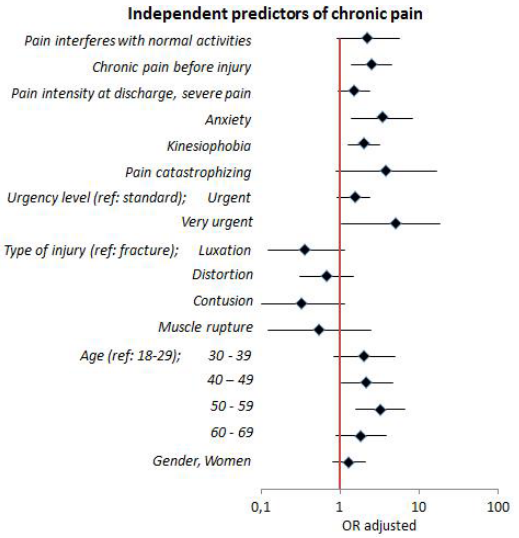
Objectives: Acute musculoskeletal pain is one of the primary complaints of patients in the Emergency Department (ED). Multiple factors within this acute pain phase may be responsible for the transition from acute to chronic pain. The aim is to find predictors that will give us the ability to target high-risk patients in the emergency setting and provide them with appropriate treatment to prevent chronic musculoskeletal pain.

Methods: In a prospective cohort study (PROTACT) 420 adult patients with blunt trauma to the extremities of the musculoskeletal system who attend the ED were followed for six months. Patient characteristics, including psychosocial-, biomedical and health related factors were collected from hospital registration and questionnaires at ED-visit, after 6 weeks and 6 months.



Results: The incidence of pain (NRS ≥1) six months after injury was 43.6%. Of those in pain, 14.2% had moderate to severe pain. Several factors are independently associated with chronic pain (Figure). Urgency level is a strong predictor, as is anxiety, chronic pain before injury and pain catastrophizing.

Conclusion: Many patients still have pain six months after trauma. Potentially modifiable factors, such as anxiety, kinesiophobia, pain catastrophizing and severe pain at discharge might be addressed through intervention in emergency setting to prevent chronic pain.

WIP-0300 QUALITY OF LIFE AFTER ACUTE MUSCULOSKELETAL TRAUMA: CONSEQUENCES OF CHRONIC PAIN

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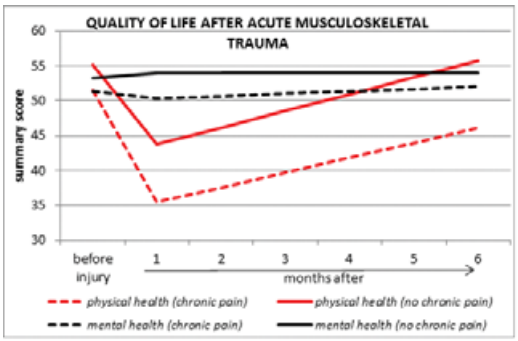
Objectives: Physical disability and mental morbidity are frequent and important complications of trauma posing sometimes serious consequences for health-related quality of life (HRQOL). This study aimed to evaluate 1) quality of life one and six month after trauma relative to the health state before injury, 2) changes over time and 3) consequences of developing chronic pain on HRQOL.

Methods: This prospective cohort study (PROTACT) includes 418 adult patients presenting with acute musculoskeletal pain to the ED. The Short Form (SF)-36 Health Survey was used to measure HRQOL.



Results: There is a large decrease in the physical health dimension of SF-36 due to injury. The decrease is higher in patients who develop chronic pain. These have a lower physical health score at six months than before injury (figure). Patients who do not develop chronic pain return to levels before injury. Mental health score does not change over time.

Conclusion: Physical health is strongly decreased immediately after acute musculoskeletal trauma. This normalizes for patients who are recovering from trauma, but not for chronic pain patients. Acute musculoskeletal trauma does not affect mental status.

WIP-0169 SEX DIFFERENCES IN THE RELATIONSHIP SHARED BY CHRONIC PAIN AND SLEEP

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Objectives: Individually, pain and sleep problems have a ubiquitous impact on physical and emotional health. Together they co-vary and exacerbate all associated symptomatology. The extent and primacy of these relationships has not been clearly ascertained. Research has demonstrated sex differences in reporting the presence of pain, further complicating the quest to clearly identify this relationship.

Methods: We constructed an 111-item questionnaire to use in conjunction with nocturnal polysomnography studies (NPS), multiple sleep latency tests, the Epworth Sleepiness Scale (ESS), and medical chart reviews of people referred for evaluation of SDs. From a group of 793 people who presented for sleep assessment, 361 reported having chronic pain.

Results: We analyzed data from 190 females (age 17–83, mean 52.52) and 171 males (age 22–88, mean 55.32). Analyses revealed numerous significant sex differences. For example, women were more likely to have asthma, allergies, headaches, depression, nightmares, wake screaming, grind teeth, sleep walk, sleep talk, use sleep medication, have problems with concentration and memory, take longer to become alert, have high body mass index, and spend more time in stages N1 and N3 sleep. Men were more likely to be married, be diagnosed with poor sleep efficiency, and to stop breathing during sleep. We also found numerous differences when comparing women and men with chronic pain and those without.

Conclusion: We believe the wide range of sex differences demonstrate the need to advance sex-specific treatment approaches in pain management.

WIP-0484 TREATMENT OPTIONS FOR OPIOID-INDUCED CONSTIPATION IN PATIENTS WITH NONCANCER PAIN

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Objectives: Opioid-induced constipation (OIC) is a common and bothersome condition that affects 40%–80% of patients undergoing opioid pharmacotherapy for management of chronic pain, and negatively impacts quality of life and effective pain management. OIC is a consequence of opioid-induced reductions in gastrointestinal transit and secretions produced by agonist effects at mu-opioid receptors in the peripheral enteric nervous system (ENS). Because conventional therapy is often ineffective and fails to target the underlying cause of OIC, mechanism-based treatment approaches are needed.

Methods: Current and future treatment options for OIC were surveyed.

Results: Methylnaltrexone and naloxegol are peripherally acting mu-opioid receptor antagonists (PAMORAs) that directly address the mechanism of OIC. Methylnaltrexone is available as a subcutaneous injection for use in patients with advanced medical illness and an insufficient response to laxatives. Naloxegol is orally administered, and in late-stage development for the treatment of OIC in noncancer pain patients. Lubiprostone is an oral prokinetic agent that facilitates secretions by activation of type 2 chloride channels in the gut lumina as twice daily treatment for OIC in adults with chronic noncancer pain. Other oral agents in earlier stages of clinical development include a reformulation of methylnaltrexone, additional PAMORAs (bevenopran, naldemedine, TD-1211), reformulations of the centrally acting opioid receptor antagonist naloxone, and a guanylate cyclase C agonist (SP-333).

Conclusion: The evolution toward mechanism-based approaches, oral dosing, and direct antagonism of ENS opioid receptors provides a variety of targeted approaches for the treatment of OIC.

Conflict of interest

WIP-0311 LOW INCIDENCE OF SKIN IRRITANCIES IN PATIENTS USING TRANSDERMAL BUPRENORPHINE (TDB)

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Objectives: To investigate the incidence of TDB-induced adverse-events, with specific focus on skin irritancies (including severity, patient impact, treatment discontinuations, and physician prescribing behaviour).

Methods: An ongoing prospective observational study of chronic pain patients aged ≥18 years receiving 7-day TDB. Adverse-event data were collected using patient/physician questionnaires completed over 6–9 months. All patients have signed a written informed consent.

Results: Interim results are reported from 287 patients receiving 7-day TDB [248 (86.4%) continuing treatment, 39 (13.6%) who have discontinued treatment]. At baseline, 192 (66.9%) patients were not naïve to treatment. Mean (SD) follow-up time was 3.6 (2.6) months. Mean (SD) age was 67.8 (15.5) years and 210 (73.2%) patients were female. Eighty-eight (30.7%) patients experienced a mean (SD) of 1.2 (0.4) skin irritancies, mostly presenting as erythema (75.0% of those 88 patients). Of those experiencing skin irritancy, 79 (89.8%) patients continued treatment and 9 (10.2%) patients discontinued treatment. Physicians reported that most skin reactions were due to 'itching' [52 (59.1%) patients] or 'mechanical irritant' [48 (54.5%) patients]. Reactions were mild [53 (60.2%) patients] and short lasting [72 (81.8%) patients]. Fourteen (15.9%) patients received medication for their skin irritancy (most physicians deeming therapy for irritancy as effective). In 56 (63.6%) patients no action was taken.

Conclusion: Skin irritancy occurred in 30.7% of patients receiving 7-day TDB. It was commonly mild and short lasting, and responsive to treatment. Only 10.2% of patients with skin irritancy had to discontinue TDB treatment.

Conflict of interest

WIP-0473 OXYCODONE/NALOXONE TREATMENT IMPROVES PAIN RELIEF COMPARED TO PREVIOUS ANALGESIC TREATMENT

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Objectives: Opioid induced constipation (OIC) is an opioid-related side effect affecting pain patients' quality of life. Prolonged release oxycodone/naloxone (OXN) improves OIC while maintaining oxycodones analgesic efficacy. The effect of analgesic pre-treatment on OXN efficacy regarding pain relief, constipation and quality of life were evaluated in daily clinical practice in Belgium.

Methods: A non-interventional study of OXN in patients with severe pain pretreated with WHO step I, II or III analgesics evaluating the physicians judgement on pain relief, constipation (BFI) and QoL (EQ-5D) compared to previous analgesic treatment.

Results: 1338 patients (63% females, average age 64 years) previously treated with WHO step I (10.6%), step II (46.7%) or step III (42.7%) analgesics participated for on average 43 days. Patients scoring pain relief "slightly better" to "much better" compared to previous treatment were considered responder. The response rate was 84.5% and was higher in step I (91.5%) and step II (89.8%) groups than in step III group (77.1%). OXN treatment resulted in clinically improved constipation (ΔBFI = -28.39 ± 26.45) in constipated patients and prevented OIC in non-constipated patients (BFI=11.2 ± 15.8 at last visit). Quality of life was significantly improved after OXN treatment (ΔEQ-5D = $+0.31 \pm 0.26$) irrespective of previous analgesic treatment or constipation.

Conclusion: OXN treatment results in significantly improved pain relief, constipation and quality of life compared to previous analgesic treatment in daily clinical practice. Response with respect to pain relief is significantly higher in WHO step I and II groups.

WIP-0222 STUDY ON DIFFERENT TREATMENTS IN A TERTIARY PAIN CENTER

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Objectives: Chronic pain is considered as a complex phenomenon where biological, psychosocial and sociocultural factor are interrelated. No treatment can address all aspects of this pathology. Our aim was to assess the effectiveness of four treatments: physiotherapy, psycho-education, physiotherapy combined to psycho-education, and self-hypnosis combined to self-care learning.

Methods: 527 chronic pain patients (440 females [mean age 54 ± 11 years; mean duration of pain 116 ± 118 months], 87 males [53 ± 10 years; 104 ± 111 months]) were allocated in treatment groups. 88 patients were in control group, 61 in physiotherapy, 50 in psycho-education, 169 in physiotherapy/psycho-education, 158 in self-hypnosis/self-care. Pain intensity, quality of life, pain interference, anxiety and depression were assessed before and after treatment.

Results: Decrease of anxiety is observed in the physiotherapy/psycho-education group ($p = 0.04$), and in the self-hypnosis/self-care group ($p < 0.001$). Decrease of depression is observed only after self-hypnosis/self-care treatment ($p < 0.001$). Improvement of quality of life is observed for both psycho-education ($p < 0.001$) and self-hypnosis/self-care treatments ($p < 0.001$). The degree of pain interference diminished for both physiotherapy/psycho-education treatment ($p < 0.001$) and self-hypnosis/self-care treatment ($p < 0.001$). Diminution of pain intensity between pre- and post-assessment is observed only for self-hypnosis/self-care treatment ($p < 0.001$).

Conclusion: We showed a larger impact of self-hypnosis/self-care learning treatment to improve the health self-assessment of chronic pain patients. This treatment showed a cost-effectiveness interest: changes were observed with only six sessions while twenty sessions were needed to obtained limited changes with the physiotherapy/psycho-education, and no significant change was observed for physiotherapy and psycho-education treatment alone.

WIP-0513 COMBINED LOW DOSES OF TAPENTADOL AND CERVICAL FACET JOINT DENERVATION IN CHRONIC NECK PAIN

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Objectives: Chronic neck pain is a common painful syndrome with many causes and pain generators including the intervertebral discs, facet joints, ligaments, muscles, and nerve roots. Tapentadol combines analgesic effects with a dual action by

activation of the μ-opioid receptor (MOR) and noradrenaline reuptake inhibition (NRI). We studied analgesic efficacy, tolerability and outcome of a combined treatment of tapentadol and cervical facet joint denervation for chronic neck pain.
Methods: 27 consecutive patients affected for 3 months duration or more of chronic cervical axial pain with positive test (at least 50% pain relief) to diagnostic medial branch blocks were enrolled to realize radiofrequency denervation. All patients after radiofrequency were treated for a period of 8 weeks with low doses of tapentadol (one evening or twice daily doses of 50 mg) and were evaluated for pain reduction with a Numerical Rating Scale, side effects and reason for discontinuation of the medication, improvement in daily life activities, satisfaction regarding the treatment result and procedure.
Results: All procedures were completed with good satisfaction of patients regard to results of treatment. NRS scores were reduced significantly at 1, 2 and 3 months. 29% patients had nausea, vomiting or drowsiness and 14% stopped tapentadol. More tolerability and satisfaction was found with one evening dose.
Conclusion: Cervical facet joint denervation and low doses of tapentadol are well tolerated, with few side effects and effectives in reducing pain, improvement in daily life activities and represent a good option in the management of chronic neck pain.
Conflict of interest

WIP-0322 CHRONIC PAIN WITHIN A FAMILY CONTEXT: AN ART PROJECT INFORMED BY LIVED EXPERIENCE

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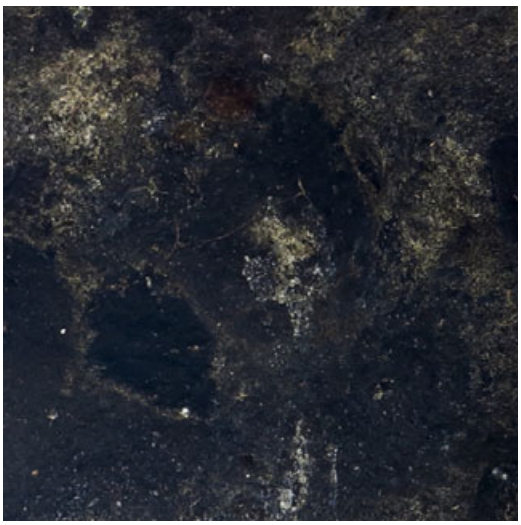
Objectives: Pain is an entirely subjective experience, difficult to articulate and share with others. Living with chronic pain has devastating effects on patients, their relationships and family life. So far, artistic representations of pain tend to be reduced to the sufferer's experience rather than an ongoing family strain. The project aims to portray, photographically, lived experiences of families coping with chronic pain, to initiate a shift in perspective of understanding chronic pain as a phenomenon affecting the social realm around patients through visual art rather than clinical analyses of the patients only.
Methods: My work is developed on the grounds of interviews with four families, each with a parent suffering from chronic pain. Using interpretive phenomenological approach the participants' lived experience of chronic pain is focused on. To facilitate a particularly positive way of understanding the individuals' positions, I approach the families as a fellow sufferer rather than analysing chronic pain from a clinical objectified perspective.
The translation of these experiences into photographic images entails a rigorous development of a visual language conducted alongside the interview analysis process.
Results: The final images are aimed to address a general non-academic audience.
Conclusion: The study received ethical approval by the NHS Ethics Panel in Lancaster, UK and should be completed in October 2014.



WIP-0219 THE FEAR-AVOIDANCE MODEL OF CHRONIC PAIN: ASSESSING THE ROLE OF NEUROTICISM AND NEGATIVE AFFECT IN PAIN CATASTROPHIZING USING STRUCTURAL EQUATION MODELING

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Objectives: Previous research on the Fear-Avoidance Model (FAM) of chronic pain suggested the personality traits neuroticism and negative affect (NA) influenced pain catastrophizing. However, their corroborating influence on pain catastrophizing remains unclear. This study examined four possible models of relationships between neuroticism and NA in pain catastrophizing within the FAM framework using structural equation modeling.
Methods: A total of 401 patients with chronic musculoskeletal pain completed measures of neuroticism, NA, three core FAM components (pain catastrophizing, pain-related fear, and pain anxiety), and adjustment outcomes (pain-related disability and depression).
Results: Regression analyses refuted the possibility that neuroticism and NA moderated each other's effect on pain catastrophic thoughts ($p > 0.05$). Results of SEM evidenced superior data-model fit for the collapse models in which neuroticism and NA were two secondary traits underlying a latent construct, negative emotion (Disability: CFI=0.93; Depression: CFI=0.91).

Table 1: Multivariate regression analyses of moderation pathway of the link between neuroticism, negative affect, and pain catastrophizing

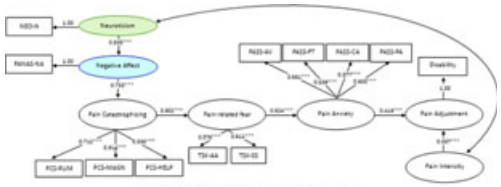
	β	SE	95% CI	P value
Neuroticism	0.48	0.07	0.35, 0.62	<0.001
Negative affect	0.32	0.08	0.16, 0.47	<0.001
Neuroticism × Negative Affect	-0.01	0.00	-0.01, 0.00	ns
Age (Controlled variable)	0.03	0.05	-0.08, 0.13	ns
Sex (Controlled variable)	-0.51	1.03	-2.53, 1.51	ns
Number of pain site (Controlled variable)	-0.01	0.22	-0.44, 0.42	ns
Pain intensity (Controlled variable)	0.11	0.03	0.04, 0.18	<0.01
Pain duration (Controlled variable)	-0.00	0.00	-0.00, 0.00	ns

Note: β: Beta coefficient; SE: standard error; CI: confidence interval; NS: non-significant P value at 0.05 level. All regression equations were controlled for age, sex, number of pain site, pain intensity, and pain duration. Using pain catastrophizing as dependent variable, one regression model was generated to test the moderation pathway of the link between neuroticism, NA, and pain catastrophizing.

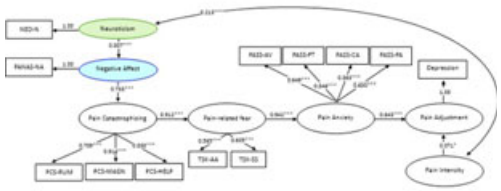
Table 2: Results of SEM testing four competing FAMs for two pain adjustment outcomes

Model	$S\text{-}B\chi^2$	*df*	CFI	NNFI	RMSEA	90% CI	SRMR
Hypothesized Hierarchical Models: NA mediating the link between neuroticism and pain catastrophizing							
Model 1: Disability	299.92	62	0.91	0.89	0.10	0.09, 0.11	0.08
Model 2: Depression	365.72	62	0.89	0.86	0.11	0.10, 0.13	0.09
"Reversed" Hierarchical Models: Neuroticism mediating the link between NA and pain catastrophizing							
Model 3: Disability	271.16	62	0.92	0.90	0.09	0.08, 0.11	0.07
Model 4: Depression	332.69	62	0.90	0.88	0.11	0.10, 0.12	0.08
"Collapse" Models: NA and neuroticism represent a latent construct, negative emotion, predicting pain catastrophizing							
Model 5: Disability	238.44	61	0.93	0.92	0.09	0.08, 0.10	0.06
Model 6: Depression	300.40	61	0.91	0.89	0.10	0.09, 0.11	0.06

Note: All models are adjusted for pain intensity. Disability was indexed by the Chronic Pain Grade Disability score; Depression was indexed by the Depression subscale of the Hospital Anxiety and Depression Scale; $S\text{-}B\chi^2$ = Satorra & Bentler scaled chi-square statistics; *df* = degrees of freedom; CFI = comparative fit index; NNFI = non-normed fit index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual.

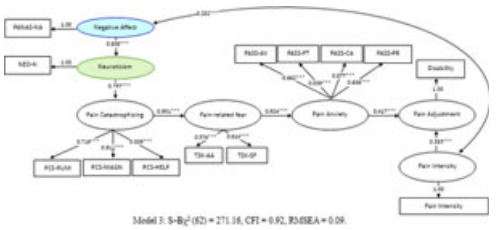


Model 1: $S\text{-}B\chi^2$ (62) = 299.92, CFI = 0.91, RMSEA = 0.10.

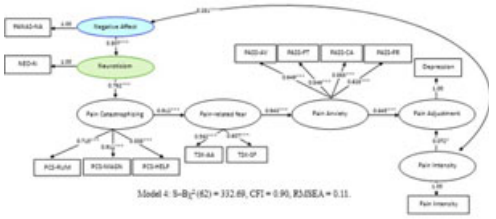


Model 2: $S\text{-}B\chi^2$ (62) = 365.72, CFI = 0.89, RMSEA = 0.11.

Figure 1: The hypothesized hierarchical models fitted for two pain adjustment outcomes. Numbers are standardized β coefficients. PANAS-NA, the negative affect subscale of PANAS; NEO-N, neuroticism subscales of NEO; PCS, Pain Catastrophizing Scale; RUM, the PCS Rumination subscale; MAGN, the PCS Magnification subscale; HELP, the PCS Helpnessless subscale; TSK, the Tampa Scale for Kinesiophobia; AA, the TSK Activity Avoidance subscale; SF, the TSK Somatic Focus subscale; PASS, Pain Anxiety Symptoms Scale; AV, the PASS Avoidance subscale; FT, the PASS Fear subscale; CA, the PASS Cognitive Anxiety subscale; PR, the PASS Physiological Responses subscale; $S - B\chi^2$ = Satorra & Bentler scaled chi-square statistic; CFI, comparative fit index; RMSEA, root-mean-square error of approximation. *p<0.05, ***p<0.001.

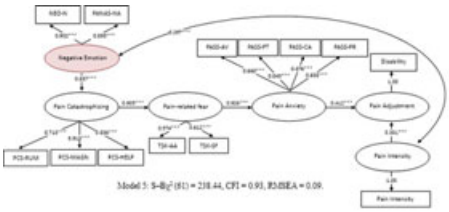


Model 3: $S\text{-}B\chi^2$ (62) = 271.16, CFI = 0.92, RMSEA = 0.09.

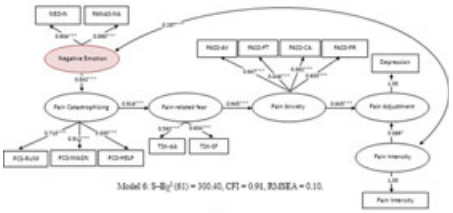


Model 4: $S\text{-}B\chi^2$ (62) = 332.69, CFI = 0.90, RMSEA = 0.11.

Figure 2: The "reversed" hierarchical models fitted for two pain adjustment outcomes. Numbers are standardized β coefficients. PANAS-NA, the negative affect subscale of PANAS; NEO-N, neuroticism subscale of NEO; PCS, Pain Catastrophizing Scale; RUM, the PCS Rumination subscale; MAGN, the PCS Magnification subscale; HELP, the PCS Helplessness subscale; TSK, the Tampa Scale for Kinesiophobia; AA, the TSK Activity Avoidance subscale; SF, the TSK Somatic Focus subscale; PASS, Pain Anxiety Symptoms Scale; AV, the PASS Avoidance subscale; FT, the PASS Fear subscale; CA, the PASS Cognitive Anxiety subscale; PR, the PASS Physiological Responses subscale; $S - B\chi^2$ = Satorra-Bentler scaled chi-square statistic; CFI, comparative fit index; RMSEA, root-mean-square error of approximation. *p<0.05, ***p<0.001.



Model 5: $S\text{-}B\chi^2$ (61) = 238.44, CFI = 0.93, RMSEA = 0.09.



Model 6: $S\text{-}B\chi^2$ (61) = 300.40, CFI = 0.91, RMSEA = 0.10.

Figure 3: The "collapse" models fitted for two pain adjustment outcomes. Numbers are standardized β coefficients. Negative emotion is indexed by NEO-N and PANAS-NA; NEO-N, neuroticism subscale of NEO; PANAS-NA, the negative affect subscale of PANAS; PCS, Pain Catastrophizing Scale; RUM, the PCS Rumination subscale; MAGN, the PCS Magnification subscale; HELP, the PCS Helplessness subscale; TSK, the Tampa Scale for Kinesiophobia; AA, the TSK Activity Avoidance subscale; SF, the TSK Somatic Focus subscale; PASS, Pain Anxiety Symptoms Scale; AV, the PASS Avoidance subscale; FT, the PASS Fear subscale; CA, the PASS Cognitive Anxiety subscale; PR, the PASS Physiological Responses subscale; $S - B\chi^2$ = Satorra-Bentler scaled chi-square statistic; CFI, comparative fit index; RMSEA, root-mean-square error of approximation. *p<0.05, ***p<0.001.

Conclusion: The results offer preliminary evidence that patients presented with more neurotic symptom and heightened NA probably elicit more catastrophic thoughts about pain.

WIP-0243 THE EFFECTS OF ANXIETY SENSITIVITY, PAIN HYPERVIGILANCE, AND PAIN CATASTROPHIZING ON QUALITY OF LIFE OUTCOMES OF PATIENTS WITH CHRONIC PAIN

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Objectives: While existing data on the Fear-Avoidance Model (FAM) of chronic pain pointed to the effects of anxiety sensitivity, pain hypervigilance and pain catstrophizing on pain-related fear, the nature of the multivariate relationships remains unclear. This study explored the possible mediating role of pain hypervigilance in the relationship of anxiety sensitivity and pain catastrophizing with pain-related fear, and their effects on quality of life (QoL) outcomes within the FAM framework.

Table 1: Results of SEM testing the relationships between anxiety sensitivity, pain catastrophizing, and pain hypervigilance for two QoL outcomes

Model	$S\text{-}B\chi^2$	*df*	*P* value	CFI	NNFI	RMSEA	90% CI	SRMR
Simple model: Anxiety sensitivity → Pain hypervigilance → Pain-related fear → QoL outcome								
Model 1: QoL-Physical	28.55	18	> 0.05	0.99	0.98	0.04	0.00, 0.07	0.04
Model 2: QoL-Mental	68.88	18	< 0.001	0.94	0.90	0.10	0.07, 0.12	0.06
Simple model: Pain catastrophizing → Pain hypervigilance → Pain-related fear → QoL outcome								
Model 3: QoL-Physical	66.14	18	< 0.001	0.95	0.92	0.10	0.07, 0.12	0.05
Model 4: QoL-Mental	90.41	18	< 0.001	0.92	0.88	0.12	0.09, 0.14	0.06
Full model								
Model 5: QoL-Physical	105.60	40	< 0.001	0.95	0.94	0.07	0.06, 0.09	0.05
Model 6: QoL-Mental	139.77	40	< 0.001	0.93	0.91	0.09	0.08, 0.11	0.06

Note: The full models include both anxiety sensitivity and pain catastrophizing, and specify that pain hypervigilance mediates the link of both anxiety sensitivity and catastrophizing with pain-related fear, which in turn predicts adjustment outcomes. Disability was indexed by the Chronic Pain Grade Disability score; QoL-Physical was indexed by the SF-12 physical component score; QoL-Mental was indexed by the SF-12 mental component score; $S\text{-}B\chi^2$ = Satorra & Bentler scaled chi-square statistics; *df* = degrees of freedom; CFI = comparative fit index; NNFI = non-normed fit index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual.

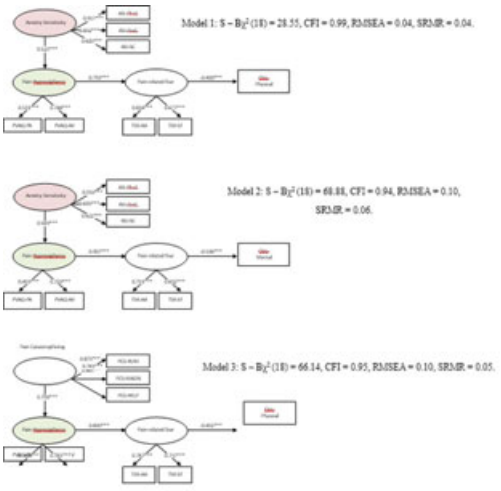

Figure 1: Simple Models testing the mediating role of pain hypervigilance in the link between anxiety sensitivity and pain-related fear (Model 1 and 2) and between pain catastrophizing and pain-related fear (Model 3 and 4) predicting QoL-Physical and QoL-Mental score. Anxiety Sensitivity was indexed by the Anxiety Sensitivity Index (ASI). PhyC = ASI Physiological Concerns subscale; PsyC = ASI Psychological Concerns subscale; SC = ASI Social Concerns subscale. Pain catastrophizing was indexed by the Pain Catastrophizing Scale (PCS). RUM = PCS Rumination subscale; MAGN = PCS Magnification subscale; HELP = PCS Helplessness subscale. Pain Hypervigilance was indexed by the Pain Vigilance and Awareness Questionnaire (PVAQ). PA = PVAQ Passive Awareness subscale; AV = PVAQ Active Vigilance subscale. Pain-related fear was indexed by the Tampa Scale for Kinesiophobia (TSK). AA = TSK Activity Avoidance subscale; SF = TSK Somatic Focus; QoL-Physical was indexed by the SF-12 physical component score; QoL-Mental was indexed by the SF-12 mental component score; S – Bχ2 = Satorra & Bentler scaled chi-square statistic; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual. ***p<0.001.

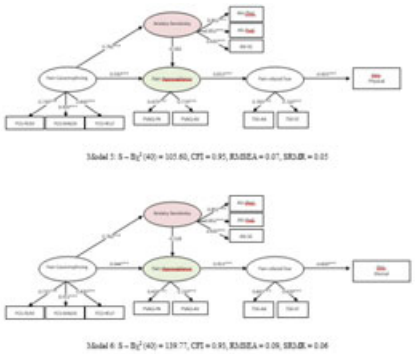

Figure 2: Full models testing pain hypervigilance as a mediator in the link of both anxiety sensitivity and pain catastrophizing with pain-related fear which predicts QoL-Physical (Model 5) and QoL-Mental (Model 6) score. Anxiety Sensitivity was indexed by the Anxiety Sensitivity Index (ASI). PhyC = ASI Physiological Concerns subscale; PsyC = ASI Psychological Concerns subscale; SC = ASI Social Concerns subscale. Pain catastrophizing was indexed by the Pain Catastrophizing Scale (PCS). RUM = PCS Rumination subscale; MAGN = PCS Magnification subscale; HELP = PCS Helplessness subscale. Pain Hypervigilance was indexed by the Pain Vigilance and Awareness Questionnaire (PVAQ). PA = PVAQ Passive Awareness subscale; AV = PVAQ Active Vigilance subscale. Pain-related fear was indexed by the Tampa Scale for Kinesiophobia (TSK). AA = TSK Activity Avoidance subscale; SF = TSK Somatic Focus. QoL-Physical was indexed by the SF-12 physical component score. QoL-Mental was indexed by the SF-12 mental component score. S – Bχ2 = Satorra & Bentler scaled chi-square statistic; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual. ***p<0.001.

Methods: A sample of 401 Chinese patients with chronic musculoskeletal pain completed the standardized measures assessing the FAM components and QoL. Structural equation modeling (SEM) was used to evaluate six hypothesized models.
Results: Results of SEM showed adequate data-model fit (CFIs ranging from 0.92 to 0.94) on models which specified pain hypervigilance as mediator of anxiety sensitivity and pain catastrophizing with pain-related fear on two QoL outcomes (QoL-Physical and QoL-Mental). Net suppression effect of pain catastrophizing on anxiety sensitivity was found in SEM where both anxiety sensitivity and pain catastrophizing were included in the same full model to predict QoL-Physical (CFI=0.95; Sobel $z = 8.26$, $p < 0.001$) and QoL-Mental (CFI=0.93; Sobel $z = 8.51$, $p < 0.001$).
Conclusion: Our findings evidenced that pain hypervigilance mediated the relationship of pain catastrophic cognition and anxiety sensitivity with pain-related fear.

WIP-0193 PREVALENCE, CHARACTERISTICS, AND EFFECTS OF POST-MASTECTOMY PAIN SYNDROME (PMPS) IN AN ETHNICALLY DIVERSE SINGAPORE HOSPITAL

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Objectives: Post-mastectomy pain syndrome (PMPS) is one example of chronic post-surgical pain (CPSP) syndrome, encountered after breast cancer surgery (BCS). Sufferers can have persistent pain that interferes with Quality of Life (QOL). Studies indicate PMPS is present in between 20 and 65% of BCS patients. This study aims to study the prevalence of PMPS, its characteristics, and effects on QOL among Singapore patients, as it has not been well studied locally, or among other Asian populations.
Methods: This cross-sectional, observational study reviewed a sample of 109 BCS patients recruited from a single breast surgery centre. Patients were interviewed by 3 trained interviewers using a modified pain questionnaire and SF12 Health Survey questionnaire.
Results: Overall, 37 patients reported PMPS symptoms (33.9%). PMPS patients were younger (55.3 vs. 63.0 years), although the time interval since surgery were similar. The percentage of PMPS was significantly higher in non-Chinese patients (48.7% vs. 25.7%). PMPS patients did not differ in rates of mastectomies, axillary clearance and stages of the cancer. Although 'Current' and 'Best Pain Scores' in PMPS patients were mild to moderate, four patients had 'Worst Pain Scores' in the severe range. PMPS patients had significantly lower SF12 physical component scores indicating an increase impact on physical health QOL.
Conclusion: PMPS is not uncommon in Singapore BCS patients, with a higher percentage in non-Chinese and younger patients. PMPS patients had significantly poorer physical health QOL scores. As such, there should be more effort to highlight PMPS and its effects to local Singapore clinicians, to allow more accurate and prompt diagnosis and treatment.

WIP-0137 THORACIC TRANSFORAMINAL EPIDURAL INJECTION OF MAGNESIUM FOR CHRONIC PAIN AFTER THORACOTOMY: DOES IT WORK?

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Objectives: Pain therapy and quality of life (QOL) are very important in patients with post thoracotomy pain syndrome. I evaluated the pain relieving efficacy, and effects on QOL of thoracic transforaminal epidural injection of magnesium diluted with lidocaine versus intercostal nerve block with methylprednisolone and lidocaine in management of chronic post thoracotomy pain syndrome.
Methods: The study protocol was approved by the local ethics committee. Patients were randomly divided into two groups. Magnesium group; GM, N = 20 were treated with magnesium (transforaminal approach), whereas the patients in steroid group; GS, N = 20 were treated with methylprednisolone (intercostal nerve block).
The VAS values, codeine consumption, and quality of life= QOL (assessed by Patient satisfaction scale=PSS, and performance status =PS) were evaluated prior to the procedure and at 2 weeks intervals after the procedure for 14 weeks.
Results: The demographic data were found to be similar. The comparisons of difference of VAS values were found to be significantly lower in GM than GS in every control till the 12th week. GM patients were found to decrease the codeine consumption significantly more than GS till the 14th week. GM patients had significant improvement in QOL values

especially after 4 weeks (assessed by Patient satisfaction scale = PSS, and performance status = PS).
Conclusion: Comparing the pain relieving efficacy, QOL – effects of the methods, thoracic transforaminal injection of magnesium may be an alternative to traditional intercostal nerve block with steroids in adult patients with post thoracotomy syndrome.

WIP-0435 CENTRAL SEGMENTAL BLOCKADE – METHOD OF TREATMENT PAIN IN PATIENTS WITH COMBINED ORTHOPEDIC PATHOLOGY?

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Objectives: Our aim was to evaluate the efficacy and safety of central segmental blockade (CSB) in patients with chronic pain with orthopedic pathology.
Methods: 346 patients (age 65 ± 4.3) were treated. Patients were divided into 2 groups (A/B). All received the same standard of medical therapy with the use of NSAIDs and muscle relaxants 14 days. Patients of group (B), in addition to standard medical therapy in the 1 and 3 days got central segmental blockade. There were different approaches depending on the prevalence of the clinical picture. The dose of steroid was reduced gradually from the second procedure. It was 3 blockades one per 3 days. The results of treatment were assessed on 3, 14 and 30 days. Statistical analysis in SPSS ($p < 0.05$).
Results: After examination we found that 148 (42.8%) patients with spine pain, 78 (22.5%) with pain in the lower back radiating to the hip joint, 102 (29.4%)pain in the hip, 18 patients (5.3%) pain in the knee joints. Disease duration was 6 months up to 2.5 years (14.1 ± 3.7). Pain intensity (7.7 ± 0.5) visual analogue scale(VAS-1/10. During the treatment we noticed a significantly decrease of pain in both groups, more in B. 3.4 ± 0.2(B) 5.4 ± 1.3(A) ($p < 0.007$) to the 3th day. To the 14th – 1.5 ± 0.5 (B) 3.2 ± 0.3(A) ($p < 0.009$), than 1.0 ± 0.3 (B)2.1 ± 0.5(A) ($p < 0.003$)to the 30th day. We had no complication, except blood pressure rise in 12%, glucose in 5% of patients.
Conclusion: these preliminary results showed that CSB statistically significant reduce pain from first procedure in patients with OP without any local or systemic side effect.

WIP-0436 METHOD OF ELECTROPHYSIOLOGICAL MONITORING THERAPY OF ACUTE RADICULAR PAIN

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Objectives: to evaluate the effectiveness of the treatment of acute radicular pain by evaluating changes doubles H-reflex during the central segmental blockade (CSB).
Methods: 23(42 ± 5.4 years) patients with clinical acute radicular pain and pain intensity 8 ± 1.0/10 points on the rank pain scale (RPS)were chosen without co morbidity. All patients were treated with therapeutic CSB. Multiplicity of drug 1 time in 3 days, the amount of not more than 3 blockades regressive decreasing dosage of the drug. Outcome of therapy was assessed by subjective changes in pain intensity at 3, 7, 14, 21 and 28, and with the help of objectified EMG study doubles H-reflex. Assessment doubles H-reflex was performed prior to treatment, after 15, 40 minutes after the blockade and 3, 7, 14, 21 and 28 days, respectively.
Results: In retrospect received change in the doubles H-reflex ranging from 150 to 200 ms in all treated patients. The latent period of the test H – reflex was variable. Change in pain intensity were respectively 4 ± 1.5/10, 2 ± 0.6/10, 1 ± 0.9/10 and 0/10 points. For statistical processing of results used the program "Statistic v7.0.61.0". Significance level ($p \leq 0.05$).
Conclusion: It is necessary to continue research doubles H-reflex as an objective method for monitoring the effectiveness of treatment, as clinical results obtained allow the use in treatment of acute radicular pain with CSB in clinical practice.

WIP-0434 CHRONIC POST-OPERATIVE PAIN AFTER KNEE AND HIP JOIN REPLACEMENT

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Objectives: The aim of our study was to identify the cause of pain in the successful execution of the joint replacement.
Methods: Eight patients with CPOP after joint replacement (5-THR; 3 TKR) was examine and treated. Surgery has been performed all over 2 years with no complication and good position of prosthesis. Six women and 2 men (66.7 ± 9.3 years),moved with additional support. All patients received standard medical therapy (NSAIDs, muscle relaxants) with negligible effect because of intestinal and heart complication. Patients was examined using X-rays with functional testing and under load. Computed tomography was performed to evaluate the lumbosacral spine. Duplex scanning of extremity vessels was performed. Evaluation of the quality of life of the patient was done using test SF-36. Pain measured by visual analogue scale (VAS). In treating used central segmental blockades. Results were evaluated after 3 and 14 days.
Results: all patients had different spine pathology (herniated lumbal disks, antelisthesis L4/L5,scoliosis 3st. (by Cobb′s), retrolisthesis L5 ½ of vertebra, with narrow spinal canal). We found no significant vessel pathology. The level of pain was 42.21 ± 12.03; physical functioning (PF)-39.81 ± 14.11 by SF-36, 6.3 ± 0.9 (VAS) before treatment. After treatment pain decreased significantly 2.1 ± 0.7 (VAS), 79.18 ± 11.5; PF-64.13 ± 11.5 (SF-36) ($p < 0.001$).
Conclusion: Pathology revealed in patients not previously taken into account during the surgery cause the pain in spite of successful execution of the operation. Before undergoing surgery, patients need to be more fully examine, concomitant orthopedic pathology need to be identify and conduct a comprehensive treatment.

WIP-0232 SUBANESTHETIC INTRAVENOUS KETAMINE INFUSION THERAPY: ASSESSMENT OF LONG-TERM EFFECTIVENESS IN THE MANAGEMENT OF CHRONIC REFRACTORY NON-CANCER PAIN

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Objectives: Ketamine is a non-competitive antagonist of N-methyl-d-aspartate (NMDA) receptors. Ketamine helps to minimise excessively painful responses. Antagonizing these receptors improves opioid receptors sensitivity, reduces opioid tolerance & suppresses opioid-induced hyperalgesia.
Currently, there is no evidence on the long-term effectiveness of the use of ketamine infusions in chronic pain. We sought to:

1. Determine whether ketamine provides long-term benefit to reduce opioid requirement.
2. Investigate long-term efficacy of sub-lingual ketamine in reducing opioid dose after ketamine infusion.

Methods: This prospective cohort study was designed to evaluate the long-term effect of a 3–7 day ketamine infusion in 100 sequential patients with refractory chronic, non-cancer attending the RPAH Pain Clinic between 2007 and 2012. The assessment was based on a questionnaire performed over the telephone. 18 patients were excluded due to insufficient data.

Results: Overall reduction in opioid use after Ketamine infusion was 30%. When Ketamine lozenges were given after the infusion, 31% were able to completely cease opioids compared to 6% without lozenges.
Conclusion: The results of this prospective cohort study show that there is evidence that using sub-lingual ketamine lozenges after an inpatient ketamine infusion, has a role in the cessation/reduction of opioid dose in patients with chronic refractory non-cancer pain.

Epidemiology

WIP-0291 SLEEP AS A PREDICTIVE FACTOR FOR THE ONSET AND RESOLUTION OF MULTISITE PAIN – A FIVE YEAR PROSPECTIVE STUDY

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Objectives: Disturbed sleep and pain often co-exist and the relationship between the two conditions is complex and likely reciprocal. This five year prospective study examines whether disturbed sleep can predict the onset of multisite pain, and whether non-disturbed sleep can predict the resolution of multisite pain.
Methods: The cohort (n = 1599) was stratified by number of self-reported pain sites: no pain, pain from 1 to 2 sites, and multisite pain (≥3 pain sites). Sleep was categorized by self-reported sleep disturbance: Sleep A (best sleep), Sleep B, and Sleep C (worst sleep). In the no-pain and pain-from 1 to 2 sites strata, the association between sleep (A, B and C) and multisite pain five years later was analyzed. Further, the prognostic value of sleep for the resolution of multisite pain at follow-up was calculated for the stratum with multisite pain at baseline. In the analyses, gender, age, BMI, smoking, physical activity and work-related exposures were treated as potential confounders.
Results: For individuals with no pain at baseline, a significantly higher odds ratio for multisite pain five years later was seen for the tertile reporting worst sleep (OR 4.55, 95% CI 1.28–16.12). Non-disturbed (or less disturbed) sleep had a significant effect when predicting the resolution of multisite pain (to no pain) (OR 3.96, 95% CI 1.69–9.31).
Conclusion: In conclusion, sleep could be relevant for predicting both the onset and resolution of, multisite pain. It seems to be a significant factor to include in research on multisite pain and when conducting or evaluating intervention programs for pain.

WIP-0158 HIGHER ORDER PERSONALITY TRAITS PLAY A SIGNIFICANT ROLE IN PAIN MODULATION

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Objectives: Substantial body of research has demonstrated the role of psychological variables as important predictors of pain, but inconsistent findings are available on the contribution of higher order personality traits in response to an acute pain in healthy population. Thus, we aimed to investigate higher order personality traits (neuroticism, extraversion, psychoticism) and pain catastrophizing as predictors of experimentally induced pain threshold and pain tolerance in healthy adults taking into consideration environmental influences as well.
Methods: A total of 1322 participants were enrolled from the Island of Korcula (n = 824) and the city of Split in Croatia (n = 498). The participants completed self-report Eyseck Personality Questionnaire-Revised and Pain Catastrophizing Questionnaire, followed by the mechanical pain pressure threshold and tolerance measurement. Mediation analysis was used to identify the inter-relationship of all three variable groups.
Results: The results show that pain catastrophizing indeed mediated the relationship between neuroticism and pain intensity. These findings further support the primary role of neuroticism in modulation of pain outcomes. The results also indicated a degree of the cohort-based differences (Island vs. Mainland) and substantial gender-related differences, marked by the higher pain threshold and tolerance in men.
Conclusion: This study adds to the understanding of the complex interplay between personality and pain, by untangling and better understanding these mechanisms in healthy adults unburdened by changes associated with chronic pain.

WIP-0327 CHRONIC SPIAL PAIN IN PARENTS AND THEIR ADULT OFFSPRING: FAMILY LINKAGE DATA FROM THE NORWEGIAN HUNT STUDY

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Objectives: Chronic spinal pain is a common cause of disability and contributes substantially to the global health burden. Although chronic pain may have a heritable component, little is known about the trans-generational associations of such pain between parents and their adult offspring. We examined parent-offspring associations of chronic spinal pain in a large population-based study.
Methods: The study comprised data from 11,081 trios (mother, father, adult offspring) participating in the HUNT Study, Norway in 1995–97 (parents) and in 2006–08 (offspring). Logistic regression was used to calculate adjusted odds ratios (ORs) for offspring spinal pain associated with parental pain in neck and low back, and with multilevel spinal pain (i.e. both neck and low back pain). Each participant signed a written consent, and the study was approved by the Regional Committee for Ethics in Medical Research.
Results: Both maternal and paternal pain in neck and low back were consistently associated with higher ORs for spinal pain in both daughters and sons, and the strongest association was observed for multilevel spinal pain. If both parents reported multilevel spinal pain, the OR in offspring was 2.6 (95% CI: 2.1, 3.3) for neck pain, 2.4 (95% CI: 1.9, 3.1) for low back pain, and 3.1 (95% CI: 2.2, 4.4) for multilevel spinal pain, compared to offspring with parents who reported no chronic pain.
Conclusion: Chronic spinal pain in parents is consistently associated with increased occurrence of offspring chronic spinal pain. Multilevel spinal pain had the most detrimental effect, especially if both parents were afflicted.

WIP-0130 THE RELATION BETWEEN PAIN AND PAIN BELIEFS WITH SOCIO-DEMOGRAPHIC-ECONOMIC CHARACTERISTICS AT THE ADULT POPULATION

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Objectives: In order to control pain which is a prevalent problem, to get knowledge regarding pain and pain beliefs is crucial. The aim of this study was to evaluate the correlation between pain, pain beliefs and the socio-demographic, economic characteristics at the adult population.
Methods: This descriptive, cross-sectional study was completed with 131 individuals between 18 and 65 ages. A questionnaire form, evaluating socio-demographic and economical status, pain traits as well, and Pain Beliefs Scale were used for data collection.
Results: 78.6% of the research group experienced pain within last one year; of 38.8% suffered from chronic pain. According

to the results of logistic regression analysis, the risk factors were determined as being between 30 and 65 age groups (OR: 0.215 p = 0.008) and had graduated from elementary school and lower education level (OR: 3.427 p = 0.021) for experiencing life long frequent pain; being female (OR: 3.003 p = 0.016) and married (OR: 4.550 p = 0.005) for experiencing pain within last one year; being between 30 and 65 age groups (OR=3.027 p = 0.027) and had a lower income (OR=4.932 p = 0.001) for chronic pain. However the organic and psychological pain beliefs scores were similar, socio-demographic and economic determinants were not significant for organic subscale ($p > 0.05$); lower income determined 11% of psychological subscale ($R^2 = 0.115$, $p < 0.05$).
Conclusion: The conclusions obtained from the research was that socio-demographic and economic status were risk factors for experiencing pain, and cultural factors related to pain beliefs warrant investigation.

WIP-0550 INTEGRATED PATHWAY FOR MANAGEMENT OF SPINAL PAIN IN THE NATIONAL HEALTH SERVICE (NHS) – THE UK EXPERIENCE

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Objectives: The cost impact of back pain to the U.K. economy is a staggering £ 19 billion each year.
We aimed to study the pattern of spinal pain referrals in the community and the journey of these patients through the health service.
Methods: The BANS (back and neck service) is a multi disciplinary service with extended scope physiotherapist, spine surgeon and chronic pain specialist discussing back and neck pain referrals with failed conservative management in community. The physiotherapists triage the patients with extensive history, examination and requisite imaging present the case.
Following each case discussion a decision is made either to refer the patient back to primary care with appropriate advise or manage the patient in secondary care under the aegis of spine surgeons, pain management unit, rheumatology, neurology, orthopedics or specialist radiology services.
Results: From January to November 2013, 1214 patients were discussed at the community clinic.
313 (G.P. 139; physiotherapists 174) were referred back to community service; 457 directed to pain management services, 376 to surgical review; 30 referred for more investigations prior to review in secondary care and 177 patients were referred to other specialty care services.
Conclusion: Our data shows that 25% referrals to secondary care can be avoided by this pathway. The patients' referred to secondary care were signposted to the right specialist from the beginning.

WIP-0180 A SURVEY OF PAIN TRAINING FOR FOUNDATION PROGRAMME DOCTORS IN A DEVELOPING COUNTRY

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Aim: Pain is universal in nature. The nature of pain problems in developing countries is that they are poorly understood and hence poorly managed. The aim of this survey is to ascertain the awareness towards principles of pain management among foundation doctors in a teaching hospital in India.
Method: The survey was conducted among 50 foundation doctors in a teaching hospital in India after getting written informed consent & Institutional Ethical Committee approval.
Results: All the doctors responded to the survey with a response rate of 100%. 36% revealed they are aware of existence of pain clinics. 84% said they did not have any formal lectures in pain management. 78% said they are not aware of a pain assessment tool. 40% said they would refer to a General Practitioner for pain management. Only 6% said they would refer patients in pain to an Anaesthetist, which was really surprising. 84% said they want more training in pain management and 86% wanted that pain management should be included in the undergraduate training curriculum.
Conclusion and Recommendations: Pain training is poor and in the best cases patchy in developing countries for multitude of reasons. The lack of training is mentioned as one of the main reasons for poor management of pain in developing countries. With the development of the new Special Interest Group, "Pain in Developing countries" in UK, we strongly recommend that more training program could be organized in developing countries like the essential pain management courses in future.

WIP-0181 A SURVEY OF PAIN TRAINING FOR MEDICAL UNDERGRADUATES IN A DEVELOPING COUNTRY

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Aim: Pain is universal in nature. The nature of pain problems in developing countries is that they are poorly understood and hence poorly managed. The aim of this survey is to ascertain the awareness towards principles of pain management in medical undergraduates in a teaching hospital in India.
Method: The survey was conducted among 150 undergraduate students in a teaching hospital in India after getting written informed consent & Institutional Ethical Committee approval.
Results: All the students responded to the survey with a response rate of 100%. 43% revealed they are aware of existence of pain clinics. 60% said they did not have any formal lectures in pain management. 92% said they are not aware of a pain assessment tool. 55% said they would refer to a General Practitioner for pain management. Only 5% said they would refer patients in pain to an Anaesthetist, which was really surprising. 96% said they want more training in pain management and 91% wanted that pain management should be included in the undergraduate training curriculum.
Conclusion and Recommendations: Pain training is poor and in the best cases patchy in developing countries for multitude of reasons. The lack of training is mentioned as one of the main reasons for poor management of pain in developing countries. With the development of the new Special Interest Group, "Pain in Developing countries" in UK, we strongly recommend that more training program could be organized in developing countries like the essential pain management courses in future.

Fibromyalgia

WIP-0324 ADAPTABILITY OF THE AEROBIC SYSTEM IN RESPONS TO MODERATE INTENSITY EXERCISE IN PATIENTS WITH FIBROMYALGIA AND HEALTHY CONTROLS

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Objectives: Reduced aerobic capacity is observed in fibromyalgia (FM) compared to healthy controls (HCs), even when similar levels of physical activity are reported. The purpose of the present study was to investigate if FM patients have the same trainability of the aerobic system as HCs.
Methods: Ten female FM patients and 16 age- and sex-matched HCs completed a 12 week endurance training pro-

gram with 89% attendance rate. Groups had similar BMI and self-reported physical activity level upon inclusion. Subjects trained 45–60 min of moderate intensity ergometer cycling twice a week. Aerobic capacity was evaluated by an incremental ramp-like ergometer cycling test to anaerobic threshold. In addition, knee extension strength was assessed by isometric MVCs. Pain was assessed by visual analogue scale (VAS).
The study protocol was approved by the Regional Committee for Ethics in medical research (project nr. 4.2008.2115) and all participants signed an informed consent before enrolment.
Results: Both groups had a significant increase in aerobic capacity (FM: 10.0% and HCs: 11.8%) and power output (FM: 26.3% and HCs: 21.7%) at anaerobic threshold after the training period. These effects did not differ between groups. Leg strength increased significantly in both groups (FM: 38.1% and HCs: 20.8%), while shoulder/neck- and low back pain decreased in the FM group.
Conclusion: Our findings suggest that FM patients have the same physiological adaptations to aerobic exercise with moderate intensity as age- and sex-matched HCs.

WIP-0220 EFFECTIVENESS OF BODY AWARENESS INTERVENTIONS IN FIBROMYALGIA AND CHRONIC FATIGUE SYNDROME: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objectives: Patients with long-lasting pain problems often complain of lack of confidence and trust in their body. Through physical experiences and reflections they can develop a more positive body- and self-experience. Body awareness has been suggested as an approach for treating patients with chronic pain and other psychosomatic conditions. The aim of this systematic review is to assess the effectiveness of body awareness interventions (BAI) in fibromyalgia (FM) and chronic fatigue syndrome (CFS).
Methods: Two independent readers conducted a search on Medline, Cochrane Central, PsycINFO, Web of knowledge, PEDro and Cinahl for randomized controlled trials.
Results: We identified and screened 7107 records of which 29 articles met the inclusion criteria. Overall, there is evidence that BAI has positive effects on the Fibromyalgia Impact Questionnaire (FIQ) (MD −5.55; CI −8.71 to −2.40), pain (SMD −0.39, CI −0.75 to −0.02), depression (SMD −0.23, CI −0.39 to −0.06), anxiety (SMD −0.23, CI −0.44 to −0.02) and Health Related Quality of Life (HRQoL) (SMD 0.62, CI 0.35 to 0.90) when compared with control conditions. The overall heterogeneity is very strong for FIQ (I^2 92%) and pain ($I^2$97%), which cannot be explained by differences in control condition or type of BAI (hands-on/hands-off). The overall heterogeneity for anxiety, depression and HRQoL ranges from low to moderate (I^2 0% to 37%).
Conclusion: Body awareness seems to play an important role in anxiety, depression and HRQoL. Still, interpretations have to be done carefully since the lack of high quality studies.

WIP-0417 CHARACTERIZATION OF A RAT MODEL OF FIBROMYALGIA

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Objectives: Fibromyalgia is a disorder characterized by chronic widespread pain and complex comorbid symptoms. The pathophysiology, although explored at the clinical and preclinical level, remains largely unknown. To develop better treatments for pain-centered fibromyalgia symptoms, animal models which mimic some aspects of the human condition are still needed. Aim of this work is to better characterize the reserpine-induced myalgia model described in the literature, expanding the behavioural assessment and evaluating plasma levels of hormones and inflammatory cytokines which are normally elevated in fibromyalgic patients.
Methods: Rats received daily subcutaneous injection of reserpine (1 mg/kg) for three consecutive days. To evaluate the onset and the duration of sensitivity, mechanical hyperalgesia, allodynia, motor coordination and spontaneous locomotor activity were measured over a 2 week period. For pharmacological characterization, pregabalin (30 mg/kg po) was administered and behavioural measurements assessed 3 and 5 days post-reserpine.
Results: The results showed that reserpine led to a significant decrease in nociceptive threshold in mechanical hyperalgesia and allodynia, as well as a significant decrease of motor coordination and locomotor activity. The neurochemical assays showed a decrease in cortical neurotransmitters (norepinephrine, dopamine and serotonin) along with a plasma level increase of corticosterone and inflammatory cytokines, like MCP-1. Pregabalin significantly attenuated behavioural abnormalities 5 days after the last reserpine injection.
Conclusion: Our work demonstrates that biochemical and behavioural parameters that are modified in fibromyalgia patients, can also be evaluated in the reserpine-induced fibromyalgia model, thus increasing its translational value in the search of new therapeutic agents.

WIP-0394 DULOXETINE IS SUPERIOR TO GABAPENTIN IN THE TREATMENT OF THE FIBROMYALGIA

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Objectives: To determine the efficacy of duloxetine versus gabapentin in treating fibromyalgia.
Methods: A study of 68 patients who met the ACR criteria for the diagnosis of fibromyalgia and presenting to our department during the period between January 2008 and May 2011, were included. All patients were randomly assigned to receive orally either 1200 mg gabapentin daily (Group 1) or duloxetine 60 mg daily (Group 2) for 2 months. Clinical outcomes were measured with VAS pain scale, Multidimensional Assessment of Fatigue (MAF), Medical Outcomes Study (MOS)-Sleep measure and Short Form 36 Health Survey (SF-36) at baseline, 6 months, 1 and 2 years after. Patients with associated other painful disorders were excluded. Statistical analysis was performed by statistical packet STATA 8.0 and significance was set at p-value < 0.05.
Results: There was no significant difference among the two groups regarding the VAS pain score, MAF, MOS-Sleep measure, SF-36 and duration of symptoms before treatment. The VAS pain score was $5.6 \pm 0.3/10$ in Group 1 and $3.2 \pm 0.5/10$ in Group 2 ($p < 0.05$) at 2 years follow up. MAF score was 27.1 ± 1.1 in Group 1 and 19.3 ± 1.2 in Group 2 ($p < 0.05$) at 2 years follow up. The MOS-Sleep measure was 45.3 ± 2.1 in Group 1 and 31.2 ± 2.4 in Group 2 ($p < 0.05$) at 2 years follow up. The SF-36 score was 53.5 ± 2.3 in Group 1 and 64.3 ± 1.5 in Group 2 regarding the physiological domain and 57.2 ± 1.4 in Group 1 and 68.9 ± 2.2 in Group 2 regarding the psychological domain, at 2 years follow up.
Conclusion: Therapy with duloxetine is more efficient than gabapentin in treating fibromyalgia.

WIP-0260 IS THERE ANY CONNECTION BETWEEN THE LEVELS OF UBIDECARENONE AND PAIN INTENSITY IN PATIENTS WITH FIBROMYALGIA?

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Objectives: Ubidecarenone or coenzyme Q10 (CoQ10) deficiency causes mitochondrial dysfunction and could be related to fibromyalgia. The aims of this study was to determine if ubidecarenone may be a diagnostic marker of fibromyalgia and its relationship with pain.

Methods: This study was approved by the Committe of Clinical Trials and all patients had signed written informed consent. 157 patients were enrolled in a descriptive cross-sectional, multidisciplinary and multicenter study to determine levels of CoQ10: 86 with fibromyalgia (American College of Rheumatology 2010 criteria) (FG) and 71 healthy as control group (CG). Patients were recruited in 5 months. Mean age+ST: 48 + 1.3/50 + 0.9 years ($p = 0.086$); male CG/CF 6/2 ($p = 0.085$). We determined CoQ10 levels in mononuclear cells and evaluated its association with VAS, SS-SCORE, WPI and number of trigger points. Statistical test: bivariate lineal correlation and mean; statistical significance: $p < 0.05$. Statistical package SPSS v.18.

Results: There was no statistically significant difference between the two groups for age and sex. Mean ubidecarenone: CG/FG: 224.5 + 1.4/144.5 + 4.7 pmoles/mg protein ($p = 0.000$). Mean WPI: 15.1 + 0.3. Mean SS-SCORE-1: 2.3 + 0.05. Mean SS-SCORE-2: 21.5 + 0.6. Mean SS-SCORE-3: 2.3 + 0.05. Mean number of trigger points: 15.9 + 0.3. There was no significant lineal correlation between levels of ubidecarenone and VAS, SS-SCORE-1, WPI and number of trigger points. There was lineal correlation with SS-SCORE-2 ($p = 0.047$) and SS-SCORE-3 ($p = 0.027$).

Conclusion: Values of ubidecarenone in FG was significantly lower compared to CG. No patients diagnosed with fibromyalgia had higher values than the mean GC ubidecarenone. Ubidecarenone can be considered as a marker indicative of fibromyalgia. Ubicarenona levels correlate with SS-SCORE 2 and 3.

Headache

WIP-0174 NEUROSTIMULATION FOR POST TRAUMATIC HEADACHE

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Objectives: The majority of post-traumatic headache (PTH) patients will report resolution of their complaints within a few months from the time of the initial injury. Posttraumatic headaches can contribute to disability, lost productivity, healthcare costs.

Methods: In this case series we discuss our institute experience with electrical neuromodulation therapy in highly selective group of patients with PTH. Application of neurostimualtion in long term pain relief will be presented. We collected 7 cases of PTH. They underwent peripheral nerve stimulation and dorsal spinal cord stimulation. We will discuss potential mechanism of action,patient's selection criteria, targeted nerve selection critieria, ultrasound guidance peripheral nerve stim placement, and short report of technical aspect of permanent implant.

Results: All 7 patient had 6 months follow up. They responded very well. we will discuss the detail.

Conclusion: Electrical neuromodulation can be extremely beneficial for a small minority of head-injured individuals, suffering from intractable PTH with disabling headaches despite aggressive and comprehensive treatment.

WIP-0135 NEUROMODULATION OF THE GREAT AURICULAR NERVE: A GREAT TARGET FOR HEADACHE MANAGEMENT

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Objectives: Subcutaneous electrode application over the branches of C2-C3—namely the greater, lesser, and the least occipital nerves—for the treatment of chronic, intractable headache is not a new concept within pain medicine literature. However, subcutaneous electrode application, specifically over the GAN, is unique.

Methods: The authors review their single institution experience of Great Auricular Nerve neuromodulation between July, 2011 and June, 2013. Pain was self-reported using the Visual Analogue Scale (VAS). Outcomes at last follow-up were also ranked as excellent, good, fair, poor, and bad.

Results: A total of 5 patients underwent ultrasound-guided GAN implantation during two year period. Four patients had excellent, and one patient considerred as good responder. The average length of pain suffering prior to implantation was 8.2 years. Mean follow-up was 340 days (range 315–710 days).

Conclusion: We will discuss our case selection criteria ultrasound methodology to identify the target. The case series report chronicles the novel application of ultrasound-guided peripheral nerve stimulation of the GAN as an effective and safe long-term treatment for chronic, intractable primary headache.

WIP-0212 PREVALENCE OF VENOUS SINUS STENOSIS IN PSEUDOTUMOR CEREBERI (PTC) USING DIGITAL SUBTRACTION ANGIOGRAPHY (DSA)

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Objectives: Study the prevalence of intracranial venous stenosis in Pseudotumor cereberi patients.

Methods: Twenty patients diagnosed as PTC according to Dandy criteria. All underwent general and neurological assessment. Full ophthalmologic assessment. Full Laboratory investigations were done. Radiological assessment included CT scan brain ± MRI brain without contrast, MRV. All underwent digital subtraction cerebral Angiography (DSA) (venous phase) to confirm the validity of filing gaps seen at the level of MRV.

Results: MRV brain showed that 14 patients (70%) showed filling gaps. Digital subtraction cerebral angiography (venous phase) showed 5 patients (25%) had stenosis in their dural sinuses. MRV showed to be a good screening tool since it had 100% sensitivity and negative predictive value. However, since it has a moderate specificity (62%) with a positive predictive value (PPV) of only 35%, then lesions detected should be confirmed with digital subtraction cerebral angiography (venous phase) particularly those involving the transverse and sigmoid sinus.

Conclusion: Studying the intracranial venous system in patients with PTC is an important step in understanding the pathophysiology of the disease. Detection of venous sinus stenosis opens the way to a novel therapeutic option for refractory patients like venous sinus stenting.

WIP-0557 EFFICACY OF MANUAL THERAPY TECHNIQUES IN TENSION-TYPE HEADACHE

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Objectives: The aim of this research was to obtain and determine the alternative method of treatment of tension-type headache (T-TH). Problem of T-TH, touches increasingly adults, who abuse the painkillers. The most frequent reason of T-TH is long-term sitting position, stress or lack of physical activity.

Methods: The research includes the group of 60 women in the age from 28 to 38, suffer from T-TH lasted from 6 months. The subjects were randomly divided into two groups. The I group were given standard treatment, using NSAIDs, which had to be used in case of headache. The subjects from II group were treated by using manual therapy techniques.

Results: In the last week before treatment, the headache has appeared in 34 cases (56.6%) and in the last month before in 26 cases (43.3%) and has lasted on average 5.6 in VAS scale in I group, and on average 5.9 in II group. The noticeable differences between two statistic groups were present (adequately $p = 0.000$; $p = 0.000$). The level of perceptible pain after therapy for the group treated with manual therapy (group II) was on the level from 0 to 3 in VAS scale, however in group I – where subjects were treated with painkillers, the perceptible pain was on a level from 3 to 6 in the same scale. After four weeks from the end of the therapy, the crucial difference between perceptible pain in these two groups was also noticed.

Conclusion: Therapy based on manual techniques may become an efficient alternative treatment for pharmacological method of T-TH treatment.

WIP-0290 CHARACTERISTICS OF MICROSTRUCTURAL ABNORMALITIES OF BRAIN WHITE MATTER ON CLINICAL REALIZATION OF HEADACHE ON MIGRAINE PATIENTS

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Objectives: The aim of our study is to investigate the white matter (WM) microstructural differences in the brains of patients suffering from migraine with aura (MA) and migraine without (MWA). Fractional anisotropy (FA) and mean diffusivity (MD) are markers of WM microstructural integrity and characterize the WM pathways state.

Methods: The first group consisted of twenty-seven MWA patients (mean age – 27.5 years old), second – nineteen MA patients following the International Headache Society guidelines. The third group consisted of twenty-three age-matched healthy subjects. Migraine patients had migraine for the past 16.2 years on average. Patients had a mean frequency of 3.1 ± 0.67 migraine attacks per month. DTI scans were obtained by Philips 1.5 T MRI scanner.

Results: Significantly lower FA values were detected of MA patients (0.521 (0.513÷0.53)) compared to age- and sex-matched healthy controls (0.535 (0.531÷0.546)) and compared to MWA ($p < 0.05$). There was found correlation of aura presence and lowest FA data ($r = 0.55$, $p = 0.04$). Frequency of migraine attacks associate with absence of *posterior brain commissure* visualization ($r = 0.47$, $p = 0.019$). Increase of MD into posterior brain quadrants correlate with reduction of tracts picture on temporal lobes projection ($r = 0.41$, $p = 0.042$).

Conclusion: Using DTI we observed significantly lower FA values in MA patients than in MWA and healthy controls. Increase of MD into posterior brain quadrants may indicate the participation of temporal lobe structures on headache realization. The detected white brain matter differences could be considered as neuronal damage due to repetitive episodes of CSD, which underlies on basis of visual aura phenomenon.

WIP-0157 HEADACHE IN AN EMERGENCY ROOM IN AL-MUKALLA

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Objectives: To evaluate the quality of primary care by analyzing retrospectively the medical records of patients with a complaint of headache seen in emergency room during the year 2012.

Methods: Retrospective study was conducted, 1254 patients, who sought the emergency room in Ibn sina hospital in Al-mukalla city, Yemen, during the year 2012 with a complaint of headache.

Etiology,age diagnosis,secodary cause and laboratory tests are main measurements.

Results: Of 1254 patients seen (61% women), 1190 (94.9%) were discharged after the administration of parentral analgesics before they had spent 12 hours in the room.

Only 64 (5.1%) patients remained for more than 12 hours.

Of the patients who spent less than 12 hours in the room, 71.5% had migrian or tension type headache and did not require subsiadiry exams for diagnosis.

Of the patients who spent more than 12 hours in the room, 7.3% had secondary headaches.

Conclusion: We conclude that, the primary care for headache is unsatifactory in Al-mukalla region.

Many patients with primary headache are referred to tertiary care service,indicating the need of dissemination of the diagnostic criteria of the international headache societyto general practitoners.

Key Words: Headache, Emergency room, General practioners.

WIP-0265 HYPERALGESIA IN PATIENTS WITH MIGRAINE WAS CORRELATED WITH THE NETWORK OF SPINAL TRIGEMINAL NUCLEI

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Objectives: Hyperalgesia are common in patients with migraine; however, the cerebral substrate is not completely determined. We hypothesize trigeminal nociceptive pathways may be implicated. This study aimed to (1) determine the mechanical nociceptive thresholds in patients with migraine and (2) to correlate the neuroimaging findings with nociceptive thresholds in patients with migraine.

Methods: The study recruited 24 healthy volunteers and 45 patients with migraine. Cutaneous nociceptive thresholds in V1, C3, and T1 dermatome were determined with electronic von Frey anesthesiometer during the interictal period. Resting-state functional magnetic resonance imaging (rsfMRI) was subsequently performed to determine the functional connectivity. Comparisons were made between the results of quantitative sensory testing and rsfMRI.

Results: Compared with healthy controls, patients with migraine had significantly lower cutaneous nociceptive thresholds in bilateral V1 as compared to controls. The results of rsfMRI showed migraine patients, as compared to healthy controls, had greater intrinsic connectivity between spinal trigeminal nucleus and bilateral thalami, anterior cingulate cortex/medial prefrontal cortex, and precuneus. Of note, the

connectivity was inversely correlated with cutaneous nociceptive thresholds.
Conclusion: Patients with migraine were hyperalgesic to punctate pressure during the interictal period. Such hyperalgesia was correlated with increased functional connectivity in the network of spinal trigeminal nuclei.

WIP-0402 REFLEX ANALGESIA IN TREATMENT OF CHRONIC TENSION HEADACHES

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Objectives: To estimate the effectiveness of the classical corporal acupuncture in complex treatment of chronic tension headaches.
Methods: One hundred and twenty-six patients (77% female and 23% men) aged 18–72 years were examined. Disease duration ranged 0.25–9 years. Patients were divided into study and control groups equally. Control group patients received conventional therapy with central muscle relaxants and antidepressants. Besides, the study group patients received a course of 14 sessions of classical corporal acupuncture 3 times per week every 2 months. Analysis was held using neuroorthopedic examination, algologic testing with Visual Analogue Scale (VAS) and McGill pain questionnaire (MGPQ).
Results: 83% patients of study and 86% of control groups had marked moderate myofascial cervicocranial zone disorders. Headaches intensity in control group before study was 3.7 ± 1.2 VAS points and 4.1 ± 1.6 in study group. According to MGPQ before treatment in control group the sensory rank pain index (RPI) was 5.64 ± 1.73 points, affective RPI −3.14 ± 0.62, the total RPI – 6.95 ± 2.17, while in study group was 6.10 ± 1.84; 2.89 ± 0.58 and 7.21 ± 1.79 points respectively. Pain intensity in control group was 4.17 ± 0.61 points after a month of treatment, after 3 – 3.5 ± 0.4, after 6 – 2.1 ± 0.6, in study group – 3.1 ± 0.9, 2.3 ± 0.4, 1.2 ± 0.3 points respectively. Study group patients demonstrated significant pain regression after treatment. Control group patients showed less distinctive positive trend.
Conclusion: The use of the classical corporal acupuncture in complex treatment of chronic tension headaches is an effective and safe method of impact at all stages of treatment.

WIP-0403 PROSPECTIVE CONTROLLED RANDOMIZED RESEARCH OF SEROTONIN LEVELS WITH CHRONIC PAIN PATIENTS

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Objectives: Pathogenesis of chronic pain is multifactorial and understanding the role of these factors including serotonin will help to find an effective chronic pain treatment.
Methods: To study the concentration of serotonin in chronic pain patients' serum. The pain intensity by Visual Analogue Scale (VAS) and serotonin concentrations were estimated within 37 patients with chronic migraine and 54 with chronic tension headaches (CTH). Serotonin was evaluated during the interictal periods within all patients and control group. Further analysis was held with Mann-Whitney and Spearman's tests.
Results: The average age of migraine patients was 36.4 ± 7.2 years, with CTH – 42.1 ± 8.3. Male/female ratio in migraine was 33/4, CTH – 41/13. Duration of the disease of migraine patients – 7.8 ± 2.6 years, CTH – 5.6 ± 1.8. Pain intensity within migraine patients was 6.8 ± 1.4 points, in group with CTH – 3.6 ± 1.3. Duration of individual episodes of pain of migraine patients was 14.3 ± 4.7 hours, with CTH – 144.6 ± 32.8. Control group patients didn't feel any significant pain over next 6 months. Serotonin concentration in healthy people was 357.06 ± 24.17 ng/ml, reduced ($p = 0.04$) within migraine patients – 259.73 ± 46.8 ng/ml, and significantly reduced ($p = 0.01$) in CTH −187.65 ± 28.5 ng/ml. Inverse correlation was revealed between duration of pain episodes and the degree of serotonin reduction in the serum.
Conclusion: Reducing serotonin in the serum of patients with chronic headaches indicates the mediator depletion in the blood during prolonged cephalic syndrome.

WIP-0270 FAMILY FUNCTIONING IN PATIENTS WITH CHRONIC AND NON-CHRONIC HEADACHE AND HEADACHE FREE INDIVIDUALS

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Objectives: The aim of this study was to compare and evaluate family functioning in families with a member suffering from headache and families without this situation.
Methods: The participants in this study were 124 patients who were suffering from headaches, 69 patients had chronic headache and 55 patients suffering from recurring headaches. In the control group, we chose 53 individuals had not a history of severe headaches. Participants of this study who chosen in neurology clinics was sampled as in access. After diagnosis of headache by neurologist, they completed demographic questionnaire and Family Assessment Device (FAD).
Results: MANOVA (multivariate analysis of variance) test was performed. Results showed that there is significant difference between chronic headache, non-chronic headache, and control group ($p < 0.01$). Otherwise, there was significant difference between these groups in family function's subscales. Games-Howell post-hoc test indicated patients with chronic headache had poorer family function in comparison to control group.
Conclusion: It seems that families of headache patients particularly chronic headache, have dysfunctional family and we should consider the role of family in consolidation and deterioration of headaches more than past. Of course giving attention to family factors could be useful in understanding this complex disorder.

WIP-0274 PRAYING AND PAIN CATASTROPHIZING AS COPING STRATEGIES IN PREDICTION OF HEADACHE INTENSITY

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Objectives: The aim of study was investigation the role of praying and pain catastrophizing as coping strategies in prediction of headache intensity.
Methods: One hundred twenty-four patients (89 female) with headache disorder who chose in neurology clinics after diagnosis of neurologist was sampled as in access participants. A battery test was administered including demographic questionnaire; visual analogues scale (VAS), praying subscale of coping strategies questionnaire (CSQ) and pain catastrophizing scale (PCS).
Results: The analysis of regression showed that rumination and praying can accounted for 9% of variation for headache intensity. Discussion: The praying and rumination are effective in prediction of pain, on the other word, praying can predict low intensity of headache, and rumination can predict high intensity of headache.
Conclusion: As a result, we can consider religious factors like praying as a positive point to control and reduction of headache at least in spiritual persons.

WIP-0486 EFFECTIVENESS OF INTRAARTICULAR PULSED RADIOFREQUENCY NEUROTOMY FOR THE TREATMENT OF SACROILIAC JOINT PAIN

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Objectives: In this study, we aimed to retrospectively evaluate the effectiveness of pulsed radiofrequency (PRF) intraarticular and L5-dorsal ramus (L5DR) neurotomy to treat intractable sacroiliac joint (SIJ) pain.

Methods: The medical charts of thirty-six patients with intractable SIJ pain who underwent treatment with PRF intraarticular and ipsilateral L5DR neurotomy were indentified. Patients were selected for treatment based on physical examination and positive response (≥50% pain relief) to an intraarticular SIJ block. PRF was applied to the SIJ and L5DR for 15 min at 2 Hz with a pulse width of 10 ms and 65V under flouroscopy. Visual analog scale(VAS) pain scores, medication usage and quality of life were retrospectively evaluated before and, 3 weeks, 3 and 6 months after the treatment. After 6 months, patients satisfaction levels were determined.

Results: A significant decrease in mean VAS scores from baseline was observed in all follow-up periods, as follows:7.6 ± 1.4 to 2.3 ± 1.1, 1.6 ± 1.0, and 2.1 ± 1.1 respectively ($p < 0.001$). 3 weeks, 3 and 6 months after the treatment, patients quality of life rates were as follows for 'much improved' 86.1%, 86.1%, 86.1%, for 'improved' 8.3%, 13.9%, 11.1%, and for 'same' 5.6%, 0%, 2.8% respectively. Patient satisfaction was very high (97.2%). No serious advers effects or complications were encountered.

Conclusion: PRF intraarticular and ipsilateral L5DR neurotomy appears to be an effective and safe intervention treatment with lower complication rate for intractable SIJ pain. Randomised controlled studies should be carried out to confirm these results.

WIP-0186 COMPARISON THE EFFECT OF LATERAL WEDGE INSOLE AND ACUPUNCTURE IN MEDIAL COMPARTMENT KNEE OSTEOARTHRITIS: A RANDOMIZED CONTROLLED TRIAL

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Objectives: In this parallel-group randomized controlled trial, we aim to assess and compare the possible structural and functional advantages of two well-known nonpharmacologic interventions; lateral wedge insole and acupuncture; in patients with medial knee OA.

Methods: Patients with medial knee OA and radiological findings consistent with grade two or three of Kellgren-Lawrence classification system were randomly allocated to group one who received an in shoe lateral wedge and group two, who underwent acupuncture. We assessed patients' pain and function in addition to knee joint cartilage thickness before and after each intervention. Paired t-test and independent samples t-test were used for in group and between group analyses.

Results: Twenty patients in each group were recruited in the study. Pain significantly decreased after therapy in both groups one and two(paired t test, $p < 0.001$, 95% CI: 1.62–3.25 and 1.58–3.20 respectively). Also, function significantly increased in each group (paired t test, $P = 0.001$, 95% CI of 0.94–2.38 in group one and 0.97–2.43 in group two). A non-clinically statistically significant difference regarding the femoral and tibial cartilage thickness was obtained in both group one ($P = 0.005$, CI: −0.43 to 0.82 and $P = 0.037$, CI: −0.44 to 0.80 respectively) and two ($P = 0.025$, CI: −0.45 to 0.79 and $P = 0.035$, CI: −0.29 to 0.96 respectively). Between groups analysis showed no significant difference regarding all above mentioned measures.

Conclusion: Both lateral wedge insole and acupuncture can be effective in treatment of medial knee osteoarthritis without any superiority of one over the other.

WIP-0185 EVALUATION OF THE EFFECT OF GREEN TEA EXTRACTS IN PATIENTS WITH MILD TO MODERATE KNEE OSTEOARTHRITIS

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Objectives: Green tea has been being used in traditional medicine and there are some evidences that this herb, especially one of its derivatives, epigllocatechin 3-gallate (EGCG), may have a role in reduction of inflammation and joint destruction. As, there is no clinical study regarding the effects of either green tea or EGCG on OA, in this study we assumed to review its clinical effects in patients suffering OA.

Methods: Forty patients were enrolled into this randomized clinical trial. They were divided into two groups, cases and controls. At the beginning of the study, WOMAC questionnaire was completed for each patient. Then, cases received 1500 mg/day of green tea leaves plus 100 mg/day Diclofenac, while the controls consumed only 100 mg/day Diclofenac. After one month, they were evaluated again, using the WOMAC questionnaire.

Results: At initial assessment, and at the end of the study, there were no differences among studied variables between the two groups. Although following the consumption of green tea, pain of the cases decreased and their capability to perform their physical activity increased and total score of WOMAC questionnaire improved. But, except of pain, there was no considerable improvement in controls.

Conclusion: Although our study is suggestive that green tea may have some beneficial effects in patients with OA, it is not obvious that it is a true consequence or just some placebo effects. Further studies may be required to lighten up the way we have started.

WIP-0381 HOW CATASTROPHIC ARE DIFFERENT TYPES OF PAIN IN WOMEN WITH ARTHRITIS?

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Objectives: Pain catastrophizing is the exaggeration of pain due to injury or illness. The presentation of neuropathic pain (NP) in arthritis is a relatively new research are. The aim of this study is to explore whether women who have arthritis with NP catastrophize more than women who have arthritis without NP.

Methods: 700 women from the Australian Longitudinal Study on Womens Health were sent a postal survey asking about their health, pain and arthritis. 579 (82.7%) women returned surveys. The painDETECT questionnaire and Pain Catatstrophizing Scale (PCS) were used to asses NP and pain catastrophizing respectively.

Results: 433 women completed both measures. 213 (83%) women had arthritis without NP and 44 (17%) women had arthritis with NP. For those with arthritis without NP, the median PCS score was 2 (95% CI 1.3), while the median score in those with arthritis with NP was 17 (95% CI 11.23). This was statistically significant at the $p < 0.001$ level.
Conclusion: In women with arthritis with NP, pain catastrophizing scores were significantly higher, reflecting an exaggerated pain experience. These findings are relevant and meaningful for the inclusion of biopsychosocial treatment interventions for women with arthritis and NP.

WIP-0380 HOW IS THE EXPERIENCE OF PAIN MEASURED IN OLDER, COMMUNITY DWELLING PEOPLE WITH OSTEOARTHRITIS – A SYSTEMATIC REVIEW OF THE LITERATURE

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Objectives: There is a large and growing range of pain outcome measures in health care and research. They evaluate disease activity, discomfort, disability, damage and death, however not one existing measure effectively captures the overall experience of pain. This project systematically reviewed the literature on how the experience of pain has been measured in population based studies of older, community dwelling people with osteoarthritis (OA).
Methods: Inclusion criteria were cohort/observational and cross-sectional studies; specific diagnosis of OA; employed outcome measures of pain and/or health and/or quality of life which included questions about pain; considered older adults. Search strategy included five electronic databases using MeSH keywords. Articles were reviewed for methodological quality using the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies.
Results: 630 articles were identified in the search strategy. 170 articles were screened by title/abstract by two independent reviewers with 50 articles assessed for eligibility by full text. 19 articles met all inclusion criteria and were included in the quantitative synthesis.
Conclusion: The multidimensional nature of the experience of pain was not effectively captured within these studies with unimodal measures inadequate. Future studies should select multiple validated measures to assess the overall experience of pain of OA in older people.

WIP-0382 HOW DOES NEUROPATHIC PAIN AFFECT QUALITY OF LIFE IN WOMEN WITH ARTHRITIS

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Objectives: There is emerging evidence for a neuropathic pain (NP) mechanism in arthritis pain. The effect of having arthritis and NP on quality of life has not been investigated. The aim of this study is to explore the effect of NP on quality of life outcomes in women with arthritis.
Methods: 700 women from the Australian Longitudinal Study on Womens Health were sent a postal survey asking about their health, pain and arthritis. 579 (82.7%) women returned surveys. The painDETECT questionnaire and SF-36 were used to assess NP and health related quality of life respectively.
Results: In seven of the eight subscales of the SF36, scores for women who had arthritis with NP were significantly lower than women who had arthritis without NP. Median scores for women with arthritis with NP and women with arthritis and without NP, respectively, were vitality: 45 (95% CI 38–52) and 60 (95% CI 56–64); physical functioning: 40 (95% CI 30–50) and 75 (95% CI 71–79); role physical: 0 (95% CI 0–15) and 75 (95% CI 68–82); bodily pain: 32 (95% CI 24–40) and 62 (95% CI 58–66); mental health: 68 (95% CI 60–76) and 80 (95% CI 77–83); social functioning: 50 (95% CI 39–61) and 87.5 (95% CI 84–91); and general health: 52 (95% CI 44–60) and 72 (95% CI 68–76) ($p < 0.001$).
Conclusion: Women who have arthritis with NP have significantly lower scores in health related quality of life, indicating greater disability and generally lower quality of life.

WIP-0159 NITROUS OXIDE/OXYGEN COMPARED WITH FENTANYL IN REDUCING PAIN AMONG ADULTS WITH ISOLATED EXTREMITY TRAUMA: A RANDOMIZED TRIAL

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Objectives: To compare the effectiveness of nitrous oxide/oxygen (N(2) O/O(2)) and fentanyl in relieving pain among patients with an isolated long bone fracture or main joint dislocation of the limbs.
Methods: Patients with isolated long bone fracture or main joint dislocation with moderate to severe pain were randomized into two groups. For the first group, nitrous oxide/oxygen (50:50) was self-administered until pain relief was achieved up to a maximum of 15 min. Fentanyl (2 μg/kg) as a single dose was administered for the second group. Pain intensity was measured with a visual analogue scale before and at minutes three, six and nine after the start of the drug administration. We also recorded observed adverse effects in these two groups.
Results: One hundred patients were enrolled in the study. No statistically significant difference in pain score was detected between the two groups with one exception. The mean visual analogue scale scores at 9 min were 2.2 and 3.1 for nitrous oxide/oxygen and fentanyl, respectively (difference −0.9 [95% CI −1.7 to 0.1]) ($P = 0.006$). There was no statistically significant difference between two groups regarding adverse effects.
Conclusion: Neither nitrous oxide/oxygen or fentanyl appeared to be superior to the other in relieving moderate to severe pain among emergency patients presenting with isolated limb fracture or dislocation. In an ED, increased use of nitrous oxide might reduce the overall need for opiate analgesia, and in our setting, the need for constant monitoring.

WIP-0304 OUR EXPERIENCE WITH INTRAARTICULAR OZONE INJECTION THERAPY IN THE PATIENTS WITH GONARTHROSIS

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Objectives: In our study it was aimed to evaluate the efficacy of intraarticular ozone therapy in the patients with gonarthrosis in our department of algology.
Methods: In this study, 242 patients with gonarthrosis that were treated using 20% concentrated intraarticular ozone in 2010–2013 were included. All data were obtained from the

pain evaluation cards in the patient files and recorded. Data of age, sex, visual analog scale (VAS) scores before and after the therapy, crepitation on knee, radiological grade, movement scores before and after the therapy and satisfaction scores after the therapy were recorded.
Results: In this study, 45 (18.6%) patients were male, 197 (81.4%) were female. Mean age was 57.48 ± 8.35. Mean initial VAS score was 7.92 ± 1.29, 1 month after the therapy it was 3.09 ± 2.39 and 6 months after therapy it was 3.25 ± 2.45. VAS scores of patients that had crepitation decreased more than the patients that had no crepitation on knee. It was found that 43 patients were grade 2, 146 patients were grade 3 and 53 patients were grade 4 according to radiological grade. VAS scores of grade 2 were decreased more than grade 4 according to pretreatment values. It was observed 436 (88.4%) patients were satisfied and 57 (11.6%) patients were unsatisfied. Movement scores were found higher after the therapy than the scores before therapy.
Conclusion: In conclusion intraarticular ozone therapy in the patients with gonarthrosis is an effective and satisfactory treatment method. We suggest using intraarticular ozone therapy especially in early grades of gonarthorsis.

WIP-0307 THE EVALUATION OF RADIOFREQUENCY THERAPY IN THE PATIENTS WITH CERVICAL RADICULAR PAIN: OUR EXPERIENCES

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Objectives: In our study it was aimed to evaluate the efficacy of radiofrequency therapy (RFT) in the patients with cervical radicular pain in our clinic.
Methods: In this study, 128 patients with cervical radicular pain that were treated using pulsed RFT in 2009–2013 were included. The patients that were operated after RFT were excluded from the study. All data were obtained from the pain evaluation cards in the patient files and recorded. Data of age, sex, visual analog scale (VAS) scores before and after the therapy, complications and satisfaction scores after the therapy were recorded. All data were analyzed using SPSS (ver. 15.0) program.
Results: It was found 44 (34.3%) patients were male, 84 (65.7%) patients were female. Mean age was found to be 52.91 ± 11.22. Mean VAS score before the therapy was 8.00 ± 1.16, 1 month after the therapy it was significantly reduced to 4.56 ± 1.45 and 6 months after the therapy it was found as 4.34 ± 2.94. When the satisfaction data were analyzed it was found 100 (78.1%) patients were satisfied and 28 (21.9%) patients were unsatisfied. Data of movement scores were found higher after the therapy than the scores of pre therapy. Patients had no complications.
Conclusion: Radiofrequency therapy is an effective method in the management of cervical radicular pain. As it has been used for 4 years in our department, we wanted to evaluate our results. In conclusion RFT in the patients with cervical radicular pain is an effective and safe treatment method, and should be used more commonly.

WIP-0190 EFFICACY OF PROLOTHERAPY VERSUS METHYLPREDNISOLONE ACETATE INJECTION IN TREATMENT OF CHRONIC PLANTAR FASCIITIS

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Objectives: Prolotherapy (PrT) is an injection-based therapy which a small volume of an irritant solution is injected on painful tendon and ligament insertions for chronic musculoskeletal pain. Many controversies exist concerning its effectiveness. This study compares prolotherapy versus corticosteroid therapy in the treatment of chronic plantar fasciitis.
Methods: Thirty-four subjects with chronic plantar fasciitis were recruited using strict inclusion and exclusion criteria from Shiraz medical school clinics. Subjects(two equal groups)were determined to receive either prolotherapy(25% Dextrose) or corticosteroid injection for treatment of chronic plantar fasciitis. Visual analog scale (VAS) self-rating of pain was measured at baseline and at 2 and 8 weeks' follow-up.
Results: Within each group, the analysis showed statistically significant improvements in VAS. In the PrT group significant changes noted from baseline to 2 weeks (VAS: Δ4.04; $p < 0.001$), and baseline to 8 weeks (VAS: Δ4.8; $P < 0.001$) after intervention, in addition from 2 to 8 weeks (VAS: Δ0.82; $P = 0.024$). The steroid group demonstrated significant statistically reduction of this pain measurement outcome from baseline to 2 weeks ((VAS: Δ4.6; $P < 0.001$) and baseline to 8 weeks (VAS: Δ3.98; $P < 0.001$) after initial treatment but not from 2 to 8 weeks (VAS: Δ−0.61; $P = 0.246$). No significant differences revealed in compare between groups received the PrT and the corticosteroid for change in VAS. Except injection-associated pain, no adverse reactions were reported.
Conclusion: PrT injection was at least effective as corticosteroid injection in the treatment of chronic plantar fasciitis.

WIP-0340 GLIAL CHANGES INDUCED BY CHRONIC MUSCLE INJURY IN RATS

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Objectives: As is well known, glial cells (astrocytes and microglia), participate in inflammatory processes and are relevant for maintaining algogenic processes, releasing different mediators involved in the transmission of nociceptive information. Thus, the objective of this work is to deepen our understanding and explore in greater detail the participation of glial cells in a model of chronic myositis.
Methods: Male *Wistar* rats weighing 170–190 g were used. Chronic myositis was induced by the administration of 300 μg of Freund's Complete Adjuvant (CFA) in the right gastrocnemius muscle of rats; *Naive* animals were used as control. Nociceptive threshold was determined by mechanical and thermal hyperalgesia tests and allodynia; besides, a behavioral locomotion test. Behavioral measures were assessed before any procedure, 6 and 12 days after induction of chronic myositis. Immunohistochemistry and immunofluorescence assays were used to evaluate astrocyte and microglia activation after myositis induction and were performed in the spinal cord and dorsal root ganglion tissues.
Results: Animals submitted to myositis induction showed a reduction in the nociceptive threshold when compared to control group and remained constant during the 12 days. Regarding Immunohistochemistry and fluorescence assays, we observed an increase in glia expression in myositis group compared to naïve animais, in both tissues analyzed.
Conclusion: Glial cells appeared to be involved in chronic myositis as it expression is higher in this condition. This set of studies can provide a basis for better understanding of the mechanisms involved in chronic muscle pain that is difficult to treat because of its complexity.

WIP-0192 MANIPULATION AND METHYL PERDNISOLONE INJECTION IN TREATMENT OF COCCYDYNIA

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Objectives: The aim of the current study was to evaluate the efficacy of manipulation with regional methylprednisolone injection on treatment of chronic coccydynia.

Methods: A randomized trial was designed. Thirty patients were recruited and divided randomly into two groups. The first group received three sessions of manual therapy based on Maigne and Thiele method. The other group received manipulation with injection of methylprednisolone around the coccyx (sacro-coccygeal and intercoccygeal joints). Then, the patients were followed up one day, a week, a month and three months after intervention. Severity of pain was assessed by visual analogue scale (VAS) during follow-ups. Finally, the data were analysed by repeated measure ANOVA model.

Results: The mean duration of pain was 23.3 ± 38.3 months. There were not any significant differences between the two groups regarding the age and duration of coccydynia. The results of repeated ANOVA indicated that the pain decreased during three months of follow-up in both groups significantly ($p < 0.0001$). However, there was no statistically significant difference between the two groups regarding the pain deceleration ($P = 0.691$).

Conclusion: One episode of injection of methylprednisolone can limits the treatment sessions of manipulation to just one session without additive effect on pain reduction.

WIP-0555 HAMSTRING STRAINS AND PAIN AMONG RUNNERS – TREATMENT PROPOSAL

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Objectives: There are three main causes of posterior-thigh pain among runners: hamstring micro-injury, sacroiliac-joint pain, and peripheral nerve tension. The aim of the study was to implement the treatment for these side effects of an intensive running workout which exposes runners to soft tissues trauma. The study aims to evaluate effectivity of manual techniques and autotherapy used as therapy and furthermore prophylaxis.

Methods: The research has been conducted on 85 runners, men and women, aged 25–45. All participants have been divided into groups depending on the seniority in running (0–2 years/I, 2–5 years/II and above 5 years/III) as well as their trainings' intensity and distances. All runners implemented the short workout before, after and between trainings in 4 weeks. Workout included stretching techniques, fascial and muscle release and self-help massage techniques. Before and after the treatment was conducted the functional and pain assessment.

Results: Preliminary assessment shows that the most affected by soft tissue injuries is the beginners group of runners (I, $n = 28$), due to unprepared musculoskeletal system to the loads. This group complained mostly on knee pain ($n = 15$), tension within plantar tendon ($n = 17$) and pain in biceps femoris ($n = 12$). There is statistically significant correlation between pain in hamstring in people who omit stretching sessions ($p < 0.01$).

Conclusion: The pain in hamstring may occur in all groups of runners. The main reason of pain is not adapted musculoskeletal system, change in trainings intensity or their type. It is worth to implement stretching and self-therapy techniques in daily running workouts.

WIP-0549 PELVIC FLOOR TRIGGER POINTS – TO TREAT OR NOT TO TREAT? SELF-THERAPY PROGRAM

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Objectives: Pelvic pain is a common problem among women that affect their whole life. There is plenty of soft tissue techniques which might be effective if used in a proper place. The aim of this research is to highlight the importance of deep tissue therapy, including trigger points therapy, within whole pelvic area.

Methods: In cooperation with gynecologist lectures focused on pelvic floor disorders and self-therapy were conducted. Exercise program was conducted by physiotherapist and based on deep tissue work, trigger point techniques improving pelvic blood supply and relaxing the abdominal. The study included 50 women aged 23–62 ($x = 38 \pm 7.6$) suffered from pelvic pain. The group filled the questionnaire based on Health Survey SF-36, Visual Analogue Scale and on McGill Pain Questionnaire before and after the program, which lasted 6 weeks.

Results: The results showed that the whole program had significant impact on pain relief and pelvic disorders awareness within the majority of participants (92%, $n = 46$). The level of pain before starting the program was 5.7. After six weeks results differed with final pain evaluation about 2 ($x = 2.2$). Women claimed that program helped them with body understanding, gave them new skills in self-therapy and courage to talk about these problems out loud. Furthermore, 86% ($n = 43$) of participants declared that their quality of life increased after the treat.

Conclusion: Pelvic floor disorders can be reversed or decreased with a manual therapy. Awareness in this area has an significant impact on a person's quality of life. Program may be treated as a pilot study.

WIP-0338 CLINICAL AND MECHANISTIC RESEARCH ON THE IMPACT OF DAILY, LONG DURATION, LOW INTENSITY THERAPEUTIC ULTRASOUND TREATMENT

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Objectives: Ultrasound is a modality for pain therapy which has been tested for 60 years, but has been limited in practice by the complexity of the technology. Recent research has allowed for the development of a portable, wearable, long duration, low intensity therapeutic ultrasound system called SAM. SAM is cleared for OTC use in Europe and Canada, and prescription use in the United States.

Methods: The SAM system is powered by battery, and can be applied by a user to deliver 4 hours of ultrasound therapy daily. This research demonstrates the efficacy of the device in small clinical trials (fewer than 30 subjects per study), along with a study of intramuscular heating demonstrating that the device provides sustained, safe deep tissue diathermy. IRB approved clinical trials were undertaken for osteoarthritis, shoulder tendinopathy and myofascial pain in the trapezius muscle, where patients evaluated their pain on a 0–10 scale before and after using the device. An IRB approved study measured the intramuscular temperature of patient's calf muscles when the device was used for multiple hours.

Results: The clinical trials demonstrate substantial (35% or greater) reduction of pain during treatment. The mechanistic study demonstrated 3–5°C heating of muscle tissue over multiple hours.

Conclusion: The wearable therapeutic ultrasound system is an innovative, alternate method for providing pain relief to patients without the use of pharmacotherapies.

Conflict of interest

WIP-0535 LOCAL IMPLEMENTATION OF THE ORIGINAL HERBAL PREPARATION IN PAIN FOLLOW SPORTS INJURIES – IS IT DOOMED TO PAINKILLERS?

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Objectives: In everyday practice very often the cause of pain is a sports damage or injury. Aim is to establish the efficacy of topical application of PAVLOV – PAIN BUSTER HERBAL SPRAY® and GEL®, a products based on the active principles of 35 species of plants, in suppressing pain in sports injuries.
Methods: The study included 128 athletes, age 24 ± 6 years, 98% of males. The product is applied in the form of spray or gel, depending on the location and severity of injury Subjects were tested for numerical and descriptive score of pain prior and after therapy.
Results: None of the subjects after 5 days of application had pain. The average time of disappearance of pain was 2.6 ± 1.9 days. Pain is stopped faster in females than in males (2.1 ± 1.6 vs. 2.8 ± 1.9), rapidly stopped in patients with degenerative rheumatism (2.6 ± 1.6 vs. 3.4 ± 1.6). Examing after 30 and 90 days showed that the pain does not return.
Conclusion: Pavlov pain buster herbal spray® and gel® proved to be a fast-acting and highly effective for eliminating chronic rheumatic pain. Positive effects is time-consuming and the pain does not have tendency of repetition.

WIP-0385 SULFASALAZINE ATTENUATES ANTERIOR CRUCIATE LIGAMENT TRANSACTION AND MEDIAL MENISECTOMY-INDUCED CARTILAGE DESTRUCTION BY INHIBITION OF CYSTINE/ GLUTAMATE ANTIPORTER ACTIVITY

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Objectives: The cystine/glutamate antiporter (system Xc) is responsible for the uptake of cystine into the cell for the synthesis of glutathione. System Xc expression was shown to correlate with progression of osteoarthritis (OA). However, the function of system Xc in the progression of OA remains unclear. Sulfasalazine (SSZ) is an inhibitor of system Xc.
Methods: SSZ intra-articularly injection was performed to study the function of system Xc in the development of OA in rats subjected to anterior cruciate ligament transaction and medial menisectomy (ACLT + MMx) and found that it significantly attenuated knee swelling and cartilage destruction in the knees of ACLT + MMx rats and that this effect was inhibited by co-treatment with SSZ and the system X activator N-acetylcysteine (NAC)
Results: These results show that inhibition of system Xc can inhibit ACLT + MMx-induced cartilage destruction. SSZ treatment also significantly reduced the generation of glutathione (GSH), which plays a crucial role in anti-oxidative processes, and decreased glutamate levels in the synovial fluid. In our previous studies, we found that a lower glutamate concentration in the synovial fluid is correlated with better cartilage condition. In the present study, GSH levels were significantly reduced in SSZ-treated cultured chondrocytes, which would be detrimental if it also occurred in the joint. However, in vivo, SSZ protected ACLT + MMx rats from OA development, and this may possibly be explained by the reduction in glutamate levels in the synovial fluid.
Conclusion: In conclusion, treatment with the system Xc inhibitor SSZ attenuates ACLT + MMx-induced cartilage destruction, and the glutamate concentration in the synovial fluid might play an important role in OA formation.

WIP-0492 THE SUPRASPINOUS LIGAMENT, A FORGOTTEN SOURCE OF (LOW) BACK PAIN: RESULTS OF LOCALLY APPLIED PRF ON THIS LIGAMENTAL STRUCTURE

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Introduction: Aspecific back pain can have its Point of Maximal Pain (PMP) that can be indicated by the patient with one finger, expressing a very small pain generating site.
Aim of the study: PMP can sometimes be found exactly in the midline. When checked under fluoroscopy it is in between the tips of two spinous processes (or, less often, at the bony tip).
Treatment was tried with PRF (22G needle, Radionics RFG3c; 120″; 50 V;2/sec; 20 msec).
Methods: Thirty-eight consecutive patients that showed LBP or neck pain and who had a PMP exactly in the midline that could be attributed to to a single level between two vertebrae were followed for 2–13 months after PRF treatment of the painful supraspinous ligament.
Results: The results will be shown in the graph.
Twenty-six patients had at last follow-up contact still a good result. (NRS decrease by 67% or more).
Five patients noted an intermediate result (NRS decrease between 33 and 66%)
Five patients had no clinical relevant result (NRS decrease 0–32%).
Two patients deteriorated, that is, the treated segment was painfree but adjacent levels started to be painful leading to an increase in NRS outcome.
Conclusion: Aspecific (low) back pain needs not to be "aspecific" at all.
After careful clinical examination it might well be considered trying this easy to perform technique in this syndrome.

WIP-0517 THE NATURAL COURSE OF MUSCULOSKELETAL LBP

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Introduction: Patients treated for musculoskeletal pain (MSP) at the Posterior Superior Iliac Spine (PSIS) by locally applied PRF may be returning to the clinic with other forms of MSP.
Aim: Finding the logic of returning pain in LBP after long lasting succesful PRF treatment of PSIS-pain
Methods: A retrospective evaluation by long term follow up of 45 patients that had a successful PRF treatment of the PSIS.
Results: 16% of patients had no MSP in the 4 year follow up.
56% needed a redo PRF treatment to enlarge the area treated.
18% needed a procedure on the medial part of the Iliac bone, sacroiliacal ligament.
43% needed a procedure on the Iliolumbar ligament.
20% needed a procedure on the greater trochanter, m piriformis insertion.
62% was also treated for radicular pain on L2. L5, S1 or S2.
Seven times a lumbar facet denervation was done and eight SI joint injections. In 62% radicular pain was treated of which 16 times L5 and 21 times S1.
In year 3 and 4 2 redo's.
Seven Iliolumbar bands:
Three epidurals.
One greater trochanter.
Conclusion: A large part of MSP-patients can be treated successfully by locally applied PRF or corticosteroids but MSP returns often in new but not at randomly located sites. It can be treated by the same technique. Most sites are also connected to the erector spinae muscle, with the noteworthy exception of the greater trochanter.

WIP-0287 INVESTIGATING THE EFFICACY OF ANTERIOR TANSFORAMINAL EPIDURAL STEROID INJECTIONS IN PATIENTS WITH LOW BACK PAIN AND CHANGES IN QUALITY OF LIFE, RETROSPECTIVELY

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Objectives: Aim: Was efficacy of anterior tansforaminal epidural steroid (TAESI) and local anesthesic injections in patients with low back pain and changes in quality of life, retrospectively

Methods: Patients (n = 260) were divided into three groups; lumbar disc herniation (LDH), failed back surgery (FBS) and spinal stenosis (SS). In the assessment of patients' pain Visual Analog Scale (VAS) was used. Measurements was made before treatment (VAS 0), in the 1st month of the application (VAS 1), 3 month (VAS 3) and 6 in (VAS-6). Patient quality of life, were questioned with Short Form-36.

Results: In all three groups, preoperative painlevels (VAS 0) showed a statistically significant reduction ($p < 0.001$) by 1, 3 and 6 months. The reduction in VAS were more likely in LDH group than patients in the BBC and SS groups ($p < 0.05$). Reduction was in LDH, BBC and SS groups respectively. There was any major major complication. Only Eleven patients had minor complication. Quality of life with the SF-36 questionnaire all parameters were lower in SS patients compared to patients with LDH ($p < 0.05$). The quality of life rate is low in SS patients, only physical health and social functioning scores were lowest in the BBC group.

Conclusion: TEASI is effective, and can safely be performed in patients who have low back pain due to disc herniation, spinal stenosis, failed back surgery. Spinal stenosis patients quality of life affected adversely and that it can be argued that, particularly on the physical role limitations.

WIP-0370 LOCAL COCCYGEAL INFILTRATION IN TREATING COCCYDYNIA AFTER NORMAL VAGINAL DELIVERY

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Objectives: Coccyx pain (coccydynia, or tailbone pain). A gender-specific risk factor in females is abrupt internal trauma related to giving birth; Infiltrating the sacrococcygeal ligament under fluoroscopy with local anesthetic and corticosteroid provide immediate permanent relief. In this study we report treatment of 38 women complaining of coccydynia after normal vaginal delivery, after failure of medical and physical treatment.

Methods: Between year 2006 and 2012, thirty eight women were treated in our pain clinic for persistent coccyx pain after normal vaginal delivery. Pain was between 8 and 9 over 10 according to VAS scale and pain didn't subside 4–6 weeks after delivery.

All the patients were referred by their OBGYN doctor after failure of treatment with NSAID and life modification modalities. All patients underwent X-ray of the coccyx; there were no tail bone fracture. Eight patients had a minor coccygeal dislocation.

Under fluoroscopy, infiltration of the sacrococygeal ligament by injecting of 10 ml of Bupivacaine 0, 125% and 40 mg of methylprednisolone was performed.

Results: An immediate relief after the infiltration was notices by all the patients. They were 100% pain free. (According to VAS scale).Patients obtained 100% pain relief, without any subsequent recurrence.

They were no complication related to the coccygeal infiltration.

Conclusion: When resistant to NSAID treatment, and lifestyle modification; coccygectomy seems to be an invasive procedure with all the complications of a surgery; infiltrating the sacrococcygeal junction with local anesthetic and steroids has proved to bean effective and safe tool for treating intractable coccydinia.

WIP-0249 PATIENTS CLASSIFIED AS "HYPERUSER" BY A PSYCHOLOGIST DO NOT DIFFER FROM OTHER PATIENTS WITH CHRONIC LOW BACK PAIN REGARDING PSYCHOSOCIAL SCORES

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Objectives: To examine whether patients with chronic low back pain (CLBP) considered as "hyperuser" by a psychologist have a different profile from the others regarding pain, disability and psychosocial scores measured by means of widely used questionnaires.

Methods: Twenty patients (11 males; mean age: 52 years) with non-specific CLBP (mean duration of disability: 60 months) were included. They attended one session consisting of a functional analysis (45-minutes interview) conducted by a psychologist who had to classify them as "hyperuser" (physical overloading despite pain) or not. Then, the patients completed a battery of validated questionnaires about pain intensity (visual analogue scale, VAS), disability (Roland–Morris questionnaire, RDQ), catastrophizing (Pain Catastrophizing Scale, PCS), pain-related fears (Pain Anxiety and Symptoms Scale, PASS), kinesiophobia (Tampa Scale of Kinesiophobia, TSK), beliefs (Fear-avoidance beliefs questionnaire, FABQ), locus of control (Multidimensional Health Locus of Control, MHLC), and anxiety and depression (Hospital Anxiety and Depression scale, HAD).

Results: Among the 20 patients included, nine were classified as "hyperuser" by the psychologist. They did not differ significantly from the other patients, neither regarding gender proportion, age, body mass index, and pain duration of disability, nor regarding all questionnaire scores ($p > 0.05$).

Conclusion: Commonly used questionnaires do not enable to identify "hyperuser" patients with CLBP; more specific questionnaires or a psychologist interview seem necessary to identify them in order to propose them a specific treatment.

WIP-0299 THE EVALUATION OF RADIOFREQUENCY FACET NERVE DENERVATION IN THE PATIENTS WITH LUMBAR FACET SYNDROME: EXPERIENCE WITH 493 PATIENTS

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Objectives: In our study it was aimed to evaluate the efficacy of radiofrequency therapy (RFT) in the patients with lumbar facet syndrome in our department of algology.

Methods: In this study, 493 lumbar facet syndrome patients that were treated using RFT in 2008–2013 were included. The patients that had no diagnosis of facet syndrome and operated after RFT were excluded from the study. All data were obtained from the pain evaluation cards in the patient files and recorded.

Data of age, sex, visual analog scale (VAS) scores before and after the therapy and satisfaction scores after the therapy.
Results: Data of 493 patients were analyzed and found 187 (37.9%) were male, 306 (62.1%) were female. Mean age of the patients was found to be 51.86 ± 13.76. Mean VAS score before the therapy was 8.03 ± 1.06, 1 month after the therapy it was significantly reduced to 4.18 ± 1.64 and 6 months after the therapy it was found as 4.08 ± 2.26. When the satisfaction data were analyzed it was found 436 (88.4%) patients were satisfied and 57 (11.6%) patients were unsatisfied. Data of movement scores were found higher after the therapy than the scores of pre therapy. Patients had no complications.
Conclusion: RFT is becoming a common method in the management of lumbar facet syndrome in our region and we wanted to evaluate our results. In conclusion radiofrequency therapy in the patients with lumbar facet syndrome is an effective and safe treatment method, and should be used more commonly.

WIP-0306 INTRADISCAL ELECTROTHERMAL THERAPY (IDET) IN THE PATIENTS WITH LUMBAR DISC HERNIATION: OUR EXPERIENCE OF 206 PATIENTS

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Objectives: In our study it was aimed to evaluate the efficacy of Intradiscal Electrothermal Therapy (IDET) in the patients with lumbar disc herniation in our department of algology.
Methods: In this study, 206 lumbar disc hernia patients that were treated using IDET in year 2013 were included. The patients that had and extrude intervertebral disc or operated after IDET therapy were excluded from the study. All data were obtained from the pain evaluation cards in the patient files and recorded. Data of age, sex, visual analog scale (VAS) scores before and after the therapy, sensory loss, complications and satisfaction scores after the therapy were recorded. All data were analyzed using SPSS (ver. 15.0) program.
Results: Data of 206 patients were analyzed and found 74 (35.9%) patients were male, 132 (64.1%) patients were female. Mean age of the patients was found to be 49.70 ± 14.74. Mean VAS score before the therapy was 8.38 ± 1.17, 2 month after the therapy it was significantly decreased to 2.65 ± 2.67. Data of movement scores were found higher after the therapy than the scores before therapy. When the satisfaction data were analyzed it was found 186 (90.3%) patients were satisfied and 20 (9.7%) patients were unsatisfied. Patients had no complications.
Conclusion: IDET is a recent method in the management of lumbar disc herniation and becoming common in our region. In conclusion IDET in the patients with lumbar disc herniation is an effective and minimally invasive treatment method and we suggest that it should be used more commonly.

WIP-0155 PSYCHOLOGICAL FEATURES IN PATIENTS WITH LOW BACK PAIN A CASE–CONTROL STUDY USING SYMPTOM CHECKLIST 90 REVISED

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Objectives: Recent studies have detected strong association between Low back pain (LBP) and psychological factors. Few studies were conducted on the investigation of psychological features of these patients in Iran. We aimed to evaluate the relationship of psychological distress with LBP.
Methods: One hundred and fifty-three consecutive outpatients in low back pain clinic and 153 controls were interred to study and invited to complete the Symptom Checklist 90 Revised (SCL-90-R) for assessment of psychological distress.
Results: Univariate and multivariate methods was used for data analysis. A significant association of LBP with all nine subscale and three global indices including Global Severity Index (GSI), Positive Symptom Distress Index (PSDI) and Positive Symptom Total (PST) of the SCL-90-R were detected. Patients with LBP reported significantly higher levels of poor appetite, trouble falling asleep, thoughts of death or dying, early morning awakening, disturbed sleep and feelings of guilt compared to the controls. Multivariate analysis indicated that interpersonal sensitivity, somatization, paranoid ideation, depression and phobic anxiety subscales and PST, PSDI and GSI global indices were significantly associated with LBP (age, gender, educational level, marital status, employment status, smoking, alcohol use).
Conclusion: Psychological features are strongly associated with LBP; notably, interpersonal sensitivity, somatization, paranoid ideation, depression, phobic anxiety and all global indices are significantly associated with. So, the appropriate psychological assessment in these patients is critically important.

WIP-0332 DIFFERENCES IN PSYCHOLOGICAL AND PHYSICAL PERFORMANCE BETWEEN SUBGROUPS OF CHRONIC LOW BACK PAIN PATIENTS AS CLASSIFIED BY THE AVOIDANCE-ENDURANCE MODEL

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Objectives: To compare the psychological and physical performance between the four subgroups (fear-avoiders, eustress-endurers, distress-endurers, adaptive responders) of patients with chronic low back pain (CLBP) as suggested by the avoidance-endurance model (AEM).
Methods: After giving written informed consent, 134 patients with CLBP completed the Avoidance-Endurance questionnaire (AEQ), 36-Item Short-Form Health Survey (SF-36), Roland-Morris disability questionnaire (RMQ), Pain Disability Index (PDI), International Physical Activity Questionnaire (IPAQ) and indicated their pain intensity via visual analog scale (VAS). Furthermore, patients performed a standardized maximum back extension test (David®) and had to estimate their anticipatory and post expositional emotional states related to this physical test.
Results: According to the AEM, patients were subclassified by a cluster analysis using the subscales thought suppression (AEQ), endurance behavior (AEQ) and mental health inventory (SF-36). Overall, 37 fear-avoiders, 23 eustress-endurers, 46 distress-endurers and 28 adaptive responders were identified. Psychological and physical outcome variables were compared between subgroups using analysis of variance. Significant differences were found for pain-related responses (AEQ), health-related quality of life (SF-36) and disability (RMQ, PDI). No significant differences were observed for physical activity (IPAQ) and pain intensity (VAS). The maximum back extension moments were unanimous between groups. However, their anticipatory and post expositional emotional states differed significantly.
Conclusion: Results indicate that rather psychological than physical findings seem to determine the different subgroups of

the AEM. These findings strongly suggest the demand for individually tailored cognitive-behavioral interventions.

WIP-0251 DO PAIN RECOVERY EXPECTATIONS CHANGE OVER TIME?

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Objectives: While a considerable body of research has explored the relationship between patient expectations and clinical outcomes such as pain, few studies investigate the extent to which expectations change over time. Further, the temporal relationship between expectations and pain has not been comprehensively researched.

Methods: We conducted a latent profile analysis on patients (n = 874) with low back pain. Patients were categorised in latent profile clusters according to the course of their expectations over three months.

Results: Nearly 80% of patients showed a pattern of stable expectation levels, these patients had either high (positive), medium of low levels of expectations related to their recovery for the whole, 3-month study period. While baseline levels of pain severity did not discriminate between the three clusters, those in the groups with higher expectations experienced better outcome at three months. Approximately 15% of patients showed a decrease in expectations over the study period and the remainder were categorised in a group with increasingly positive expectations. In the former clusters, decrease in expectations appeared to be concordant with a plateau in pain improvement, and in the latter, increase in expectations occurred alongside an increase in pain improvement rate.

Conclusion: The expectations of most people presenting to primary care with low back pain do not change over the first three months. People with very positive, stable expectations generally experience a good outcome. While we attempted to identify a causal influence of expectations on pain severity, or vice versa, we were unable to demonstrate either conclusively.

WIP-0425 A SYSTEMATIC REVIEW AND META-ANALYSIS OF COMPARATIVE STUDIES TESTING TRANSFORAMINAL VERSUS INTERLAMINAR APPROACHES TO EPIDURAL STEROID INJECTIONS FOR LUMBOSACRAL RADICULAR PAIN

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Objectives: The superiority of transforaminal epidural steroid injections (TFESI) versus interlaminar epidural steroid injections (ILESI) for treating unilateral lumbosacral radicular pain (LSRP) is unproven. Objective of this review is to assess studies comparing TFESI to ILESI for unilateral LSRP for pain relief and functional improvement.

Methods: A systematic literature search was conducted using the Cochrane Central Register of Controlled Trials, PubMed, and Scopus databases for trials reported in English. Studies meeting the Cochrane Review criteria for randomized trials and the AHCQ criteria for observational studies were included. Evidence was graded using the USPSTF classification.

Results: Five (prospective) and three (retrospective) studies were included assessing 506 patients. Statistical analysis was calculated only utilizing the five prospective studies and consisted of 249 patients with an average of 3.2 months follow up. For short-term (2 weeks) pain relief, there was a 15% difference favoring TFESI versus ILESI. There was no efficacy difference at 1 or 6 months. Combined pain improvements in all five prospective studies revealed <20% difference between TFESI and ILESI (54.1% vs. 42.7%). There was slightly better functional improvement in ILESI groups (56.4%) versus TFESI groups (49.4%) at 2 weeks. Combined data showed slight differences (TFESI 40.1% and ILESI 44.8%).

Conclusion: The findings show that both TFESI and ILESI are effective in reducing pain and improving functional scores in unilateral LSRP. In the treatment of pain, TFESI demonstrated non-clinically significant superiority to ILESI only at the two-week follow up. Based on two studies, ILESI demonstrated non-clinically significant superiority to TFESI in functional improvement.

WIP-0494 SUCCESSFUL ACUPRESSURE TREATMENT WITH COLLATERAL MERIDIAN THERAPY IN A PARTURIENT WITH SEVERE SCIATICA

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Objectives: About 72% of parturients complaines of 'back' pain. Sciatica in parturient is troublesome, nevertheless, mostly are refractory and without well treatment. Treatments with slight to no adverse effects would be invaluable in parturient patients. Here, we present a pregnant patient suffered from acute sciatica who responded well to response to Acupressure with Enrac collateral meridian therapy (CMT).

Methods: A 32 y/o woman, 21 weeks pregnant, had suffered from a stiff back for several days with severe radiculopathy over left lower limb before the initial visit. She was 160 cm in height, 55 kg in weight, and had visited the rehabilitation doctor for physical therapy but refused. She could not sit or walk even for a short time after bed rest or other conservative treatments. VAS was 8/10. Her history and physical exams met the criteria for sciatica.

Results: In concerning the fetus, no medication was given even with sick leave. After first Enrac CMT, the pain got advanced immediately. The VAS decreased to 4/10. The gait got improved. Pain remained over left thigh with mild sharp pain but was much better than before. After continuous treatment for 2 weeks, the pain got alleviated. Her stiffness sensation over low back and buttock region, numbness over thigh had almost disappeared 1 month later. Her VAS decreased to 1/10 two months later. No adverse effects were observed during treatment.

Conclusion: To our limited knowledge, this is the first report of sciatica in a parturient with successful treatment by acupressure theapy. Prospective and randomized studies are warranted.

WIP-0390 THE CONTINUOUS RADIOFREQUENCY FOR LUMBAR FACET PAIN IN ADULT PATIENTS WITH DEGENERATIVE SCOLIOSIS

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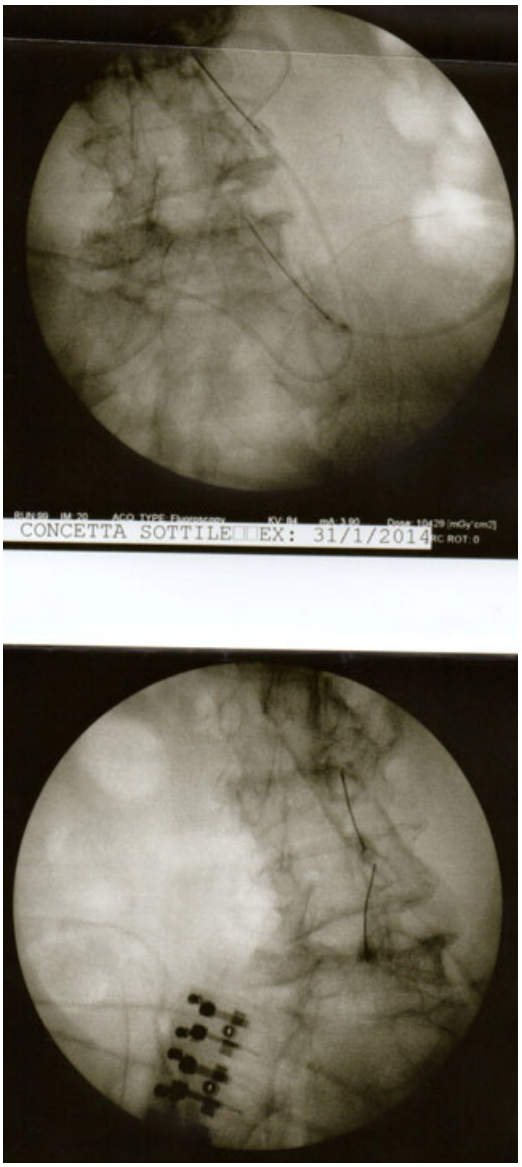
Objectives: In the degenerative scoliosis, the low back pain is the most frequent clinical symptom. In these patients an axial rotation of the spinal segments causes deterioration of spinal discs and facet joint and neuro-axial pain. Author evaluated retrospectively the efficacy and safe profile of continuous radiofrequency of the posterior branch of medial nerve.

Methods: After selective trial with intrarticular Z-joint injection of 5 mg of bupivacaine, eight consecutive patients with scoliosis were been candidates for continuous radiofrequency of the posterior branch of medial nerve. The group was composed of six women and two men (mean age range 41–65). In all eight patients neurotomy's treatment was performed



bilaterally in three segments at least of lumbar region; in five patients, clinical presentation of pain and the trial phase indicated the thermorizotomy in four consecutive segments of thoracic and lumbar segments.

Results: The mean duration of pain relief in seven of the eight patients was maintained for 12 months, and the relief is continuing in the other two. Only one patients had a second neurotomy, after extension of procedure to the thoracic vertebrae. Overall 85% of patients reported a significant pain relief following the procedure as far as one year. No complication was been recorded.

Conclusion: Facet joints Syndrome in scoliotic adult patients could betreated with the radiofrequency of medial branch of posterior ramus of lumbar spinal nerves.

WIP-0506 PROLOTHERAPY FOR SACROILIAC JOINT PAIN

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Objectives: Prolotherapy induces a localised inflammatory response, stimulating the growth of collagen fibres and connective tissue for the non-surgical treatment for chronic musculoskeletal pain in damaged ligaments or tendons. A previous study of 25 sacroiliac joint (SIJ) pain patients reported a functional improvement of 76% following prolotherapy.[1] This study set out to investigate the efficacy of prolotherapy in treating SIJ instability.

Methods: We assessed 131 patients injected with 1.5 ml Narapin 0.75% and 10 ml 50% glucose over multiple sites around the SIJ, repeated on average three times, at 6-week intervals. Outcome measures at 6 and 12 months post therapy included pain relief, strengthening, disability (ODI), patient satisfaction and analgesic use.

Results: At 12 months stability and pain relief improved by 65.8 ± 29.9% and 50.2 ± 33.3%, respectively. Pain relief is dependent on improved stability $r = 0.617$; ($p \leq 0.0001$). In turn, improvement in pain relief and strength directly correlated with the number of prolotherapy injections in a series $r = 0.422$; ($p \leq 0.01$) and $r = 0.265$; ($p \leq 0.05$) respectively. Pain relief was also found to be directly correlated with the number of injected sites during each treatment (e.g., unilateral, bilateral etc.) $r = 0.289$; ($p \leq 0.05$). By 12 months, of the patients using analgesics, 45.8% reduced their use and a statistically significant 8.2 point reduction in disability was observed.

Conclusion: These findings suggest that prolotherapy can be an effective treatment for increasing strength and function, whilst decreasing pain in patients with SIJ pain.

Conflict of interest

Reference:

[1]Cusi et al. Br J Sports Med. 2010 Feb,44(2):100–4.

WIP-0561 CONCORDANCE BETWEEN REFERRED CONDITIONS AND PAIN CHARTS

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Objectives: A staggering 80% of the population will experience low back pain. Irrespective of this, mainstream medical practices have a limited understanding of low back pain (LBP) and referred pain from the pelvis, sacrum, buttocks etc. For example, force imposed on the low back from a pelvic imbalance or the sacrum initiating torque force on the lower back. In this study we investigated the accuracy of LBP referrals to an interventional pain specialist facility.

Methods: We retrospectively compared the low back pain diagnoses proposed in referral letters from General practitioners ($n = 104$), Neurologist/Neurosurgeon/Orthopedic Surgeons ($n = 34$), Osteopaths ($n = 6$), Physiotherapists ($n = 9$) and Sports Physicians ($n = 30$), with the outcome of pain charts used by the specialist pain unit following evidence based algorithms.

Results: Results showed that referral letter diagnoses of LBP were often subsequently identified by pain specialists as pain arising from the hip, sacrum, pelvis and buttock. In particular, Sports physicians and Neurologists/Neurosurgeon/Orthopedic surgeons were most likely to correctly refer patients for low back pain approximately 50% of the time ($W = 0.533$, $p = 0.001$, $W = 0.541$, $p = 0.001$, respectively). General practitioners demonstraed a unanimity with the pain specialist 47% of the time ($W = 0.587$, $p = 0.001$). Small sample numbers for Osteopath and Physiotherapist referrals prevented conclusive results, however the trend suggested that Osteopaths were the

least concordant (W = 0.00, p = 0.063), whilst physiotherapists demonstrated strong agreement and were correct 50% of the time (W = 0.444, p = 0.046)
Conclusion: Low back pain is often misdiagnosed, resulting in increased costs to both the patient and society with limited therapeutic benefits. Improvements in low back pain education are imperative for enhanced patient care.
Conflict of interest

WIP-0515 DETERMINING THE IMPACT OF RADIOGRAPHIC PARAMETERS ON THE LOWER BACK PAIN AMONG KOSOVO POWER PLANT WORKERS

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Objectives: Lower Back Pain (LBP) is a very common disorder in the general population. Its prevalence rate on worker population depends heavily on occupational factors. Although some specific risk factors have already been identified, such as; heavy weight lifting, lifestyle as well as psychosocial factors, the disorder's exact etiology remains still unclear.
The aim of this study is to determine the influence of some etiological and radiographic parameters on the occurrence of LBP in worker population from different units.
Methods: The examinees from Kosovo Energy Corporation (KEC), were split into two working groups: the first group consisted of production workers (those who work indoors and outdoors) while the second group consisted of administration workers. The following methods for data collection were used: a survey through a standardized questionnaire, a comprehensive clinical, radiological and biochemical evaluation, and an ergonomic survey. The severity of LBP was evaluated based on 0–10 range visual analogue scale.
Results: Through the model of multivariate logistic regression analysis on productivity workers, (OR-55.67; 95% CI 19.87–155.97, p = 0.05) and on administration workers (OR-23.37; 95% CI 8.48–64.45, p = 0.05) we've concluded that there is a significant difference between these two groups regarding the impact of degenerative diseases in the occurrence of LBP.
Conclusion: Degenerative changes of the dynamic vertebral segment are the main cause of LBP.
Workers who experience degenerative changes, such as: disc space narrowing, osteophytes, spondylosis, spondilolysis and spondilolysthesis and sclerosis are at greater risk of developing LBP than those who do not have these changes.

WIP-0483 SPINAL CORD STIMULATION (SCS) OF THE DORSAL ROOT GANGLION (DRG) FOR THE TREATMENT OF CHRONIC LOW BACK PAIN IN FBSS: PROSPECTIVE RESULTS AND POTENTIAL MECHANISMS

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Objectives: Chronic low back pain (CLBP) in failed back surgery syndrome (FBSS) patients is a common, debilitating and costly complaint (Frey et al. 2009). The failure of traditional SCS to effectively treat CLBP is probably multi-factoral but two significant challenges are a thick layer of CSF at T8-T11 (Struijk et al. 1993) and unclear pathophysiology responsible for the CLBP. SCS of the DRG offers a promising alternative treatment option for CLBP patients who are refractory to conventional medical management.
Methods: Fourteen FBSS subjects were enrolled and underwent trial therapy where specifically designed leads were implanted at the target DRGs (L1–L3). Subjects who had a successful trial (>50% improvement in their primary area of pain) received the fully implantable neuromodulation system. Pain scores on visual analog scale (VAS) and quality of life metrics were captured.
Results: Baseline VAS was 75.0 ± 2.9 mm (Median ± SE, n = 14) reduced to 34.0 ± 8.4 mm (n = 13), a 52.9% (±10.3%) reduction at 6 months. Seven (53.8%) and four (30.8%) subjects had >50% and >80% pain reduction, respectively. EQ-5D index score improved from 0.273 ± 0.067 to 0.713 ± 0.094 ($p < 0.05$). Good paresthesia coverage over the pain area was observed with minimal change with body position.
Conclusion: Preliminary results from the treatment of CLBP in FBSS patients with SCS of the DRG are promising. Three subjects with the best clinical response had leads implanted at the L2 DRG and have anamnesis suggestive of discogenic LBP. Potential mechanisms are discussed further.
Conflict of interest

WIP-0197 RELATIONSHIP BETWEEN SYMPTOM SIDE AND MUSCLE ATROPHY IN PATIENTS WITH UNILATERAL CHRONIC LOW BACK PAIN

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Objectives: We (J. Physi. Ther. Sci, 2011) have previously reported muscle atrophy and transversus abdominis muscle asymmetry in patients with chronic low back pain (CLBP). Atrophy of the multifidus muscle on the symptomatic side has also been reported in CLBP patients. However, there are no similar reports of abdominal muscle atrophy associated with CLBP. In this study, we compared the thickness of the abdominal muscles on the symptomatic and asymptomatic side in patients with unilateral CLBP.
Methods: Data were obtained from 30 patients with unilateral CLBP (8 men and 22 women, 51.4 ± 17.0 years old). Prior to the study, all patients provided written informed consent. The thicknesses of the rectus abdominis, external oblique, internal oblique, and transversus abdominis muscles were measured using ultrasonography. We compared the thickness of each muscle between the symptomatic and asymptomatic side, and between the larger and smaller side, using a t-test. Significance was defined as $p < 0.05$.
Results: There were significant differences between the larger and smaller side in the external oblique (lager/smaller: 6.6 ± 1.8 mm / 5.6 ± 1.3 mm, $p<0.05$) and transversus abdominis muscles (lager/smaller: 3.8 ± 1.0 mm / 3.1 ± 0.7 mm, $p<0.01$). However, there were no significant differences between the symptomatic and asymptomatic side in any of the measured muscles.
Conclusion: It is thought that bilateral contraction of the abdominal muscles increases intra-abdominal pressure and stabilizes the spine. Therefore, we can say that it is not necessarily that symptom side accords with atrophy side.

WIP-0214 ANALGESIC EFFECT OF 10 KHZ HIGH-FREQUENCY SPINAL CORD STIMULATION (HF10 SCS): PRELIMINARY RESULTS OF A COMPARATIVE STUDY (CONVENTIONAL SCS VS. HF10 SCS)

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Background: High frequency spinal cord stimulation at 10 kHz (HF10 SCS) represents an important advance in SCS pain therapy. Recent clinical and basic science studies have suggested that HF10 SCS may effectively reduce pain in absence of paresthesia

Objective: The objective of the study is to compare the effectiveness in pain relief of two different types of stimulation (conventional SCS vs. HF10 SCS).
Material and methods: Thirty-two patients with FBSS being eligible for SCS were enrolled in the study. A psychological assessment was conducted before implant. Patients' pain ratings, disability, quality of sleep, pain medication, patient satisfaction and complications were assessed for up 6 months
Results: After 6 months SCS reduces the intensity of pain (−68% HF10 SCS group, −66% Conventional SCS group). There were significant improvements both in disability and quality of sleep. Oswestry score decreased in all groups (−51% HF10 SCS group; −47% conventional SCS group). More than 50% of patients reduced or stopped oral medications. No differences were found between groups
Conclusions: SCS provided significant and sustained low back and leg pain relief to more 90% of subjects. Notably in HF10 SCS group this was achieved without paresthesia with a consequently higher patients' satisfaction. Moreover with the HF10 SCS intra-operative trial is not necessary, this allow to reduce surgical procedure time and radiation exposure both for the patient and the physician.

WIP-0499 SACROILIAC JOINT DIAGNOSTIC INTRA-ARTICULAR INFILTRATION – RANDOMIZED, DOUBLE BLIND STUDY

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Objectives: Sacroiliac joint (SI joint) pain can be relieved by intra-articular infiltration of local anesthetics with or without corticosteroids. Since there is no consensus in the literature regarding the injected drugs, the aim of this study was to investigate the effectiveness of different medications.
Methods: Patients aged 18–70, with SI joint pain, and three or more positive provocation tests for SI joint pain, were included. Patients were randomly assigned to one of the groups: 2 ml 2% lidocaine; 1 ml lidocaine 2% with 40 mg methylprednisolone; or 2 ml of 0.9% NaCl. The infiltration was performed under the fluoroscopy. The effectiveness was evaluated with NRS pain scores. Pain relief of >2 point was interpreted as clinically relevant. Data were analyzed with parametric (t-test) or non-parametric tests (Mann–Whitney and Kruskal–Wallis), whereby $p < 0.05$ was statistically significant.
Results: Thirty-four patients (8 men, 26 women), mean age 47 years (SD 10.98), were included. Mean pain relief after the infiltration was 0.2 (SD 3.27) in the lidocaine group, 1.08 (SD 2.36) in the placebo group, and 2.5 (SD 3.01) in de lidocaine-methylprednisolone group. A statistically significant was the mean pain relief between the groups was observed at the day 3 ($p = 0.034$), 7 ($p = 0.013$), 9 ($p = 0.021$), 12 ($p = 0.02$), and 28 ($p = 0.004$). In the group of lidocaine-methylprednisolone was the mean pain relief clinically relevant.
Conclusion: The difference between the groups was not consistent during the follow-up; however, these results provide an indication that infiltration with lidocaine-methylprednisolone is superior for pain relief compared to placebo and lidocaine.

WIP-0460 EVALUATION OF RELATIONSHIP BETWEEN AGE, GENDER, AND BODY MASS INDEX, AND LUMBAR FACET JOINT PAIN

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Introduction: Lumbar facet joint pain account for between 5% and 15% of cases of chronic, axial low back pain. Most commonly, facetogenic pain is the result of repetitive stress and/or cumulative low level trauma, leading to inflammation and stretching of the joint capsule.
Method: In this descriptive study, 76 patients that were diagnosed, after a diagnostic block, as lumbar facet joint pain were evaluated by age and sex, and body mass index. Data collected according to a checklist and entered to SPSS version 16.
Result: The mean age of participants were 48.53 years old. Prevalence of lumbar facet joint pain in the age range of 40–55 years was more than other ranges. Forty-four women and 32 men diagnosed as lumbar facet joint pain. At the end, 40.8% of patients with the BMI about 24.5–29.5 kg/m^2 were the largest group with lumbar facet joint pain according to BMI.
Conclusion: Based on our findings, the chance of developing to lumbar facet joint pain in women, patients between 40 and 55 years old and patients with BMI about 24.5–29.5 kg/m^2 is more than others.

Neuropathic Pain

WIP-0228 EFFECTIVENESS OF TAPENTADOL PROLONGED RELEASE (PR) VERSUS OXYCODONE/NALOXONE PR FOR SEVERE CHRONIC LOW BACK PAIN WITH A NEUROPATHIC PAIN COMPONENT

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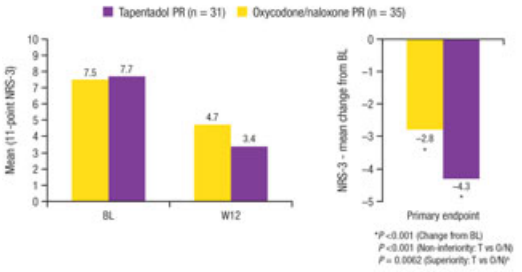
Objectives: To evaluate effectiveness of tapentadol PR versus oxycodone/naloxone PR, including effects on neuropathic pain.
Methods: In this ongoing, open-label, Phase IIIb/IV study, eligible patients (average pain intensity [NRS-3] ≥6 and painDETECT 'positive'/'unclear' ratings) are randomized to twice-daily tapentadol PR 50 mg or oxycodone/naloxone PR 10 mg/5 mg. After 21-days titration (maximum twice-daily doses: tapentadol PR 250 mg or oxycodone/naloxone PR 40 mg/20 mg plus oxycodone PR 10 mg), target doses are continued for 9 weeks. The primary efficacy endpoint is change in NRS-3 from baseline (randomization) to final evaluation. PainDETECT and Neuropathic Pain Symptom Inventory (NPSI) questionnaires evaluated effects on neuropathic pain-related symptoms. Interim results are presented [77/240 (32.1%) planned patients].
Results: In this interim subset, for the primary efficacy endpoint, the effectiveness of tapentadol PR was non-inferior, and, based on descriptive analyses, even superior, to oxycodone/naloxone PR [LSMD (97.5% CI), −1.5 [−2.9, −0.2]; Figure 1). Improvements in painDETECT and NPSI scores were significantly greater with tapentadol PR versus oxycodone/naloxone PR ($P \leq 0.01$; Table 1).

Figure 1. Mean pain intensity at baseline and Week 12 and mean change in pain intensity from baseline to final evaluation (LOCF; per protocol set).



LOCF, last observation carried forward; NRS-3, numerical rating scale-3; PR, prolonged release; BL, baseline; T, tapentadol PR; O/N, oxycodone/naloxone PR.
*Descriptive analyses.

Conclusion: For tapentadol PR, results indicate superior effectiveness and greater improvements in neuropathic pain-related symptoms versus oxycodone/naloxone PR.
Conflict of interest

WIP-0446 NEUROPATHIC PAIN RELIEVED BY A PERCUTANEOUS PNS LEAD DESIGNED TO RESIST MIGRATION, FRACTURE AND INFECTION

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Objectives: Determine if a peripheral nerve stimulation (PNS) lead designed to resist migration, fracture, and infection can relieve neuropathic pain when placed percutaneously under ultrasound guidance.
Methods: The 0.2 mm lead wire is coiled in a spring-like design to reversibly stretch and flex to resist fracture and migration. Its coiled construction encourages healthy tissue-ingrowth, providing a natural barrier against infection. The percutaneously inserted lead stimulated major (sciatic and/or femoral) nerve trunks in amputees with moderate-to-severe neuropathic pain. A unique approach enabled lead placement under ultrasound guidance up to 3 cm away from the nerve trunk to provide comfortable paresthesia coverage without evoking muscle contractions.
Results: Significant pain relief (average: 76%) and paresthesia coverage (average: >90%) was successfully obtained in 14 of 16 (88%) subjects. Subjects who obtained comfortable coverage and completed the 2-week home trial reported reductions in their average residual limb pain (RLP; 72 ± 28%, n = 7), average phantom limb pain (PLP; 81 ± 28%, n = 7), RLP interference (81 ± 27%, n = 6), PLP interference (83 ± 31%, n = 7), and pain disability index (70 ± 38%, n = 9) after the second week. There were no migrations, fractures, or infections and no unanticipated adverse events.
Conclusion: A percutaneous PNS lead designed to resist migration, fracture, and infection, placed under ultrasound guidance up to 3 cm away from major peripheral nerve trunks, can provide relief of neuropathic pain using a minimally invasive approach that does not require surgical exposure of the nerve.
Funding: This work was sponsored by NDI Medical, Cleveland, OH and supported in part by the National Institute of Neurological Disorders and Stroke (R43NS066523).
Conflict of interest

WIP-0462 ASSESSMENT OF PAIN-RELATED PSYCHOLOGICAL DISTRESS AND IMPACT ON SELF-RATED HEALTH IN DANISH SOLDIERS INJURED IN AFGHANISTAN

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Objectives: To investigate the correlation between pain characteristics, mental health issues, and self-rated health in wounded soldiers.
Methods: A retrospective review of standardised questionnaires [PainDETECT (PD-Q), PTSD Checklist-Civilian (PCL-C), The Hospital Anxiety and Depression Scale (HADS), and EuroQOL Visual Analogue Scale (EQ-VAS)] administered to injured soldiers.
The participants were classified into three groups according to the PD-Q: non-neuropathic pain (NNP); possible neuropathic pain (PNP); and definite neuropathic pain, (DNP).
Results: A total of 53 participants were included. On an 11-point VAS, the average pain intensity for the past 4 weeks was in median (interquartile range) 3 (1–4), while the mean intensity rating when pain was at its worst was 4 (2–7).
Furthermore, 21% had neuropathic pain, whereas 51% had nociceptive pain. The median PCL-C score was 26 (22–31), the median anxiety score was 4 (2–6.5), and the median score for depression was 2 (1–5). Evidence of a neuropathic pain component correlated positively with the PCL-C score (rho = 0.469, P = 0.000) and HADS-A score (rho = 0.357, P = 0.009), but negatively with the EQ-VAS score (rho = −0.361, P = 0.008).
Conclusion: The results from the present study suggest that neuropathic pain are related to increased psychological distress and deterioration in self-rated health in injured soldiers.
Conflict of interest

WIP-0134 PERIPHERAL NERVE NEUROMODULATION, AN UNDERUTILIZED MODALITY

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Objectives: Peripheral nerve stimulation (PNS) is a well-established yet underutilized method of addressing chronic neuropathic pain. Neuromodulation may oftentimes be a last resort in cases of failed neurolysis and/or neurectomy. Barriers to implementation of neuromodulation include denial of insurance approval for trials of stimulation and off-label FDA use of spinal cord stimulation technology.
Methods: The authors review their single institution experience of peripheral nerve neuromodulation between July, 2012 and June, 2013. Pain was self-reported using the Visual Analogue Scale (VAS). Outcomes at last follow-up were also ranked as excellent, good, fair, poor, and bad.
Results: A total of 20 patients underwent ultrasound-guided PNS implantation during a one year period. Of the 20, 82% had either an excellent, good (1) or fair (2) outcome. In the remaining three patients, one had a poor outcome, and two had bad outcomes (one requiring explantation for infection, and one lead migration requiring ultimate explantation). Of those with a good or excellent outcome, the average length of pain suffering prior to implantation was 5.1 years, compared to 10.1 years in the group with bad outcome ($p < 0.001$).
Conclusion: Peripheral neuromodulation is an underutilized technology for carefully selected patients. The authors were able to develop a successful peripheral neuromodulation program. Factors leading to good success rate include a low lead migration rate due to ultrasound guided placement of the lead, novel method of intra-clinic trialing leading to insurance pre-approval for all successfully trialed patients, and a novel method for greater auricular nerve stimulation in cases of migraine.

WIP-0358 NEUROPATHIC PAIN COMPONENTS IN PATIENTS WITH CANCER: PREVALENCE, TREATMENT AND INTERFERENCE WITH DAILY ACTIVITIES

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Objectives: Neuropathic pain (NP) severely impacts quality of life of patients with cancer. To get better insight into this problem data on pain, pain with neuropathic characteristics (NPC), treatment and interference with daily activities in outpatients with cancer were collected.
Methods: A cross-sectional prevalence study among patients with cancer visiting an outpatient department (OPD) of a Dutch university hospital. To identify pain, pain intensity and interference of pain with daily activities and pain medication, the Brief Pain Inventory (BPI) was used. NPC were identified with the Douleur Neuropathique (DN4) interview, and pain characteristics with the McGill Pain Questionnaire (MPQ). Descriptive statistics, X^2 tests, Mann–Whitney U-tests and logistic regression analysis were conducted.
Results: In total 892 patients filled in the questionnaire. Twenty-three percent (n = 204) reported moderate to severe pain, and 19% (n = 170) scored positive on NPC (≥3 components). Of the patients with NPC, 8% received adjuvant pain treatment as tricyclic anti-depressants (TAD) and/or anti-epileptic Drugs (AED). Particularly in patients with NRS <5, existence of NPC significantly increased interference with daily activities. Receiving curative treatment, using a systemic drug with high toxicity, having had an operation, and having had a lymph node dissection independently contributed to NPC, and also the number of different types of anti-tumour interventions.
Conclusion: This study shows that many patients with cancer suffer from NPC. NPC independently interferes with daily activities. Yet, most of these patients do not receive optimal pain treatment. There is a need to improve neuropathic pain management at the OPDs.

WIP-0447 PREVALENCE OF NEUROPATHIC PAIN AND RELATED FACTORS IN ADVANCED AGE: A MULTICENTER RESEARCH

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Objectives: With aging, there is an increase in the prevalence of pain. However, information on epidemiologic data of neuropathic Pain In The Elderly is inadequate. In our multicenter study, we aimed at determining the prevalence of neuropathic pain in elderly patients and the relationship of neuropathic pain with sociodemographic and clinical characteristics.
Methods: A total of 1163 patients who presented with pain complaint to physical medicine and rehabilitation outpatient clinics in 13 centers and 8 cities from various regions of Turkey were included in the study. The clinical and sociodemographic data were collected through face-to-face interviews. The DN 4 and Lanss Pain Scale were used to assess neuropathic pain in patients.
Results: Neuropathic pain was found in 52.5% of those who were included in the study. 67.5% of the patients were in the 65–74 age interval and 72.1% of them were female. Concomitant diseases included osteoarthritis by 41.6%, low back pain by 35.2%, osteoporosis by 29%. The complaints that accompanied neuropathic pain were fatigue by 75.1%, insomnia by 63.6%, anxiety by 44.8% and loss of appetite by 27.2%. The regions where pain was most severe were lower back (23.8%), feet and ankle (19.5%) and knee (19%).
Conclusion: Neuropathic pain was seen more frequently in women, those with a lower level of education, those leading a sedentary life, those who had rheumatic-endocrine diseases and those who used multiple drugs. Questioning the elderly for neuropathic pain seems important for an effective treatment.

WIP-0229 SAFETY/TOLERABILITY OF TAPENTADOL PROLONGED RELEASE (PR) VERSUS OXYCODONE/ NALOXONE PR FOR SEVERE CHRONIC LOW BACK PAIN WITH A NEUROPATHIC PAIN COMPONENT

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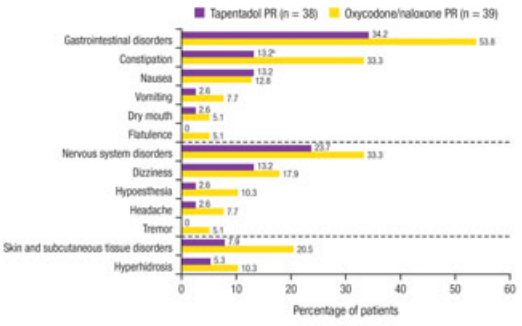
Objectives: To evaluate safety/tolerability of tapentadol PR versus oxycodone/naloxone PR.
Methods: Eligible patients [average pain intensity (NRS-3) ≥6 and painDETECT 'positive' or 'unclear' ratings] in this ongoing, open-label, Phase IIIb/IV study are randomized to twice-daily tapentadol PR 50 mg or oxycodone/naloxone PR 10 mg/5 mg. After 21-days titration (maximum twice-daily doses: tapentadol PR 250 mg or oxycodone/naloxone PR 40 mg/20 mg plus oxycodone PR 10 mg), the target dose is continued for 9 weeks. Change in bowel function [evaluated using the Patient Assessment of Constipation Symptoms (PAC-SYM) total score] from baseline (randomization) to final evaluation is a primary endpoint. Interim results are presented [77/240 (32.1%) planned patients].
Results: The PAC-SYM score did not change significantly from baseline with tapentadol PR (n = 31; mean [SD] change, −0.06 [0.095]) or oxycodone/naloxone PR (n = 35; 0.02 [0.091]), showing non-inferiority between treatments (Figure 1).
Conclusion: A low impact on bowel function was observed in both groups, with a numerically better outcome for tapentadol PR. Tapentadol PR was well tolerated with significantly less gastrointestinal TEAEs and constipation during titration versus oxycodone/naloxone PR.
Conflict of interest

Figure 1. Gastrointestinal, CNS, and skin-related TEAEs reported by ≥5% of patients in either treatment group during the whole treatment period (safety population, interim results).[a]



CNS, central nervous system; TEAE, treatment-emergent adverse event; PR, prolonged release.
[a]Descriptive analyses.
[b]P <0.05 versus oxycodone/naloxone PR.

WIP-0230 EFFECTS OF TAPENTADOL PROLONGED RELEASE (PR) VERSUS OXYCODONE/NALOXONE PR ON QUALITY-OF-LIFE/FUNCTION MEASURES IN PATIENTS WITH SEVERE, CHRONIC LOW BACK PAIN WITH A NEUROPATHIC PAIN COMPONENT

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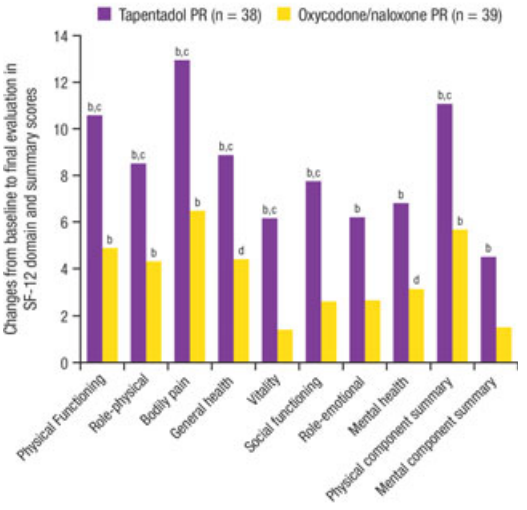
Objectives: To evaluate the impact of tapentadol PR and oxycodone/naloxone PR on quality-of-life and function measures.

Methods: In this ongoing, open-label, Phase IIIb/IV study, eligible patients [average pain intensity (NRS-3) ≥6; painDETECT 'positive' or 'unclear'] are randomized to tapentadol PR 50 mg bid or oxycodone/naloxone PR 10 mg/5 mg bid. After titration over 21 days (maximum doses: tapentadol PR 250 mg bid or oxycodone/naloxone PR 40 mg/20 mg bid plus oxycodone PR 10 mg bid); the target dose is continued for 9 weeks. Quality-of-life and function measures include the Short Form-12 (SF-12) and EuroQol-5 Dimension (EQ-5D) questionnaires. Interim results are presented (77/240 [32.1%] planned patients).

Results: All mean SF-12 domain and summary scores improved significantly with tapentadol PR ($P \leq 0.002$), with significantly greater improvements than oxycodone/naloxone PR in six domains and the physical component summary score (Figure 1). The mean EQ-5D health status index score improved significantly ($p = 0.004$).

Figure 1. Changes from baseline to final evaluation in SF-12 domain and summary scores (least square mean, LOCF; full analysis set, interim results).[a]



LOCF, last observation carried forward; SF-12, Short Form-12; PR, prolonged release.
[a]Descriptive analyses.
[b]$P \leq 0.002$ for the change from baseline.
[c]$P < 0.05$ versus oxycodone/naloxone PR, in favor of tapentadol PR.
[d]$P \leq 0.03$ for the change from baseline.

Conclusion: Tapentadol PR was associated with greater improvements in quality-of-life and function measures than oxycodone/naloxone PR for severe, chronic low back pain with a neuropathic pain component.

Conflict of interest

WIP-0477 OUTPATIENT INTRAVENOUS KETAMINE AND EPIDURAL STEROIDE FOR THE TREATMENT OF COMPLEX REGIONAL PAIN SYNDROME: CASE REPORT

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Objectives: Explanation of a multimodal approach.

Methods: Thirty years old male K.S. 2 years after Op. (Resectio egzostosis reg. tuberositas tibiae lt. dex. et suturae lig. patellae lat. dex.) developed Complex Regional Pain Syndrome (CRPS).

First choice therapy was ketamine as the most potent clinically available safe NMDH antagonist. Patient was infused intravenously (i.v.) with normal saline 100 ml with Ketamine 100 mg (25 ml/h) daily for 6 days.

Second chioce therapy was epidural levobupivacaine with dexamethasone 4 mg without fluoroscopy at the L4–L5 level every 2 weeks five times.

Atropine 1 mg i.v. was necessary because of bradicardia (42/min). Complete cardiological evaluation was regular.

Finally next medicaments were prescribed: calcium, magnesium, D3 vitamine, alprazolam and fluvoksaminmaleate.

Results: The symptoms on 19.02.2013: neuropathic pain (24 PD-Q Mapi Research Institute), dynamic VAS was 7–8, static VAS was 3; insomnia, syndroma anxyosodepresivum, muscular hypotrophy and iregular sympathetic regulation of the dexter leg.

Patient was walking with staff.

Electromyoneurography (EMNG): radiculopathya on the level S1 on the both sides and axons damage of the motoric branches nervus tibialis posterior.

The symptoms on 13.02.2014: patient is without any therapy, uses staff only when walking downstairs, has regular sympathetic regulation without pain, sleeps well, physical therapy 1 hour daily.

Conclusion: Multimodal therapy resulted in reduction of the pain parameters and improved the sympathetic regulation.

WIP-0511 ATYPICAL OTALGIA

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Objectives: Case report.

Methods: Forty-one year old female who attended the pain clinic with complains of constant pain in her ears which started following exposure to loud noise at work. She described it as a burning sensation.

Results: Examination was insignificant i.e. no TMJ dysfunction was identified. She was started on antineuropathics but no pain relief was obtained. She received PRF, acupuncture but no benefit was achieved. She did get some relief with noise generators and then was tried on auriculotemporal nerve block with good results.

Conclusion: Neuralgia associated with auriculotemporal nerve is experienced in the temporal region, TMJ, parotid, auricular and retro-orbital region. Auriculotemporal nerve originates from the mandibular branch of the trigeminal nerve. It innervates the auricle.The middle ear is supplied by the auriculotemporal and tympanic nerves and by the auricular branch of the vagus.Auriculotemporal nerve is considered a cause of pain in TMJ dysfunction. But in the patient described, TMJ abnormality was not found but still the patient received benefit from ATN injections suggesting that auriculotemporal nerve may be a cause of pain in patients in whom apparently no other source of ear pain could be found.

References:

Refractory facial pain attributed to auriculotemporal neuralgia. *J Headache Pain*, July 2012.

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WIP-0482 LONG TERM OUTCOMES USING SPINAL CORD STIMULATION (SCS) OF THE DORSAL ROOT GANGLION (DRG) IN THE TREATMENT OF COMPLEX REGION PAIN SYNDROME (CRPS)

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Objectives: When conventional medical management fail to provide adequate pain relief in complex regional pain syndrome (CRPS), traditional spinal cord stimulation (SCS) is a recommended treatment option [1]. We report data from 21 subjects with CRPS from four prospective studies using a SCS of the dorsal root ganglion (DRG).

Methods: Twenty one subjects diagnosed with CRPS underwent trial therapy. Specifically designed leads were implanted at the target DRGs and upon a successful trial (>50% improvement), subjects received fully implantable neuromodulation systems. Pain scores on visual analog scale (VAS) and quality of life (EQ-5D) were also captured at follow-up visits.

Results: Foot pain at baseline and 12 months were 85.9 ± 10.2 mm (Mean ± SD, N = 16) and 20.0 ± 31.7 mm (N = 7), respectively (77.5 ± 33.5% improvement). Leg pain scores improved by 71.0 ± 41.0% at 12 months. EQ-5D Index Score improved from 0.315 ± 0.044 to 0.573 ± 0.116 ($p < 0.05$). A subset of subjects with CRPS of the knee (N = 4) reported 72.1 ± 23.9% improvement in their knee pain at 3 months.

Conclusion: SCS of the DRG provided long-term pain relief in CRPS subjects with concomitant improvement in quality of life. Subjects also reported improved mobility and showed remission in some sympathetically-maintained symptoms such as swelling and discoloration.

Conflict of interest

Reference:

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WIP-0285 THE EFFECTS OF INTERCOSTOBRACHIAL NERVE BLOCK ON ACUTE AND CHRONIC PAIN AFTER UNILATERAL MASTECTOMY AND AXILLARY LYMPH NODE DISSECTION SURGERY

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Objectives: The postmastectomy pain syndrome is a common situation regarded as a chronic neuropathic pain after surgery for breast cancer. In this study we have investigated the effects of intercostobrachial nerve blockade during breast surgery on postoperative analgesic consumption and chronic neurophatic pain incidence.

Methods: Sixty patients who underwent modified radical mastectomy with axillary dissection for breast carcinoma under general anaesthesia were randomly divided into two groups, In the first group intercostobrachial nerve was blocked with 10 cc 0.5% bupivacaine, then five minutes later nerve was sectioned from the distal part (Group BT; n = 30). In the second group nerve was sectioned without blockage (Group T; n = 30). For postoperative analgesia tramadol PCA was administered for all patients. Pain severity (VAS), analgesic consumption, hemodynamics, and side effects were recorded in the first 48 hours postoperatively. The frequency of neuropathic pain was assessed using the Douleur Neuropathique 4-question survey (DN4) and visual analog scores in the first postoperative week, and first and third postoperative months. DN4 score ≥4 was accepted as neuropatic pain.

Results: DN4 scores on the 1st postoperative week and 3rd postoperative month and VAS scores on the 1st week, 1st and 3rd postoperative month after surgery were significantly lower in Grup BT compared to control group (Fig 1 and 2). No significant difference was observed in acute Postoperative Pain scores, tramadol consumption, hemodynamics and adverse effects such as nausea-vomiting between groups.

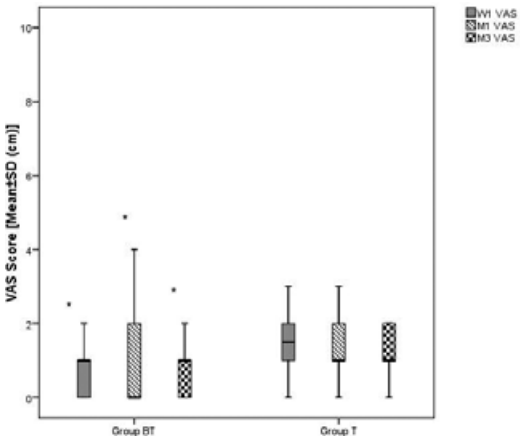

Figure 1. VAS scores *p < 0.05.

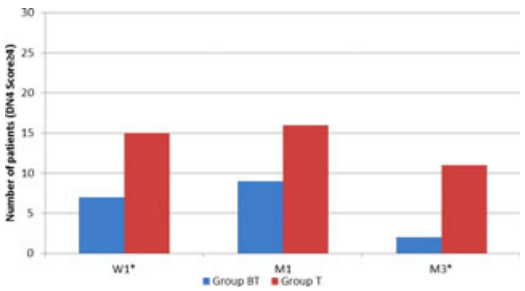

Figure 2. Neuropatic pain at 1 week, 1 and 3 month after surgery *p < 0.05.

Conclusion: This study showes that intercostobrachial nerve block is an effective method to reduce the chronic neuropathic pain development after a breast cancer surgery but did not decrease acute Postoperative Pain.

WIP-0288 NEUROPATIC PAIN AFTER VERTEBROPLASTY-CASE REPORT

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Background: Vertebroplasty provides excellent functional restoration of osteoporotic fractures. However, a short-term complication such as cement leakage is well described.
Aim: To show patient with a neuropathic pain as the complication resulting from cement leakage after vertebroplasty.
Method and patient: Sixty-one year-old woman was admitted to rehab due to paralysis of the lower extremities and pain in the lumbosacral part of the spine and left leg. She underwent kyphoplasty for pathological fractures of L1 vertebra. A neurological deficit occurred due to cement leakage into the spinal canal. Reintervention was performed with vertebroplasty. The neurological deficit still remained after the surgery. It included incomplete lesions of the spinal cord below L3 level with bilaterally severe pain and tactile allodynia in dermatome L3 and hyperesthesia in dermatome L4 in the left leg. Visual Analog Scale (VAS) and DN4 Questionnaire (VAS = 8/10, DN4 = 8/10) were used for pain evaluation. Pregabalin 75 mg, 2 × 1 and tramadol 50 mg, 2 × 1 were administered.
Result: Reassessment of pain 7 days after the treatment: VAS = 8/10. The daily dose of pregabalin was increased to 150 + 0 + 75 mg. After increasingthe dose, mouthdryness and dizzinessoccurred, and therefore the therapywas reduced to 75 mg, 2 × 1. One month after the treatment: VAS = 6/10, DN4 = 6/10. Allodynia and hyperesthesia disappeared; pain in the lumbosacral spine is still maintained.
Conclusion: Pregabalin plus tramadol therapy with this patient, despite the side effects, gave results in eliminating allodynia and hyperesthesia, but it had no effect in pain relief in lumbosacral spine.

WIP-0344 DIAGNOSTIC CUT-OFF VALUE FOR ULTRASONOGRAPHY IN THE ULNAR NEUROPATHY AT THE ELBOW

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Objectives: To determine the diagnostic value of ultrasonographic measurements in ulnar neuropathy at the elbow (UNE).

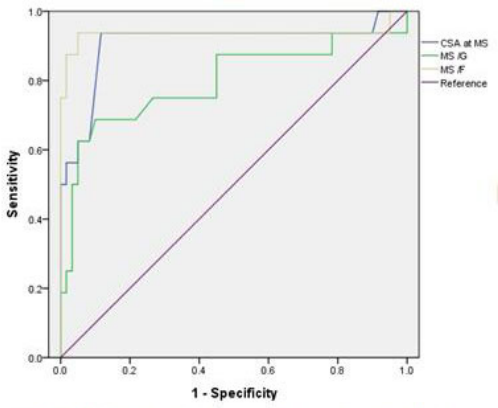

Figure 1. A receiver operator characteristic (ROC) curve showing the relationship between sensitivity and specificity for each ultrasonographic parameter in diagnosis of ulnar neuropathy at the elbow.

Table 1. Baseline characteristics of subjects

Variables	Control	Ulnar neuropathy
Number	30	25
Sex M : F	15 : 15	16 : 9
Age (years)	45.23±13.46	49.3±12.22
Duration of symptom (months)		34.66±32.02
Side (right : left)	30 : 0	11 : 14

Values are mean ± standard deviation or the number of cases

Table 2. Ultrasonographic measures of the subjects

	Control	Ulnar neuropathy
CSA at Guyon's canal (mm^2)	4.28±0.69	4.72±0.98
CSA at midforearm (mm^2)	6.38±1.09	6.00±1.50
CSA at MS or cubital tunnel inlet (mm^2)	7.51±1.25	12.20±4.99
MS /G	1.79±0.38	2.66±1.18
MS /F	1.19±0.19	2.22±1.11

Table 3. Sensitivity and Specificity of Cut-Off Values

	Cut-off value	Sensitivity (%)	Specificity (%)
CSA at MS	8.95 (mm^2)	93.8%	88.3%
MS/W	1.99	75%	73.3%
MS/F	1.48	93.8%	95%

Values are mean ± standard deviation
CSA : Cross-sectional area, MS : Maximal swelling point
G : Guyon's canal, F : Midforearm

Methods: Twenty-five elbows of 23 patients with ulnar neuropathy at the elbow and 30 right elbows of healthy controls underwent ulnar nerve ultrasonography at the Guyon's canal, midforearm, maximal swelling point (MS) around elbow (cubital tunnel inlet in healthy controls). Cross-sectional area (CSA) measurements of the ulnar nerve at each point, the Guyon's canal-to-MS ulnar nerve area ratio (MS/G) and the midforearm-to-MS ulnar nerve ratio (MS/F) were analyzed.
Results: Among the variables, only CSA at MS, MS/G, and MS/F displayed significant differences between the control and the patient group. The cut-off value in diagnosing UNE were 8.95 mm^2 for the CSA at MS (sensitivity 93.8%, specificity 88.3%), 1.99 for the MS/G (sensitivity 75%, specificity 73.3%), and 1.48 for the MS/F (sensitivity 93.8%, specificity 95%).
Conclusion: These findings show that both CSA at MS and MS/F are the valuable ultrasonographic measurements for diagnosing UNE.

WIP-0263 DIAGNOSTIC CUT-OFF VALUE FOR ULTRASONOGRAPHY IN THE ULNAR NEUROPATHY AT THE ELBOW

S. Ko, H. Park, S. Won, W. Rhee
Department of Rehabilitation Medicine, Yeouido St. Mary's Hospital The Catholic, Seoul, Korea

Objectives: To determine the diagnostic value of ultrasonographic measurements in ulnar neuropathy at the elbow (UNE).
Methods: Twenty-five elbows of 23 patients with ulnar neuropathy at the elbow and 30 right elbows of healthy controls

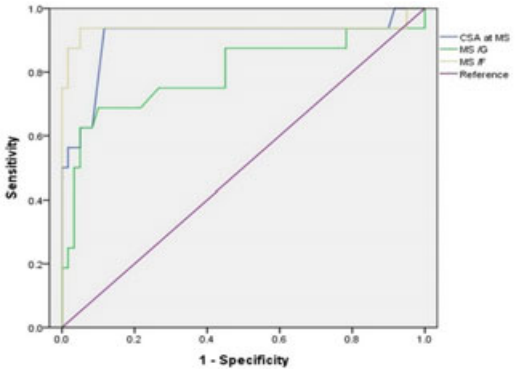

Table 1. Baseline characteristics of subjects

Variables	Control	Ulnar neuropathy
Number	30	25
Sex M : F	15 : 15	16 : 9
Age (years)	45.23±13.46	49.3±12.22
Duration of symptom (months)		34.66±32.02
Side (right : left)	30 : 0	11 : 14

Values are mean ± standard deviation or the number of cases

Table 2. Ultrasonographic measures of the subjects

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CSA at Guyon's canal (mm^2)	4.28±0.69	4.72±0.98
CSA at midforearm (mm^2)	6.38±1.09	6.00±1.50
CSA at MS or cubital tunnel inlet (mm^2)	7.51±1.25	12.20±4.99
MS /G	1.79±0.38	2.66±1.18
MS /F	1.19±0.19	2.22±1.11

Table 3. Sensitivity and Specificity of Cut-Off Values

	Cut-off value	Sensitivity (%)	Specificity (%)
CSA at MS	8.95 (mm^2)	93.8%	88.3%
MS/W	1.99	75%	73.3%
MS/F	1.48	93.8%	95%

Values are mean ± standard deviation
CSA : Cross-sectional area, MS : Maximal swelling point
G : Guyon's canal, F : Midforearm

underwent ulnar nerve ultrasonography at the Guyon's canal, midforearm, maximal swelling point (MS) around elbow (cubital tunnel inlet in healthy controls). Cross-sectional area (CSA) measurements of the ulnar nerve at each point, the Guyon's canal-to-MS ulnar nerve area ratio (MS/G) and the midforearm-to-MS ulnar nerve ratio (MS/F) were analyzed.
Results: Among the variables, only CSA at MS, MS/G, and MS/F displayed significant differences between the control and the patient group. The cut-off value in diagnosing UNE were 8.95 mm^2 for the CSA at MS (sensitivity 93.8%, specificity 88.3%), 1.99 for the MS/G (sensitivity 75%, specificity 73.3%), and 1.48 for the MS/F (sensitivity 93.8%, specificity 95%).
Conclusion: These findings show that both CSA at MS and MS/F are the valuable ultrasonographic measurements for diagnosing UNE.

WIP-0560 SPINAL INTERVENTIONS FOR INTRACTABLE NEUROPATHIC ITCH

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Objectives: Brachioradial pruritus (BRP) is a neurogenic itch syndrome[1] which is believed to be a variant of neuropathic pain. The itch is described as intense, burning and tingling, usually localized to skin of the upper extremities overlying the brachioradialis muscle.[2] It was first reported in 1968 under the term "Solar Keratosis".
Methods: Two Caucasian patients presented to the outpatient pain clinic with longstanding burning intractable pruritus localized to both the dorso-lateral aspect of his arms, neck and shoulders. Pruritus worsened on sunlight exposure and was relieved by cold sponges. Clinically the skin was unremarkable other than the scratch lesions, clear trigger points in Trapezius and hypoesthesia around the neck region.MRI Cervical spine showed facet disc degenerations with marginal osteophytes and disc protrusions compressing exiting nerve roots.
Results: Patient were treated as per the British Pain Society Neuropathic Pain guidelines with Pregabalin, Amitryptilline, Lidocaine 5% patch and later Capsaicin cream with minimal improvement. Their enigmatic pruritus responded dramatically to the cervical facet and epidural steroid injections.
Conclusion: Brachio-radial pruritus is a neuropathic itch caused by a disturbance along the sensory afferent pathway conveyed via un-myelinated C or Aδ fibres. BRP is unique in it's presentation, and owing to its low prevalence there are no evidence-based standardized treatment options.
References:
[1]Waisman M. Solar pruritus of the elbows (brachioradial summer pruritus). Arch Dermatol. Nov 1968, 98(5):481–5.
[2]Heyl T. Brachioradial pruritus. Arch Dermatol. Feb 1983, 119 (2):115–6.
[3]Veien NK, Hattel T, Laurberg G, Spaun E. Brachioradial pruritus. J Am Acad Dermatol. Apr 2001, 44(4):704–5.

WIP-0429 A CASE REPORT OF NEUROPATHIC PAIN IN A FAMILY WITH FABRY DISEASE

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Background: Fabry disease is an X-linked lysosomal storage disorder caused by the alterations in *GLA* gene encoding alpha-galactosidase A. Fabry disease is characterized by burning or shooting pains in hands and feet.
Methods: Case report.
Patient 1 (son):
A 20-year-old man complained of pain in his hands and feet since childhood. He recalled that pain was aggravated during spiking fever or after exercise. On physical examination, tiny red-purple papules were symmetrically distributed over shoulder, lower trunk and inguinal areas. Skin biopsies from thigh were consistent with angiokeratoma. The clinical symptoms and histological findings suggested Fabry disease. Enzyme activity of alpha-galactosidase A was decreased below the lower limit of normal value (2.4 nmol/hr/mg).
Patient 2 (mother):
The mother of patient 1 was 49 years old. She reported that she experienced burning pain in her hands and legs since childhood.

Physical examination was normal. Enzyme activity of alpha-galactosidase A was within normal value (51.6 nmol/hr/mg).
Results: Mutational analysis: We performed direct sequencing for all seven exons and flanking intron regions of *GLA* gene. We indentified a missense mutation, c.1045T>C (p.Trp349Arg) mutation in exon7. This mutation in the *GLA* gene completely cosegregated with affected status within the family.
Conclusion: In this case report, we present a family with Fabry disease with characteristic neuropathic pain and skin lesions. We must pay attention to these clinical features because early diagnosis and treatment leads to good prognosis in Fabry disease.

WIP-0361 COMBINED THERAPY WITH CAPSAICIN 8% PATCH AND LIDOCAINE 5% PATCH FOR THE TREATMENT OF NEUROBORELLIOSIS: A CASE REPORT

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Departement of Neuroscience Psychiatric Science and Anesthesiology, Specializzation School of Anesthesia and Intensive Care University of Messina, Messina, Italy
Objectives: Neuroborreliosis is a possible post infectious, severe painfull radiculopathy that can affect approximately the 8–12% of patients with Lyme disease.
Methods: A 41 years old man, with laboratory confirmed Borreliosis, affected by chronic, severe pain which manifested itself since the third week after diagnosis and persisted for about three years as an asymmetrical, unilateral, severely disabling radiculopathy of the left shoulder. Burning pain, hot/cold allodynia, disestesia and hypelagesia were been identified, after a trigger point infiltration with 3 ml of lidocaine 1%. After NSAIDs, tramadol, oxycodon and acetaminophen, amitriptyline, pregabalin administration without benefit, patient was been treated with three application of 60 minutes of Capsaicin 8% patch with a regular interval of 30 days and with the daily application (for 12 hours) of a 5% Lidocaine patch, 150 mg/daily of Pregabalin and Oxycodon titrated up to 40 mg per day.

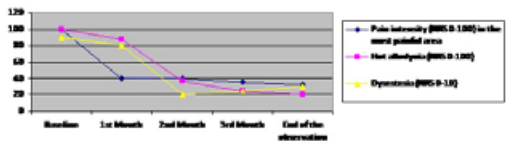
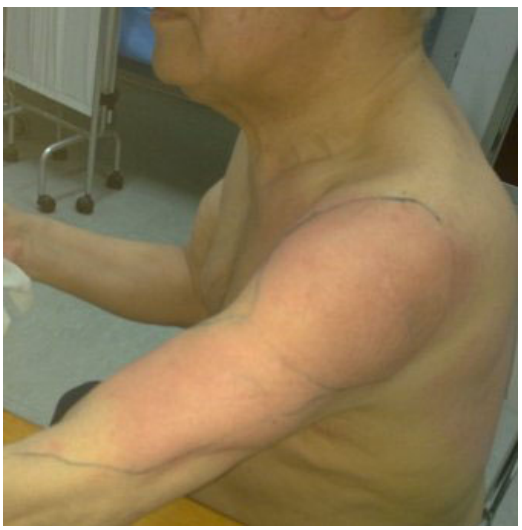


Figura 1 Results



Results: Pain intensity decreased (see the graph) since the third day after the application of Capsaicin patch and analgesic effect endured for 28 ± 5 days. The treatment was been tolerated quite well. After 105 days of combined treatment patient expressed a significant reduction of pin intensity (NRS 3–4) with occasional discomfort, thermic allodynia disappeared, while an intermittent, soft paresthesia continued to be appreciated. Oxycodon and pregabalin were down titrated until both of them were been suspended.
Conclusion: This case shows the utility of a combined approach both on the first neuron of sensitivity (with capsaicin and lidocain) and on spinal and sovra spinal mechanism that control pain.

WIP-0362 CAPSAICIN AND LIDOCAIN PATCHES FOR TREATMENT OF PERIPHERAL PAINFUL NEUROPATHIES: THE EXPERIENCED OF THE CIVIL HOSPITAL IN TAORMIN, SICILY

C. Lo Giudice
Department of Neuroscience Psychiatric Science and Anesthesiology, Specializzation School of Anesthesia and Intensive Care University of Messina, Messina, Italy
Objectives: Aim of the study is to describe the safety and effectiveness of cyclic application of 8% capsaicin patch in real clinical practice in East part of Sicily.
Methods: This is an observational non-intervention prospective cohort study concerning patients with moderate-severe (NRS 50–100) neuropathic pain of non-diabetic etiology. General clinical information, number of visits, intervals and duration of treatment with 8% capsaicin and 5% Lidocaine patch, pain intensity, change in painful area, occurrence of adverse events and consumption of opioids, adjuvants and analgesics were recorded.
Results: The 107 patients (43 men, 64 women, mean age 59 ± 14 years) were followed-up for 6 months. Major diagnoses were post-traumatic, post-surgical, post-herpetic neuralgia, small fiber radiculopathy, neuroborelliosis and HIV related neuropathy. The magnitude of pain, hot/cold allodynia and dysestehesia intensity were measured before, 3 and every 30 days after application of capsaicin and lidocaine patch. The average pain intensity measured on the NRS score decreased from 6.7 at baseline to 4.0 ($P < 0.05$) after 6 months. 65% of patients experienced pain reduction of at least 30% after 1 month of treatment. 42% of patients reported local and 4% systemic adverse events. Pain area was reduced in 44% of patients, which was associated with significant decrease in pain intensity ($P < 0.01$). During the study period, sum of 2.5 patches of capsaicin and 2.3 patches of lidocaine were used on average per patient.
Conclusion: The data confirmed effectiveness of 8% capsaicin patch in patients with peripheral neuropathy.

WIP-0470 THE PRESENCE OF MU- AND KAPPA- BUT NOT DELTA- OPIOID RECEPTORS ON MICROGLIA WEAKENS ANALGESIA AFTER SELECTIVE LIGANDS IN RAT MODEL OF NEUROPATHIC PAIN

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Objectives: Neuropathic pain is resistant to alleviation by morphine in clinical and animal studies, however the mechanism of this phenomenon is not clear.
Methods: The Wistar rats were implanted with intrathecal catheters and 7 days later sciatic nerve injury was performed. To describe the role of glial activation in analgesic effect of opioid receptors agonists we investigated the influence of minocycline-induced inhibition of microglial activation on the analgesic effects of nonselective (morphine) and selective

(DAMGO, U50,488H, DPDPE and Deltorphin II) opioid receptor agonists in a neuropathic pain model n rats. The level of spinal opioid receptors mRNAs and in microglia cell cultures was measured using qPCR and Western blot.
Results: We demonstrated that minocycline administration significantly reduced allodynia and hyperalgesia. The antiallodynic and antihyperalgesic effects of intrathecally (it) administered morphine, DAMGO and U50, 488H were significantly potentiated after minocycline, but no changes were observed in the effect of DPDPE and deltorphin II administration. Furthermore, nerve injury-induced down-regulation of all types of opioid receptors in the spinal cord and DRG was not influenced by minocycline. Our study in rat primary microglial cell culture using qPCR, Western blotting and immunocytochemistry revealed the presence of MOR and KOR but not DOR on microglial cells.
Conclusion: In summary, DOR analgesia is not dependent on injury-induced microglial activation, as in the case of MOR and KOR receptors. In light of these results, DOR agonists appear to be the best candidates for new drugs to be used in neuropathic pain.
Acknowledgements: Supported by NCN2011/03/B/NZ4/00042, 2012/07/N/NZ3/00379, 2012/06/A/NZ4/00028 and statutory funds.

WIP-0524 PAIN IN NEUROFIBROMATOSES

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[1]*Neurosciences, Ospedale Papa Giovanni XXIII,*
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Objectives: Pain may be a problem in Neurofibromatoses, due to occasional occurrence of peripheral neuropathy both in Neurofibromatosis type 1 (NF1) and in Neurofibromatosys type 2 (NF2); moreover, pain seems the main symptom, due to severity, in patients affected by Schwannomatosis (SCH), the third form of Neurofibromatosis.
Methods: In the NF Bergamo Center of HPG23 since 2005, we have found 22 cases (19 definite, 3 probable) affected by SCH, over more 800 NF patients examinations.
Results: Mean age was 46, 62 (range 26–80); 16 females (26–80) and 8 males (33–57). 13 of them 59.1% complained of different types of pain: spontaneous (2), at pressure (10), pseudoradicular (4), shock (6); most had mixed pain and were submitted to analgesic treatment.
Conclusion: In SCH tumors originate in Schwann cells which form the nerve sheaths except in cochleo-vestibular nerves, fact that differentiates SCH from NF2.
Incidence is calculated 1/40.000 newborns, similar to NF2. Median age at symptom onset is generally 30 years. In the literature pain is reported as the most common presenting symptom, referred by 57% of patients and in the many cases pain is not associated with a discrete mass.
At contrast pain is only occasionally reported in NF1, where neuropathy is a frequent neurological manifestation, and in NF2 where it takes rarely the form of a cranial (facial palsy) or a spinal (foot drop) indolent mononeuropathy.
In our patients, pain seems to be the cardinal manifestation of SCH, a rare and poorly known disease.

WIP-0478 SYSTEMIC, INTRATHECAL OR PERINEURAL ADMINISTERED GLUCOCORTICOIDS LACK ANALGESIC PROPERTIES IN A PRECLINICAL NEUROPATHIC PAIN MODEL IN RATS

M. Rijsdijk[1], C.I. Svensson[2], A.J.M. van Wijck[1], T.L. Yaksh[3]
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Objectives: Epidural glucocorticoids are widely used in the treatment of pain. The efficacy of glucocorticoids for neuropathic pain however, remains debated. This study examined the effects of intrathecal, perineural and systemic glucocorticoids on pain-like behavior and pain-associated markers in a rat model of neuropathic pain.
Methods: Rats received unilateral ligation of the L5/L6 spinal nerves and were treated at different timepoints with the maximum tolerable dose of (1) dexamethasone (10 μg), methylprednisolone sodium succinate (MP) (40 μg) or methylprednisolone acetate (MPA) (400 μg) intrathecally, (2) dexamethasone (0.25 mg) or MP (1.5 mg) intraperitoneally or, (3) dexamethasone (40 μg), MP (40 μg) or MPA (40 μg) perineurally. Mechanical thresholds were measured over time. DRG and spinal cords were harvested for immunohistochemistry and qPCR to assess markers of neuronal damage (ATF3) and glial cell activation (GFAP, Iba1).
Results: None of the glucocorticoid treatments reduced ligation-induced mechanical hypersensitivity at any timepoint. While *intrathecal* MPA only reduced signs of spinal glial activation (GFAP/Iba1), the effect of *perineural* MPA remained limited to the DRG, decreasing neuronal damage (ATF3). Systemic glucocorticoids had no effect on these ligation-induced changes in DRG ór spinal cord dorsal horn.
Conclusion: High concentrations of glucocorticoids applied locally (intrathecal or perineural) had effects upon nerve injury evoked changes in surrogate markers, but unexpectedly reliably failed to reduce mechanical hypersensitivity. Explanations for this dissociation include insufficient glucocorticoid-passage across the blood brain barrier leaving pain-driving mechanisms intact either in DRG or spinal neurons.

WIP-0466 THE INFLUENCE OF MICROGLIA ACTIVATION ON THE EFFICACY OF AMITRIPTYLINE, DOXEPIN, MILNACIPRAN, VENLAFAXINE AND FLUOXETINE IN MODEL OF NEUROPATHIC PAIN

E. Rojewska, M. Zychowska, W. Makuch, B. Przewlocka, J. Mika
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Objectives: Antidepressants are often used for the treatment of neuropathy, but the role of glial activation in their analgesic response is not known.
Methods: We examined the neuropathic pain-relieving properties of antidepressants, amitriptyline, doxepin, milnacipran, venlafaxine and fluoxetine, after intraperitoneal (*i.p.*) injection 7 days after sciatic nerve injury (CCI) in rats and its influence on microglia (IBA-1) and astroglia (GFAP) activation in the spinal cord and DRG.
Results: Our results indicate that all tested antidepressants significantly antagonised CCI-induced allodynia. Amitriptyline and milnacipran did not alter hyperalgesia, but the other antidepressants antagonised hyperalgesia. The strongest effect was observed after fluoxetine administration. A Western blot analysis demonstrated that *i.p.* injection of amitriptyline or milnacipran under neuropathic pain caused the upregulation of the IBA-1 in the lumbar spinal cord and DRG, whereas fluoxetine produced a downregulation. The doxepin did not influence the IBA-1 in either structure, but venlafaxine decreased it in the DRG only. No changes in the GFAP level in the spinal cord or DRG were observed after any antidepressant administration. Minocycline enhanced amitriptyline and milnacipran, but not fluoxetine analgesia under neuropathic pain. Amitriptyline and milnacipran administered alone relieved pain and inhibited microglia activation, so are not recommended for neuropathic pain.
Conclusion: Our results suggest that nerve injury-induced pain is associated with the activation of microglia, which is diminished by fluoxetine treatment. Therefore, fluoxetine is the best treatment for neuropathic pain.
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WIP-0405 PERCUTANEOUS IMPLANTED PADDLE LEAD FOR SCS: TECHNIQUE AND FOUR YEARS FOLLOW UP

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Objectives: Spinal cord stimulation is an established method for treatment of chronic pain. Cylindrical type leads can be implanted percutaneously. Yet paddle type leads offer several advantages over cylindrical type leads, including less lead migration and better paraesthesia coverage. The presented technique combines advantages of both approaches. The goal of this study was to demonstrate the long term safety and efficacy of a slim line paddel lead for SCS.

Methods: Data was collected prospectively. The patients were implanted with a slim line paddle lead using a introduction system for percutaneous implantation. All implantations have been done under local anesthesia. Prior to the final implantation of the IPG (Eon mini; SJM, Plano, TX, USA), all patients underwent seven days of trial stimulation. Median follow-up was 27 months.

Results: The 330 patients have been implanted so far. All patients preesented a combined leg and lower back pain. The data shows excellent clinical outcome for paraesthesia overlap and pain reduction with a risk profile comparable to known percutaneous techniques (median VAS reduction 7–3). They were no major complications. Compared to the literature (up to 30%) the rate of lead migration was low (1.26%).

Conclusion: Our data shows this meanwhile well known minimal invasive percutaneous approach to be effective and safe in a follow up series for more than four years. The approach is less invasive. It offers a faster and more comfortable procedure with stable long term results.

Conflict of interest

WIP-0378 BURST OR TONIC STIMULATION? FIRST RESULTS OF A PLACEBO CONTROLLED, DOUBLED BLINDED, RANDOMIZED STUDY FOR THE TREATMENT OF FBSS PATIENTS

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Objectives: Spinal cord stimulation is an established method for treatment of chronic pain in FBSS patients. In the last decades only tonic stimulation patterns were used to modulate the pain. There were several reports that indicate that burst stimulation offers other opportunities and advantages. The goal of this study was to evaluate the pain level during placebo stimulation, burst stimulation, 500 Hz tonic stimulation with tonic 40–50 Hz stimulation as a baseline.

Methods: The study was designed as a double blind, randomized, prospective, cross over study. 20 patients were enrolled and completed the study at the investigational site. The patients were randomized to one of six treatment sequences

Results: The data shows that the NRS scores were significantly lower during burst stimulation compared to either 500 Hz stimulation or placebo stimulation, indicating that burst stimulation results in greater pain relief. Significantly more patients preferred burst stimulation over all other stimulation modes. There were no adverse events during the study.

Conclusion: The results of this study indicates that burst stimulation reduces pain intensity and pain quality significantly as compared to tonic 500Hz, tonic 40-50 Hz and Placebo stimulation

Conflict of interest

WIP-0589 CAPSAICIN PATCH 8% USE IN INTRACTABLE NEUROPATHIC PAIN

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Objectives: Neuropathic pain (NP) affects 8% of the population in Europe. Despite treatment, for 50% of them the pain is intractable.

Capsaicin 8% patch, is mainly used to treat post herpetic neuralgia and HIV-associated neuropathy.

Methods: We are presenting three patients who suffered from intractable NP, who however responded well to the capsaicin 8% patch.

Results: Case 1. A 51-year old woman, suffering from failed back surgery syndrome, was experiencing severe NP (VAS 9/10) despite the use of medication and central neurostimulation. The implantation of an intrathecal pump led to adverse events, and it was removed. A trial of the patch led to a significant improvement of pain (VAS 5/10).

Case 2. A 68-year old woman with a history of spinal stenosis and rheumatoid arthritis, was experiencing severe NP (VAS 9/10). Oral treatment and central neurostimulator achived only a 20% reduction in the intensity of her pain (VAS 7/10). However, the patch reduced the intensity of pain to moderate levels (VAS 4/10).

Case 3. A71-year old woman, suffering from post-herpetic neuralgia (VAS 8/10), did not respond well to medication and subcutaneous neurostimulation. However, a trial of the patch led to a more than 50% reduction of the intensity of pain (VAS 3/10).

Conclusion: We report a case series of patients with resistant NP that responded in treatment with capsaicin 8% patch when other treatments showed minimal effectiveness. Although further controlled studies are needed to explore the efficacy of capsaicin 8% patch in patients who experience intractable NP, we encourage clinicians to try capsaicine 8% patch when alternative treatment fail.

WIP-0490 IDENTIFICATION OF NEUROPATHIC PAIN IN CERVICAL RADICULOPATHY – APPLICATION OF QUANTITATIVE SENSORY TESTING AND A SCREENING TOOL

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Objectives: To investigate the presence of neuropathic pain (NeP) in patients with painful cervical radiculopathy (CxRAD), using quantitative sensory testing (QST) and the Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) screening questionnaire.

Methods: Twenty-three patients (8 females, 46 $\pm$ 10 years) with a unilateral painful C6 or C7 cervical radiculopathy (clinical signs of sensory and motor nerve root impairment with a demonstrable clinically relevant abnormality on imaging studies) participated. The LANSS was completed before QST. The QST protocol of the German Research Network on Neuropathic Pain was performed in the maximal pain area. Reference data were obtained in 31 healthy control (HC) subjects. QST data were *z*-transformed using the included HC data. The study was approved by Ethics Committees of all participating institutions and all participants signed written informed consent.

Results: Patients with CxRAD were characterized by a loss of function (thermal, mechanical, vibration detection $P < 0.009$)

and cold hypersensitivity (P = 0.001) in the maximal pain area. All patients demonstrated at least one sensory alteration outside the 95% HC confidence interval. These sensory alterations were confirmative for the presence of NeP. Five (22%) patients with CxRAD demonstrated a NeP component according to the LANSS score.
Conclusion: QST data suggest that NeP is likely to be observed in patients with painful CxRAD. The LANSS failed to identify the majority of patients with NeP.
Acknowledgement: This study was supported by the National Health and Medical Research Council (Grant 425560), Arthritis Australia and the Physiotherapy Research Foundation.

WIP-0347 VALIDITY OF THE DN4 IN PATIENTS AFTER BREAST CANCER

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Objectives: The reported prevalence of pain after treatment for breast cancer ranges from 13% to 93%. The presence of nerve damage plays a key-role in the development of chronic pain. The aim of this study was to validate the Dutch language version (Dlv) of the 7-items (interview only) and 10-items (interview and examination) 'Douleur Neuropathique 4 Questions' ($DN4_{-Dlv}$), a screening instrument for the neuropathic component of pain, in patients after treatment for breast cancer.
Methods: Cross-sectional design to assess the validity of the $DN4_{-Dlv}$. The "gold standard" for neuropathic pain is based on the independent diagnosis of the pain of the patient by two experienced pain physicians using a standardized clinical protocol. The medical and ethical review board gave approval to conduct this study. All patients gave written informed consent.
Results: Eighty-five patients (mean age 56 ± 9 years) were included. Mean pain (NRS0-10) over the past 4 weeks was 3.5 ± 2.4. Analyzed were 63 patients who had the same pain diagnosis (neuropathic pain component yes/no) by both physicians. The $DN4_{-Dlv}$ 7-items (AUC: 0.79) resulted in a youden-index of 0.48, corresponding to a cut-off score of 3/7, sensitivity 75% and a specificity of 73%. Results for $DN4_{-Dlv}$ 10-items (AUC: 0.85): 0.54 (cut-off score of 4/10), 81% and 73%.
Conclusion: The $DN4_{-Dlv}$ is a reliable and easy-to-use instrument in daily practice to screen for a neuropathic pain component in patients after breast cancer.
This study was performed within DALI for PAIN, a national program that focuses on neuropathic paincare optimalisation. DALI for PAIN is an initiative of Pfizer. This project was supported by an unrestricted grant from Pfizer.

WIP-0366 TIME TO ONSET OF PAIN RELIEF IN ELEVATE: AN OPEN-LABEL, RANDOMISED, MULTICENTER NON-INFERIORITY EFFICACY AND TOLERABILITY STUDY

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Objectives: Peripheral Neuropathic Pain (PNP) has a devastating impact on patients' lives and it poses a high burden on healthcare resources. Topical high concentration (8%) capsaicin patch (QUTENZATM) and oral Pregabalin are effective treatments for PNP. ELEVATE was the first randomised Clinical Trial to compare efficacy and tolerability of these drugs in patients with PNP.
Methods: The 568 subjects were randomized to one of two treatment arms: QUTENZATM (single application of up to four patches) or Pregabalin (daily administration at a flexible, optimized dose). All subjects recorded average pain scores for 8 weeks. One of the main endpoints of ELEVATE was "time to onset of pain relief." The onset date of pain relief was the date of the first NPRS score out of three consecutive with a 30% reduction from baseline. Adverse events, laboratory tests and vital signs were recorded for safety analysis.
Results: Median time to pain relief (where 50% of subjects had a 30% reduction in "average pain for the past 24 hours") was 7.5 days (95% CI 6.0, 10.0) for the QUTENZATM versus 36 days (95% CI 22.0, 50.0) for the Pregabalin arm. The hazard ratio adjusted on country-gender-NPRS at baseline was 1.68 in favor of QUTENZATM (95% CI 1.35, 2.08), $p < 0.0001$.
Conclusion: Time to onset of pain relief was significantly shorter for the QUTENZATM arm. It will be shown in the poster that the ELEVATE trial also met its primary endpoint, demonstrating that QUTENZATM is as effective as Pregabalin for the treatment of PNP.
Conflict of interest

WIP-0383 ULTRA-LOW DOSE NALOXONE PREVENTS MORPHINE-INDUCED HSP90 FRAGMENTATION: PROTEOMICS STUDY

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Objectives: As we known, long-term morphine treatment leads to tolerance. We previously demonstrated that ultra-low dose naloxone restores the antinociceptive effect of morphine in morphine-tolerant rats *via* suppresses microglia activation. However, microglia constitute only 5–12% of all cells in the central nervous system (CNS), which leads to some impartment role of microglia been ignored. Therefore, in the present study, we further investigated the effect of ultra-low dose naloxone in morphine-induced activated microglia EOC13.31 cells.
Methods: EOC13.31 mouse microglia cells were treated with DMEM or ultra-low dose (1 nM) naloxone 30 minutes before addition of medium or 1 μM morphine and incubation for 2 h at 37°C in a 5% CO_2 atmosphere. The cells were then collected and perform followed analysis.
Results: Morphine not only significantly induced morphological changes of cultured EOC13.31 cells, but also induced heat shock protein 90 (HSP90) fragmentation. All of these changes were abolishable by pre-treatment with ultra-low dose naloxone.
Conclusion: This study provides evidence for ultra-low dose naloxone inhibits morphine-induced microglia activation by prevent HSP90 fragmentation.

WIP-0316 NEUROPATHIC PAIN IN FABRY DISEASE

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Objectives: Fabry disease is an X-linked lysosomal storage disease caused by the mutations in the GLA gene coding for the

lysosomal enzyme alpha galactosidase. Neuropathic pain episodes are common both in childhood and adulthood. These episodes are rarely consultated with a pain specialist. In this study our goal was to investigate the diagnostic yield of Lanss and DN4 scores which have not been used in Fabry disease until now, to our knowledge. We also aimed to keep track of these tests in the follow-up.
Methods: Eighteen patients aged between 8 and 51 years were enrolled in the study. The diagnosis of Fabry was confirmed by mutation analysis.Neurological examination, electroneuromyography, Lanss and DN4 tests, Beck Depression scale, Pittsburgh Sleep Quality Index, Fatigue Severity scale and Short Form Health Surveys of each patient were determined. The tests were repeated after enzyme replacement therapy (ERT).
Results: All patients had scores higher than 12 in Lanss and more than 4 "yes" answers which pointed out to a diagnosis of neuropathic pain. Both the pain and life quality scores before and after each and every two months of ERT (the patients received ERT every 2 weeks) regressed during ten months of therapy and this regression was statistically significant ($p = 0.001$).
Conclusion: Neuropathic pain diagnosis in Fabry patients deserves more attention. Lanss and DN4 scores seem to be reliable both in diagnosing and monitoring of neuropathic pain in Fabry patients. The pain scores before and after ERT show that this therapy is effective to cure neuropathic pain of Fabry disease.

WIP-0315 SPINAL CORD STIMULATION AND MICROGLIAL CELLS IN THE DORSAL HORN AFTER PARTIAL LIGATION OF THE SCIATIC NERVE IN THE RAT

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Objectives: Microglial cell activity is suggested to be related to the onset and maintenance of neuropathic pain. In this study we investigated the effect of Spinal Cord Stimulation (SCS) on microglial cell activity in a rat model of mononeuropathy.
Methods: Sixteen days after partial ligation of the sciatic nerve, SCS was applied for 30 minutes at 50Hz. Animals were sacrificed 30 or 90 minutes after SCS and spinal cord tissue was collected for immunohistochemical identification of microglial cell Iba-1 in the dorsal horn. SCS was analyzed by its effect on mechanical hypersensitivity with the use of von frey testing.
Results: Partial ligation of the sciatic nerve resulted in a significant increase in Iba-1 gray value and area fraction in the dorsal horn after 16 days. No differences in Iba-1 staining were observed in rats receiving SCS compared to sham operated animals, regardless of behavioral response to treatment (70% responder $n = 11$, 30% non-responder $n = 5$).
Conclusion: Partial ligation of the sciatic nerve results in microglial cell activation in the dorsal horn. SCS treatment, applied for 30 minutes, does not affect Iba-1 expression within 90 minutes after treatment. In view of the immediate effect of SCS on the behavioral response to painful stimuli, analysis of early microglial cell activation markers is suggested.
Acknowledgements: This study was partially supported by a grant from Medtronic to Sofie Janssen and Maarten van Beek.

WIP-0496 HEALTH-RELATED PATIENT-REPORTED OUTCOMES DEMONSTRATE THAT DORSAL ROOT GANGLION (DRG) NEUROSTIMULATION FOR CHRONIC NEUROPATHIC PAIN PROVIDES LONG-TERM BENEFITS ACROSS MULTIPLE DIMENSIONS

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Objectives: DRG neurostimulation is an effective approach for relieving neuropathic pain. International recommendations for clinical trial design emphasize the value of assessing multiple domains within the patient's experience of pain. Therefore, this report uses a variety of patient-reported outcomes (PROs) to more fully describe the long-term effects achieved with this therapy.
Methods: Subjects with chronic neuropathic pain were implanted with a DRG neurostimulator and assessed through 12 months post-implantation. In addition to pain severity (via a standard visual analogue scale, VAS), PROs of affective/sensory pain qualities (McGill Pain Questionnaire), physical functioning (Brief Pain Inventory), emotional functioning (Profile of Moods Scale), quality of life (EQ-5D), improvement (Global Impression of Change), and satisfaction were captured and compared to pre-implantation scores.
Results: Subjects ($N = 32$) were 53% female, of mixed pain etiologies, and averaged 52.5 ($\pm$12.4) years of age. At 12 months post-implantation, VAS scores decreased by 56.3%, with 60% of subjects reporting at least 50% reduction. Improvements were observed in aggregate scores across all PROs. Importantly, 80% of subjects reported feeling 'better/much better', quality of life was improved by 64%, and satisfaction with therapy was 89%.
Conclusion: DRG neurostimulation reduces neuropathic pain intensity and results in improvements across multiple domains of functioning, mental outlook, and perceived quality of life. This suggests that in addition to being a clinically effective intervention, DRG neurostimulation carries personally-relevant participatory implications. Further research, including economic analysis, is necessary.
Conflict of interest

WIP-0227 NEW APPROACH TO THE MONITORING OF EFFICACY OF CAPSAICIN 8% PATCH TREATMENT

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Objectives: Chronic neuropatic pain ranks among the pains most difficult to treat. Capsaicin 8% patch became in last years modern option how to treat peripheral neuropathic pains condition. Treatment differs from standard therapeutic approaches as it consist from single patch application on the painful area with analgetic effect persisting for about 3 months.
Methods: Considering all specific aspects of this analgetic treatment we have designed a special examination form to improve choice of correct patient and dokument initial examination as well as the whole therapeutic process. We demonstrate practical use of this questionnaire by case of 45-year old

patient with serious post-herpetic lesion on left thoracic side, where was capsaicin 8% patch applied after failure of standard analgetic therapy.
Results: We display the course of treatment during one full year on four consecutive forms. They show a substantial analgetic effect, improvement of quality of life and significant decrease of concomitant analgetic medication as well as decrease in size of painful area and changes in the pain character. This case history demonstrates that capsaicin 8% treatment is effective and safe.
Conclusion: Capsaicin 8% patch became important part of treatment of neuropathic pain, especially if the pain is superficial and well deliminated. This is confirmed by being placed in the first line of treatment options in current guidelines. The questionnaire introduced by us should lead to improvement of patient's monitoring of this specific treatment and thus to improvement of its clinical use.

WIP-0399 CLINICAL EFFECT OF CONTINOUS SGB FOR THE TREATMENT OF TRIGEMINAL POST-HERPETIC NEURALGIA

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Objective: Trigeminal post-herpetic neuralgia is one of typical painful diseases of head or face area. This paper report clinical effect of continuous SGB with neurotin on trigeminal postherpetic neuralgia.
Methods: There are 60 cases, 30 is in-patient (group A) or outpatient (group B), of trigeminal post-herpetic neuralgia are investigated and index of pain types, sleeping condition and remain symptoms in zoster area are used. VAS,HMAD and thermography were used to analysis pain score, depression and local temperature.
Results: lightning pain, lancinating pain, burning pain are main complaint in clinical and average VAS score is 7.8. There are two sub-clinical types, irritable nociceptor group (42), deafferentation group (18),respectively. After continuous SGB with neurotin, the average VAS score is 3.2, recurrent rate is 20%; the control group is 5.6, recurrent rate is 43%. The effect is stable after 14–18 months follow up in group B. There are significantly surface temperature change can be seen in zoster scar area before and after treatment with the examination of thermography, the mean value between 1.2 to 5.8?
Conclusion: After treatment by continuous SGB with neurotin, the quality of life of patient markedly improve, the effect is better than the control group during average 12 months follow up.

WIP-0400 CPCEA AND OZONE INTERVENTION TREATMENT FOR PAIN-RELIEF OF CHEST PHN

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Objective: PHN is a typical painful disease. Patient controlled epidural analgesia (CPCEA) and ozone intervention treatment (OIT) for pain-relief of chest PHN are reported in this paper.
Methods: There are 60 cases of refractory chest PHN with an average PHN history for 2.5 years. 30 cases are out-patient (group A) and other 30 cases are in-patient (group B), oral 0.5 mg of methylcobalamin, tid; 200 mg of gabapetin, tid or 75 mg pregabalin, bid and two tablets of neurotropin, bid are given in group A; The oral medication in group B is same with group A and CPCEA (puncture point is T3/4–T10/11) with analgesia solution(200 ml with 0.1% ropivacaine, neurotropin 6 ml) is used, the base follow begin from 0.5 to 2 ml/hr. thoracic sympathetic and DRG ganglion treatment by OIT (20 μg/ml) under monitoring of CT scan. VAS and HAMD score are used to evaluate pain and psychological state, thermography is to monitor temperature. Follow up by telephone during average 18 months after treatment.
Results: Tightening, lancinating and burning pain are main complaint. Average VAS score is 6.8, HAMD score is 21.2; After CPCEA and OIT, the average VAS score in group A:B is 5.3:2.8; HAMD score is 18.3:10.6; local temperature of zoster scar area decrease 1.1 to 4.6? in group B. The recurrent rate is 56.6%:20%; The effect is stable after 18 months follow up and the itching, tighting, paresthesia of herpes area are improved about 50% in group B.
Conclusion: Therapeutic effect of PHN by CPCEA and OIT keeps satisfactory results during 18 months follow up.

WIP-0384 RESVERATROL REGULATES MORPHINE-INDUCED NEUROINFLAMMATION BY SUPPRESSES HDAC1 EXPRESSION

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Objectives: The present study was further examined the effects and mechanisms of Chinese herb resveratrol on attenuation of morphine-evoked neuroinflammation in morphine-tolerance rats.
Methods: Male Wistar rats were implanted with two intrathecal (i.t.) catheters; one catheter was connected to a mini-osmotic pump, used for either morphine (15 μg/h) or saline (1 μl/h) infusion for 5 days. On day 5, resveratrol (30 μg), DMSO (5 μl), or saline (5 μl) was injected via the other catheter immediately after discontinued morphine infusion. Three hours later, morphine (15 μg) was given intrathecally. All rats were received nociceptive tail-flick test every 30 min for 120 min after morphine challenge.
Results: Long-term morphine infusion induced antinociceptive tolerance, increased histone deacetylase 1 (HDAC1) expression, up-regulated inflammatory cytokines tumor necrosis factor-α (TNF-α), and increased TNF receptor-1 (TNFR1) but not TNFR2 expression in synaptosome fraction of tolerant spinal cord dorsal horn. Resveratrol pretreatment provided a significant antinociceptive effect of morphine in morphine tolerant rats, and it was associated with reversal of the up-regulated TNFR1 in the synaptosome fraction of morphine tolerant rat spinal cords. Furthermore, the increasing of HDAC1 in morphine tolerant rat spinal cord was also inhibited by resveratrol pretreatment. Moreover, chronic morphine infusion activated glial cells with increasing of TNF-α expression in morphine tolerant rat spinal cords and this effect was suppressed by resveratrol pretreatment before morphine challenge.
Conclusion: Attenuation of morphine tolerance by resveratrol is contributed by inhibition of neuroinflammation and down-regulation of TNFR1 expression; resveratrol regulates the TNFR1 expression might be involved in inhibition HDAC1 levels.

WIP-0147 THE EFFECT OF P-RF TREATMENT OF POSTERIOR TIBIAL NERVE FOLLOWED BY 40 MG METHYLPREDNISOLONE IN PATIENTS WITH PLANTAR FASCIITIS ON THE VAS SCORES OF PATIENTS

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Objectives: To investigate the change induced in the VAS scores of patients with plantar fasciitis by the pulsed RF of the posterior tibial nerve followed by 40 mg methylprednisolone.
Methods: Twenty-eight patients aged between 20 and 60 in the ASA I–II class were included in the study. The study was

conducted with a retrospective examination of the patient files. The VAS scores of patients in pre- and post-procedure week 1, month 1–6 and year 1 were queried. The pre-procedural changes in VAS scores in week 1, month 1–6 and year 1 were statistically analyzed.
Performance of the Procedure: A 5 mm radiofrequency lesion needle with a 0.5 mm active tip was guided to the nerve in the posterior tibial nerve site of the painful site of patients. After the confirmation of pain in the plantar site of the patient via sensorial stimulus, Pulsed RF of 5 minutes at 42°C with a frequency of 2 Hz was delivered. At the end of the procedure, 40 mg methylprednisolone combined with 2 ml isobaric bupivacaine were administered.
Results: The VAS scores in week 1, month 1–6 and year 1 were lower than the pre-procedural VAS scores at a statistically significant level, $p < 0.05$.
Conclusion: In patients with plantar fasciitis, the Pulsed RF treatment of the posterior tibial nerve followed by perineural administration of 40 mg methylprednisolone is effective on the VAS scores of patients in short, middle and long terms.

WIP-0146 THE EFFECT OF USG-ACCOMPANIED P-RF TREATMENT OF LATERAL FEMORAL CUTANEOUS NERVE FOLLOWED BY 40 MG METHYLPREDNISOLONE ON THE VAS SCORES OF PATIENTS WITH MERALGIA PARESTHETICA

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Objectives: To investigate the change induced in the VAS scores of patients with meralgia paresthetica by USG-accompanied pulsed RF of the lateral femoral cutaneous nerve followed by 40 mg methylprednisolone.
Methods: Twenty-three patients aged between 20 and 70 in the ASA I–II class were included in the study. The study was conducted with a retrospective examination of the patient files. The VAS scores of patients in pre- and post-procedure week 1, month 1–6 and year 1 were queried. The pre-procedural changes in VAS scores in week 1, month 1–6 and year 1 were statistically analyzed.
Performance of the procedure: The straight probe of USG was used to visualize the femoral lateral cutaneous nerve in the painful part of the patients and a 10 mm radiofrequency lesion needle with a 0.5 mm active tip was guided to the nerve. After the confirmation of pain upon sensorial stimulus when the motor stimulus could not be received, Pulsed RF of 5 minutes at 42°C with a frequency of 2 Hz was delivered. At the end of the procedure, 40 mg methylprednisolone combined with 2 ml isobaric bupivacaine were administered.
Results: The VAS scores in week 1, month 1–6 and year 1 were lower than the pre-procedural VAS scores at a statistically significant level, $p < 0.05$.
Conclusion: In patients with meralgia paresthetica, the USG-accompanied Pulsed RF treatment of the femoral lateral cutaneous nerve followed by perineural administration of 40 mg methylprednisolone is effective on the VAS scores of patients in short, middle and long terms.

WIP-0144 THE THERAPEUTIC EFFECT OF DORSAL COLON STIMULATION ON THE LOWER EXTREMITIES OF BURGER PATIENTS

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Objectives: To retrospectively examine the effects of dorsal column stimulation performed in patients, who have skin symptoms and shorter walking distances due to Burger-disease related circulation disorder in the lower extremity, on the VAS scores and walking distances of the patients.
Methods: Three male patients aged between 20 and 60, who were diagnosed with the Burger disease and had skin wounds, were included in the study. Performance of the procedure: Following the pre-operative preparation, an in-dwelling Lamitrode S Series pain assessment battery electrode was inserted in the patients; 15 days later, an in-dwelling pain battery generator was placed. The VAS scores and walking distances of patients in the baseline, week 1, month 1–3–6 and year 1 were recorded.
Results: The VAS scores in week 1, month 1–3–6 and year 1 were lower than the baseline VAS scores at a statistically significant level ($p < 0.05$). Their walking distances started to increase as of month 6. As of year one, their walking distances became longer than their pre-procedural walking distances at a statistically significant level ($p < 0.05$).
Conclusion: Dorsal column stimulation is an effective therapeutic method in lower extremities of Burger patients.

Neuropathic Pain: Central Nervous System

WIP-0453 OPIODS IN THE TREATMENT OF CHRONIC PAIN CAUSE CHANGES COGNITIVE PROCESSES BY CHANGING THE SPEED OF PERCEPTION AND ATTENTION

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Objectives: The aim of this study was to determine the effect of the treatment of chronic pain on cognitive processes including learning and memory methods.
Methods: Randomly selected patients were treated with opioid fentanyl puch and oral oxycontin from chronic musculoskeletal pain. The second group was treated with methyloprednisolone injections.
All patients underwent the neuropsychological examination before and after 3 months following tests VAS; CSQ; d2; BDI; WAIS; CVLT; QL-100;
Results: The results of preliminary tests noted the pain relief and satisfaction improvement. There were slight differences noticed in tests of memory and a clear statistical differences in the attention of D2 test $P < 0.005$ before and after the opiod therapy. Also the differences between steroids and local anesthetics group and opiods treated patients were noted.
Conclusion: The use of opioid therapy for chronic pain treatment can change the mental state of the patient especially after the disturbance due attention process, evaluated by D2 tests.

WIP-0502 SHOULDER PAIN AFTER STROKE

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Objectives: A common sequela of stroke is hemiplegic shoulder pain that can effect functional recovery and lead to disability. Some of the most frequently suspected factors contributing to shoulder pain include subluxation, contractures, complex regional pain syndrome (CRPS), rotator cuff injury, and spastic muscle imbalance of the glenohumeral joint.
Methods: We aimed to investigate the incidence and the type of shoulder pain and the relationship between demographics, clinic and therapy. Of 100 consecutive hemiplegic patients were examined, 62 had shoulder pain. Computer generated random numbers were applied for the treatment of pain with gabapentin 800 mg (2 times 400 mg in a day) or paracetamol 1500 mg (3 times 500 mg in a day). ll patients' measurements were

recorded at the begining and at the second week of the therapy after a month. Range of shoulder external rotation, shoulder pain (VAS), Barthel index, Brunnstrom grading for upper extremity, Modifiye Ashworth Scale. After a month, gabapentin were given instead of non steroid antiinflamatory. And both groups were evaluated at the end of second month.
Results: Both therapies had some improvements. Especially gabapentin was the most significant results on shoulder pain VAS ($p < 0.01$) at the first mounth. And at the end of second month, gabapentin was successful instead of 1500 mg paracetamol.
Conclusion: Shoulder pain is an important and common problem for stroke patients. Neurapathic orgin is common in etiology. Even low dose gabapentin was effective in our study and well tolerated.

WIP-0528 THE NEUROPATHIC PAIN IN VASCULAR DEMENTIA

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Objectives: To demonstrate that an appropriate pain control in patients with vascular dementia (VD) depends on good pain evaluation and may express an improvement in behavior and daily activities.
Methods: Fifty-six patients were diagnosed in the last 2 years with advanced vascular dementia according to clinical manifestations, vascular risk factors and neuroimaging which revealed brain atrophy and multiple focal lesions in the subcortical white matter. 21 of them suffered from neuropathic pain but were unable to reliably communicate their pain. So, we used Pain Assessment in Advanced Dementia Scale (PAINAD) whose total score ranges from 0 to 10 points, including mild pain (1–3), moderate pain (4–6) and severe pain (7–10) The lesions were 34% compressive-disc prolapse in the spine, producing sciatica or cervico-brachial nevralgia, 15% were infiltrative as paraneopastic polineuropathy and 51% due to damage to the nerve itself by an intrinsec process-diabetic, alcoholic neuropathy, postherpetic neuralgia. The pain responded well to antiseizures and antidepressant medication
Results: From 21 patients treated with painkillers others than opioids, 15 revealed a marked cognitive and behavior improvement concerning especially the apathy, depression and incontinence of affect-involuntary laughing and crying.
Conclusion: The patients with white matter lesions, particularly those noncommunicative, but also demented patients who report less prevalent pain, must be considered at high risk for undertreatment of pain. That's why, we have to use the screening instruments to check the existence of pain, first and then to check whether the pain is neuropathic – Leeds Assessment for Neuropathic Symptoms and Signs (LANSS) and Pain DETECT.

WIP-0247 OCCIPITAL NERVE STIMULATION FOR PRIMARY CHRONIC HEADACHE DISORDERS – A RANDOMIZED TRIAL ON TREATMENT EFFICACY

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Objectives: ONS may provide pain relief for patients with otherwise refractory primary headache disorders. For the time being all authors failed to provide much needed outcome predictors. We hypothesized that sub-threshold stimulation would be effective but less effective than supra-threshold stimulation. The second hypothesis was that in 'stim off' condition no treatment effect would be seen, thereby verifying the treatment effect of ONS.
Methods: We therefore developed the following study design comprising three treatment groups: an effective 'standard' stimulation (Group 1), a subthreshold stimulation without amperage set just below perception (Group 2) and a 'stim off' condition with the IPG set to the lowest amperage possible (Group 3).
Results: Twelve patients were recruited within 6 months, eight suffered from chronic migraine, two from cluster headache and two from tension headache. All patients received bilateral ONS lead implantation (SJM, Octrode).The mean VAS score change was 8.2 ± 1.5 preoperatively. Decreases in pain and improvement in functional capacity at 3 months follow-up was measured by the SF-36. No complications occured during the study. Cephalgia improved substantially with effective stimulation of the occipital nerves in all patients. VAS score improved from 8.2 ± 1.5 ($p < 0.01$; Group 1) to 1.5 ± 1.4, Group 2 (sub-threshold stimulation) to 4.9 ± 2.0 compared to Group 3 (no stimulation) 7.9 ± 1.8 ($p < 0.01$).
Conclusion: ONS is safe and efficacious in the treatment of medically intractable headache. Paraesthesia is not required to achieve pain reduction but supra-threshold stimulation yields better results underlining the significance of stimulation parameter customization
Conflict of interest

Nursing in Pain Management

WIP-0231 PATIENT SUPPORT SERVICE AND THE PAIN GRADUATE SCHOOLS, ENHANCING THE NECESSITY OF MANAGING PAIN IN TOTALITY IN CHRONIC PAIN MANAGEMENT

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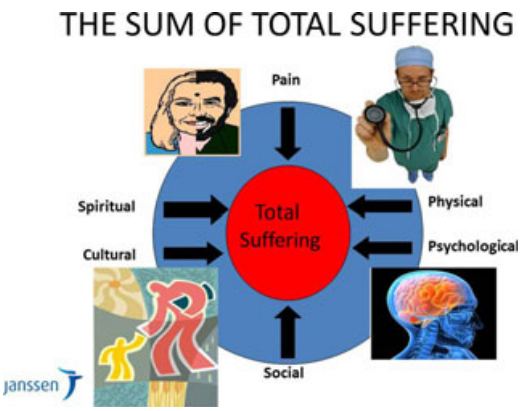
Objectives: Pain has always been treated as a symptom, which is appropriate in acute pain, but in chronic pain it becomes a persistent debilitating disease.The experience of persistent chronic pain changes the person's whole life, has a significant impact on patient's quality of life. Some of the numerous modalities are depression, anxiety and sleep disorders. The objective of the data gathering was to find out directly what the people concerned think or know.
Cognitive behavioural therapy on how the person thinks, feels, behaves and responds to stressors become the support system
Methods: In a qualitative design, descriptive strategy within a phenomonological framework the subjectivity of pain was accentuated which enhanced patient support services for both the patients and healthcare practitioners. Naive sketches were



used to gather data due to the qualitative nature from (n = 60) patients and their family to discuss anxieties, uncertainties and new demands.

Results:

Main Themes	Categories	Sub categories
Anxieties	Psychological	Surgery
		Dying
		Scared
		Uncertainty
		Depression
		Frustration
	Psychosocial	Change and adapt
		Act normal
		Return to work
		The bills (Financial concerns)
New demands	Physical	Pain
		Diet
		To keep fit
		Poor strength
		Insomnia
		Medication
	Psychosocial	Caregiver responsibility
		Role change between spouses

The sub categories were devided in main themes and categories.The final categorisation of the results reflected as above

Conclusion: Lifestyle adaptation programme used in booklet

WIP-0296 NURSE MANAGEMENT IN GALICIAN PAIN SCHOOL

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Objectives: Provide knowledge and skills to patients, caretakers and families on pain management. Improve clinical information directed at patients or patient associations with chronic processes involving pain. Acquire skills to improve self-care management in patients with pain and promote healthy lifestyles.

Methods: Galician School in Public Health for Citizens begins in 2010 to provide information, training and skills in health and illness processes to patients, caregivers and general public, in order to improve their quality of life and encourage participation in decisions involving their processes.

It is directed and managed by nurses and offers on-site and online formative activities on self-care. These activities involve empowering chronic disease patients in managing their illness and their pain as well as how to measure pain intensity (VAS), to report this to health professionals, since pain is registered as the fifth vital sign in all patients' medical records in Galicia.

Results: Galician School in Public Health for Citizens: 512 workshops have taken place, of which 32 dealt specifically with illnesses involving pain.

More than 10,000 patients and citizens have attended our workshops, the degree of satisfaction being 88%.

Conclusion: The patient's view is essential in multidisciplinary chronic pain management since he or she is an active agent.

Online training allows patients with chronic pain or at risk of suffering this pain to have access to formative activities on this subject. For this reason, we are revising the on-site version of activities in order to be able to offer an online 'expert patient on chronic pain' workshop.

WIP-0132 PAIN CHARACTERISTICS AT THE PATIENTS EXPERIENCED MYOCARDIAL INFARCTION AND FACTORS INFLUENCING PAIN

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Objectives: This study aimed to determine pain characteristics resulting from myocardial infarction and factors influencing pain.

Methods: This descriptive and cross-sectional research completed with 89 patients in a government hospital, cardiology inpatient clinic in Turkey. The questionnaire developed by the researcher with literature review was used for the data collection; pain evaluated with 10 cm- visual analog scale.

Results: More than half of the patient experienced myocardial infarction at home (62.9%), when sitting, resting, watching television or sleeping (59.6%). Additionally, more than half of the patient experienced pain on pre-cordial-left chest area, between 10 minutes and 2 hours (52.8%) and at 8–10 severity (85.4%) and burning (53.9%). More than half of the patient applied to the hospital's emergency department within first one hour after experiencing heart attack (53.9%) and majority did not practice anything till going to the hospital (73%). Pain severity was lower at 1.00 and 6.00 comparing to other time intervals during day. Moreover, male comparing to female and people living in urban comparing to rural were identified to apply to an emergency department earlier following myocardial infarction. A weak, negative correlation was found between monthly income and time for emergency department application.

Conclusion: Myocardial infarction can have an atypical presentation with symptoms including burning and indigestion other than pain. Patients' characteristics such as female gender, living in rural area and low income were associated with late arrival to the emergency department.

WIP-0131 THE EFFECT OF METHYLPREDNISOLONE INJECTION SPEED ON THE PERCEPTION OF INTRAMUSCULAR INJECTION PAIN

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Objectives: The aim of this study was to determine the impact of two different IM methylprednisolone injection speeds on pain intensity and pain duration

Methods: A one-group quasi-experimental design was used to study 10-second versus 30-second injection durations. According to the formula for one sample using average values, 25 patients were recruited from a dermatology clinic. Data were collected using the 'Patient Characteristics Form' and the Visual Analog Scale (VAS).

Results: The mean difference in pain levels according to the VAS in the post-injection period was significantly higher with administration of IM methylprednisolone in 10 seconds compared to the 30-second administration (VAS: 1.9 vs. 1.3; $p < 0.05$). The severity of pain peaked at 0 minutes for both injection speeds, but the duration of pain was longer with 10-second injections. The data showed that at multiple time-points following 10-second injections, males and patients older than 40 years age experienced greater pain severity. Pain severity following 30-second injections was greater for patients of normal or low weight who had completed higher levels of education.

Conclusion: In conclusion, slow injection of intramuscular steroids improves pain management.

WIP-0196 KNOWLEDGE AND INTERVENTIONS OF POSTOPERATIVE PAIN MANAGEMENT BY NURSES IN SURGICAL WARDS AT UNIVERSITY AND TERTIARY STATE-CARE HOSPITALS: ISTANBUL SURVEY

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Objectives: Postoperative Pain management (POPM) is an integral part of nursing care. This study aimed to explore the knowledge and interventions of surgical ward nurses (SWN) in practice that impede effective POPM at nine hospitals in Istanbul, Turkey.

Methods: The final sample comprised 86 SWN using a structured questionnaire focused descriptive design for data collection.

Results: The mean age of nurses was 28.75 ± 5.42 and educational background was graduate program generally. The majority of the nurses monitored of changes in vital signs, and took into consideration anesthetic technique used for surgery during pain assessment; informed the physician about insufficient practices, gave prepatory information to improve postoperative recovery and reduce pain medication use, read analgesics' prescriptions and over half of nurses documented and reported the pain assessment findings and used of placebo. Mostly, re-positioning was known and used as non-pharmacologic pain relief method among SWN. In the study, SWN' inadequate POPM knowledge and interventions might have resulted from gaps during education, training, inadequate clinical supervision, and workshops for practising nurses.

Conclusion: Training should incorporate credit-bearing courses on POPM, and appropriate educational programmes should be instituted for practising SWN.

WIP-0198 PRE-ENDOSCOPIC ANXIETY LEVEL'S NEED PREDICTIONS FOR SEDATION REGIMENS

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Objectives: Increased pre-endoscopic anxiety should be determined when making decisions on sedation regimen anxiety prior to esophago-gastro-duodenoscopy (EGD). To date, no nursing study exists investigating pre-endoscopic anxiety levels predicting the need for sedation regimen during EGD. We hypothesized that a severe and clinically significant (SCS) anxiety prior to EGD may be able to predict the need of an appropriate sedation regimen during EGD.Specific study objectives were: (1) to define patients' factors; (2) to discover the relationship between patients' factors and pre-procedural state and trait anxiety levels; (3) to discover state and trait anxiety mean scores and cut points compared with sedation regimen.

Methods: A quantitative cross-sectional study including 240 outpatients was designed. Collected data utilized a structured questionnaire and the Spielberger State and Trait Inventory (STAI). A mean score of (≥40) shows a SCS anxiety level. Descriptive statistics and the relationships of the STAI were evaluated using t-test and one-way analysis of variance.

Results: Pre-procedural state anxiety levels were SCS, trait anxiety levels were high. High statistical reverse relation between age and state anxiety along with high levels of trait anxiety associated with education levels were evident. Although 20.87% patients had SCS state anxiety, they were not administered conscious sedation (CS) during this procedure.

Conclusion: The decision for the use of CS was not decided in concordance with pre-procedural anxiety levels.

WIP-0275 NURSES PAIN CONSULTATIONS BY TELEMEDICINE IN-HOSPITAL

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Objectives: An advanced practitioner nurse, pain management specialists, is qualified to educate the staff in wards while consulting the unstable suffering patients. Although it's an important factor of nursing quality care, it's insufficient for a tertiary hospital located on wide geographic space.

Methods: Therefore, we allowed pain nurses' consultations by live interactive telemedicine technique in some departments. A nurse addresses the pain specialist via electronic technologies, and receives an on-line response. This communication provides secure telephone-calls, video and chats' conferences between up to five participants simultaneously no matter where they work, even while out of the hospital.

Results: In-hospital nursing pain consultations offers fast professional response without an unnecessary transportation, combined with highly motivated and efficient health care services. The experimented program showed improvement of pain management quality care and patients' satisfaction.

Conclusion: Telemedicine improves communication between providers and ward's stuff. This model of nurses' pain consultance using on-line telemedicine system empowere their work performance, lower patients waiting, alleviate pain, and reduce overall length of hospitalization. We intend to broaden the conceptual framework which could be applied to practice nurses in other specialties such as wounds or diabetes to use the telemedicine system for live interactive consultations.

WIP-0458 ASSESSMENT OF NURSES DUTIES IN POST OPERATIVE PAIN CARE

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Objectives: The aim of the study is to assess responsibilities of nurses in biopsychosocial care of Postoperative Pains.

Methods: Survey utilizes quantitative research method. As an investigation tool is chosen questionnaire. Survey was carried out in the surgical profile and intensive care wards in clinics of Latvia. In research participated 730 nurses, 163 physicians.

Results: For the assessment of nurses duties were identified 23 assessment criteria. Nurses with professional higher education statistically show a substantially higher self-evaluation of knowledge ($p = 0.002$) than nurses with the secondary professional education. Certified nurses in comparison with the registered nurses present higher self-evaluation of knowledge about pain care ($p = 0.007$). Nurses with the greater work experience more regularly manage pain assessment ($p = 0.001$) and information of patients ($p = 0.020$).
In nurse group average values of factors (min = 1; max = 5) were as follows: provision of designated medical therapy 4.41 (SD = 0.95), informing of patient and general care 4.0 (SD = 0.78), assessment and care of symptoms directly connected to pain 4.11 (SD = 0.85), assessment of pain intensity 3.25 (SD = 0.96), assessment of patients' condition 4.13 (SD = 0.83).
Conclusion: Study establishes coherence between the responsibilities of nurses and indicators forming professional competence. With the length of the work experience increases significance of nurse duties associated with ensuring of medical therapy, evaluation and care of pain related symptoms, assessment of pain intensity and patient's condition. Nurses with the professional higher education more relevantly put forward responsibilities associated with the determination of patient's vital indicators and evaluation of efficiency of medical therapy.

WIP-0570 NURSES ASSESSING PAIN WITH THE NOCICEPTION COMA SCALE; INTER-RATER RELIABILITY AND VALIDITY

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Objectives: To assess the inter-rater reliability of the NCS and NCS-R among nurses for the assessment of pain in ABI patients with DOC. A secondary aim was further validation of both scales by assessing its discriminating abilities for the presence or absence of pain.
Methods: Hospitalized ABI patients (n = 10) were recorded on film during three conditions: (1) baseline, (2) following tactile stimulation and (3) following noxious stimulation. All stimulations were part of daily treatment for these patients. The 30 recordings were assessed with the NCS and NCS-R by 27 nurses from three university hospitals in the Netherlands. Each nurse viewed nine to twelve recordings, totaling 270 assessments.
Results: Inter-rater reliability of the NCS/NCS-R items and total scores was estimated by intraclass correlations (ICC), which showed excellent and equal average measures reliability for the NCS and NCR-R total scores (ICC 0.95), and item scores (range 0.87–0.95). Secondary analysis was performed to assess differences in ICCs among nurses' education and experience and to assess the scales discriminating properties for the presence of pain.
Conclusion: The NCS and NCS-R are valid and reproducible scales that can be used by nurses with an Associate (of Science) in Nursing degree or Baccalaureate (of Science) in Nursing degree. It seems that more experience with ABI patients is not a predictor for good agreement in the assessment of the NCS (-R).

Obstetric Labor Pain

WIP-0139 THE EFFECT OF PREOPERATIVE STRESS, ANXIETY, AND DEPRESSION ON POSTOPERATIVE PAIN IN CESAREAN SECTION

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Objectives: We sought to investigate the relationship between preoperative stress, anxiety, and depression and Postoperative Pain in a group of women undergoing C-section.
Design: Cross-sectional study.
Setting: Depression Anxiety Stress Scale (DASS) standard questionnaire, face-to-face interview before surgery and VAS scale.
Population or sample: According to statistical considerations a sample size of 98 patients was required so 124 patients was chosen for our study.
Methods: DASS scale was used to evaluate preoperative stress, depression and anxiety and VAS scale was used to determine post-operative pain of the patients.
Main outcome measures: Pain (postoperatively), Stress, depression and anxiety (preoperatively).
Results: In this survey, 124 singleton pregnant women at a mean age of 25.25 ± 4.28 years were studied. The mean rate of pain during the first 24-hours after C-section was associated with the three factors of depression ($p = 0.003$, $r = 0.263$), anxiety ($p = 0.006$, $r = 0.244$), and stress ($p = 0.005$, $r = 0.252$), whereas the mean rate of pain in the first postoperative hour was significantly associated only with anxiety ($p = 0.042$, $r = 0.183$).
Conclusion: The present study shows that post C-section pain can be better managed by reducing preoperative stress, depression, and anxiety. To that end, it seems advisable that pregnant women be educated about anesthesia and C-section with a view to easing their preoperative stress and anxiety.

WIP-0150 A COMPARISON OF 0.125% ROPIVACAINE, 0.125% ROPIVACAINE WITH FENTANYL AND 0.2% ROPIVACAINE IN EPIDURAL LABOUR ANALGESIA: A DOUBLE BLINDED RCT

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Objectives: To study the effectiveness of 0.125% ropivacaine, 0.125% ropivacaine with 2 μg /ml fentanyl and 0.2% ropivacaine for epidural labour analgesia.
Methods: In this double blinded RCT, parturient (ASA I, II) in active labour requiring analgesia were enrolled and randomly divided into three groups (30 each). Each group received an epidural bolus (10 ml) of 0.125% ropivacaine (group A), 0.125% ropivacaine with 2 μg/ml fentanyl (group B) and 0.2% ropivacaine (Group C) respectively. Same dose was used as subsequent top-up for pain relief. The quality of motor and sensory block, VAS score, number of top-ups, consumption of ropivacaine and maternal satisfaction scores were compared.
Results: A total of 90 subjects were enrolled. Baseline parameters were comparable. There was no significant difference in the level of sensory block and quality of motor block. Mean VAS scores at 30, 60, 120, 180 minutes, at delivery and the need of top up doses were higher in group A as compared to other groups ($p < 0.05$). The total dose of ropivacaine used was highest in group C followed by group A ($p < 0.05$). Maternal satisfaction was significantly higher in group B and C as compared to group A ($p < 0.05$). There was no significant

difference in the mode of delivery, duration of labour and any adverse maternal or neonatal outcome.
Conclusion: Low dose ropivacaine with fentanyl may be a better agent for labour analgesia.

Orofacial Pain

WIP-0395 BURNING MOUTH SYNDROME: HOMEMADE SOLUTION OF PEPPER – AN ALTERNATIVE?

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Objectives: Introduction: burning mouth syndrome (BMS) manifests as an intraoral burning sensation (BS) occurring in the absence of identifiable oral lesion or laboratory findings. The treatments proposed include alpha-lipoic acid, clonazepam, antidepressants, topical capsaicin and cognitive-behavioral therapy.
Methods: Case report: women (44 of 52 year-old) with hypotiroidism, depression, and one patient had diabetes and hypertension. They were sent to chronic pain department with diagnosis of BMS with 3 years of evolution. They had bilateral oral BS on the tongue and in the hard palate in one patient. The pain was constant, with visual analog scale (VAS) of 7/10. The BS worsened during the day but did not affect their sleep pattern. Treatment: one patient started pregabalin in association with an oral rinse homemade solution of pepper (HSP). Follow-up of 2 years: no pain and her quality of life went back to her baseline. The other patient started pregabalin and next clonazepam without success. We changed for amitriptyline and oral rinse HSP. Follow-up of 1 year: significant improvement and a reduction in the frequency of the crisis.
Discussion: Topical capsaicin rinse has been used as an alternative treatment for controlling neuropathic pain in general. The drug induced desensitization to thermal, chemical and mechanical stimuli when applied topically. In Portugal, topical capsaicin is not available on the market, so we start to apply in our patients an oral rinse HSP.
Conclusion: An oral rinse (HSP) may be useful in improving the discomfort of BMS.

WIP-0136 MENTAL NERVE NEUROPATHY FOLLOWING DENTAL EXTRACTION

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Objectives: Mental nerve neuropathy, colloquially referred to as numb chin syndrome, is an uncommon neurologic condition that may arise secondary to multiple local and systemic etiologies,
Methods: Pain was self-reported using the Visual Analogue Scale (VAS). Outcomes at last follow-up were also ranked as excellent, good, fair, poor, and bad.
Results: I describe the clinical courses of two patients who were presented to the pain clinic with chronic painful numbness in the mental nerve sensory distribution following dental extraction. After a period of failed conservative medical management and repetitive successful nerve blocks at the mental foramen, we decided to proceed with radiofrequency nerve ablation. In both cases, performance of radiofrequency nerve ablation demonstrated a significant decrease in pain. Radiofrequency Nerve ablation has long term benefit in addition to multidsciplinary, and multimodality pain management.
Conclusion: The objective of the article is to help clinicians identify and properly manage early stage mental nerve neuropathy.

WIP-0393 THE USE OF GRADED MOTOR IMAGERY IN PHANTOM AND NEUROPATHIC OROFACIAL PAIN

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Objectives: Patients with Orofacial phantom and neuropathic pain have few non-medical treatment options. This contrasts with limb pain where there are positive effects for Mirror therapy and Graded Motor Imagery alone, associated with fMRI evidence of cortical reorganisation. Recent fMRI studies show significant S1 functional reorganisation in patients with trigeminal neuralgia.
We aimed to apply the principles of Graded Motor Imagery as a pain management option for patients with Orofacial phantom and neuropathic pain.
Methods: The conventional mirror techniques of Graded Motor imagery are difficult to apply to the head and neck region. To overcome this we combined using a mirror with prism glasses creating a kaleidoscope effect to reverse the image of the patient's face and neck in the mirror.
We present three cases where this technique has been applied. Two cases of phantom after exenteration of the orbit and one of trigeminal neuralgia.
Results: All three case obtained significant, sustained, reduction of pain allowing drug reduction to take place.
Conclusion: Graded Motor Imagery using prism glasses and a mirror to produce a kaleidoscope image can be considered a useful tool in the management of orofacial phantom and neuropathic pain.

WIP-0553 TIME COURSE STUDY OF POSTOPERATIVE PAIN AFTER DENTAL IMPLANT SURGERY

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Objectives: The aim of this time course study is to evaluate the pain thresholds in the trigeminal nerve and the adjacent cervical plexus area after dental implant surgery.
Methods: Subjects consisted of 48 outpatients who underwent the implant surgery. Thermal pain thresholds were quantitatively recorded before, and a week, a month, and three months after the surgery on the skin surfaces of bilateral maxillary nerve (V2), bilateral mandibular nerve (V3) and bilateral upper cervical plexus (C) using Pathway (Medoc). The Kaplan-Meier method was used to evaluate the occurrence of decreased threshold events. This study was approved by the Osaka University Institutional Review Board and supported by KAKENHI #19390495.
Results: Decreases in pain threshold immediately after the surgery were observed in lower cases (20/25 cases) and upper cases (7/11 cases). The number of decreased pain threshold in upper cases had decreased after 4 and 12 weeks. However, the decreased pain threshold was still observed in lower cases even after 4 and 12 weeks. Interestingly, in the lower jaw cases, the decreased pain thresholds were more often observed in the cervical area than in the V3 area.
Conclusion: It was found that the decrease in the pain threshold after the surgical procedures was a common finding even though patients did not complain of their pain. It was suggested that not only peripheral but also central sensitization at least in the nucleus of spinal tract of trigeminal nerve took place for more than 12 weeks.

WIP-0554 OROFACIAL PAIN MANIFESTATION IN PATIENTS WITH HEADACHE AND CERVICAL SPINE DISORDERS

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Objectives: The main objective was to assess the type of the dysfunction in the area of head and face from the point of view of the physiotherapist. Then to indicate the most effective therapy and find eventual connection between symptoms and psychosocial factors. Many of the patients with cervical spine disorders suffer from headache with additional symptoms, such as pain around eyes, mouth and temporomandibular joints.

Methods: The study was conducted among people both sexes (n = 53) professionally active, aged 29–46, suffering from headaches with associated symptoms. Patients were interviewed about their general health state, pain symptoms and were asked to evaluate their stress level. All patients have been asked to consult their pain disorders with a dentist and a general practitioner to exclude vascular and neurologic disorders. Physiotherapeutic examination included in particular cervical spine and temporomandibular joint evaluation.

Results: The majority of patients have been affected by stress, suffered from depression (90.6%, n = 48). Pain incidents were very common (13.2%, n = 7), frequent (54.7%, n = 29), from time to time (20.7%, n = 11) and sporadic (11.3%, n = 6). There was a significant relation between pain symptoms and high stress level ($p < 0.001$). Symptoms suggest that patients suffered mainly from tension-type headache (22.6%, n = 12), temporomandibular joint disorders (20.75%, n = 11) and cervical spine disorders with coexisting headaches (32.1%, n = 17).

Conclusion: The basis of targeted and effective treatment is a proper diagnosis. Similar symptoms may be caused by other root causes. Stress factor has a significant impact on the frequency of symptoms. Part of the cases require regular cooperation between physiotherapist and dentist.

WIP-0276 THE EFFECT OF EXPERIMENTAL MUSCLE PAIN ON MASTICATORY MUSCLES DURING STANDARDIZED AND NON-STANDARDIZED CHEWING

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Objectives: The aim of the study was to evaluate the effect of experimental muscle pain on masticatory muscle electromyographic (EMG) activity while performing standardized and non-standardized chewing.

Methods: Fourteen participants (aged 26–54 years old; nine males, five females) were infused with 5% hypertonic saline into the right anterior temporalis to induce experimental muscle pain. The EMG activity of right anterior temporalis (RAT), left anterior temporalis (LAT), right masseter (RMAS), left masseter (LMAS), and right digastric (RDIG) was recorded by using bipolar surface electrodes. The participants were asked to chew gum unilaterally at their natural speed (non-standardized chewing), and in another chewing sequence to chew at a standardized speed (standardized chewing). The entire sequence was repeated during isotonic saline infusion. Analysis of the data was performed by using the linear mixed effects model analysis.

Results: During hypertonic saline infusion, in comparison with isotonic saline infusion, there were significant increases in EMG activity for the LAT ($p = 0.002$), RMAS ($p = 0.001$), and LMAS ($p = 0.024$) during the closing phase of standardized chewing. There were also significant increases in EMG activity shown by the LAT ($p = 0.000$) muscle and significant decreases shown by the LMAS ($p = 0.000$) muscle during the opening phase of non-standardized chewing. There were no significant effects found during the opening phase of standardized chewing and the closing phase of non-standardized chewing.

Conclusion: The findings showed that there were some changes in the EMG activity of the masticatory muscles during experimental temporalis muscle pain. Further studies in this area are needed.

WIP-0238 REFRACTORY SYMPTOMATIC TRIGEMINAL NEURALGIA SUCCESSFULLY TREATED BY CONTINUOUS ADMINISTRATION OF INTRATHECAL MORPHINE AT C1/C2 LEVEL

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Objectives: Common causes of symptomatic trigeminal neuralgia (STN) are neoplasms that affect the trigeminal nerve (TN), either by compression or perineural invasion. We present a refractory STN successfully treated by continuous administration of intrathecal morphine at C1/C2 level.

Methods: Case Report: A 70-year-old woman with a left sphenoidal fibromyxosarcoma, received treatment with chemotherapy, radiation and surgery for local recurrence. She presented with continuous neuropathic pain over the left V2-V3 distribution. Physical examination reveals V2-V3 hypoesthesia and VI paresis. MRI shows a lesion invading the hemiclivus and left cavernous sinus with carotid commitment, which was extending to the orbital and pterygopalatine fossa. Electromyography demonstrates partial TN deafferentation. Pain was refractory to pharmacologic treatment and TN peripheral block. Neurosurgery dismisses any procedure over the gasserian ganglion. An intrathecal morphine test at C1-C2 level was then performed, demonstrating excellent pain relief for 6 hours, with the same results after a second test. Subsequently an intrathecal catheter was placed at C1-C2 level for morphine continuous admistration (syncromed II, Medtronic, Minneapolis USA). After a 6 month follow-up, patient reported excellent pain relief (V.A.S: 2–3) without any major side effects.

Results: Figure 1.

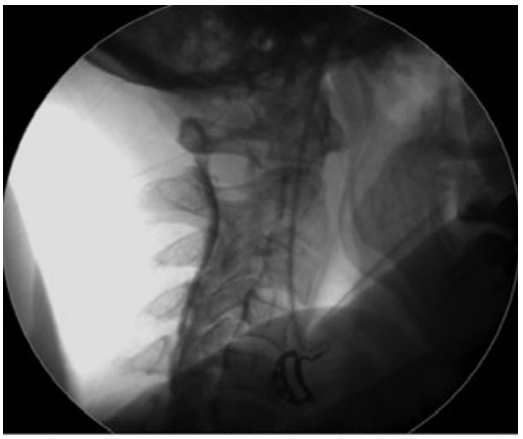

Fig. 1: Fluoroscopic lateral view of intrathecal catheter at C1/C2 level with contrast injection

Conclusion: Continuous intrathecal infusion of morphine at C1/C2 level can be a useful treatment in refractory STN when procedures over the gasser ganglion are contraindicated. Further studies are necessary to establish the safety and efficacy of this treatment.

Pain Diagnosis and Evaluation

WIP-0365 EARLY DIAGNOSIS AND REFERRAL OF PROSTATE PAIN SYNDROME TO PAIN TEAMS – A PARTNERSHIP IN PROGRESS

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Objectives: Prostate Pain Syndrome (PPS) is a syndrome of chronic prostate pain with no demonstrable underlying bacterial infection or other prostatic pathology[1]. In contrast acute bacterial prostatitis and chronic bacterial prostatitis demonstrate positive cultures (Stamey Test). European Association of Urology (EUA) 2012 Chronic Pelvic Pain Guidelines[2] emphasise an MDT approach for management of PPS involving a Pain Specialist. We retrospectively reviewed all patients undergoing Stamey Tests to determine whether those diagnosed with PPS were referred to Pain Teams.

Methods: All patients listed for day case Stamey Testing in our unit from 22.12.11 to 25.4.13 were reviewed. Data collected included Stamey test results, eventual diagnosis and subsequent management/referral.

Results: 28 patients were identified. 16 (57%) were diagnosed with type 3 PPS. Of these 9 (56%) were referred to a Pain Specialist and 5 (31%) were referred back to their GP, 1 was referred to another hospital specialist and 1 DNA followup.

Conclusion: Chronic pelvic pain syndromes such as PPS are increasingly understood as disease processes which involve abnormal peripheral signalling and central sensitisation. Therefore referral to an MDT with Pain Specialists, Physiotherapy and Psychology is important for appropriate care[3]. This unicentre audit has highlighted the strength in this partnership. We propose the use of a validated baseline symptom scoring system, the NIH-Chronic Prostatitis Symptom Index[4], for this cohort at point of referral to quantify subsequent treatment benefit thus providing data to develop streamlined patient pathways.

WIP-0325 MEASURING SENSORY AND PAIN TRESHOLDS BY SEMMES-WEINSTEIN MONOFILAMENTS IN PATIENTS WITH LEG ULCERS – A PILOT STUDY

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Objectives: The aim of this pilot is to learn more about mechanical sensory thresholds (MST) and mechanical pain thresholds (MPT) determined with Semmes-Weinstein monofilaments (SWMs) in patients with chronic leg ulcers.

Methods: In ten ulcer patients MST and MPT were determined at three different skin sites: 1) unaffected (contralateral) leg, 2) affected leg, 10 cm away from the ulcer margin, 3) affected leg, close to the ulcer margin. Besides MST and MPT, we measured pain at the ulcer site using an 11 point Numeric Rating Scale (NRS).

Results: All patients showed an increased MST at all sites, half of them to the extent of loss of protective function. In six patients, no MPT could be determined at any of the three sites. In four patients we observed a significantly lower MPT close to – and distant from – the ulcer margin on the same leg. In these patients MPTs were also lowered at the unaffected leg, suggesting CNS involvement via spreading hyperalgesia or allodynia. Patients with moderate to severe pain (NRS > 5) showed lower MPTs.

Conclusion: MST is increased in all subjects, if this was already present before the development of the ulcer, it migth have contributed to its development via (partial) loss of protective function. 40% of patients consistently showed hyperalgesia and allodynia at unaffected sites suggesting central sensitization of pain processing. Such lowering of MPTs correlated with more pain.

WIP-0278 DIAGNOSTIC PROPERTIES OF A QUESTIONNAIRE TO DETECT ABDOMINAL AND PERINEAL ALLODYNIA IN WOMEN WITH CHRONIC PELVIC PAIN

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Objectives: Allodynia (pain in response to a non-painful stimulus) is an important differential diagnostic procedure in the identification of visceral vs. somatic causes of chronic pelvic pain in women. The objective was to determine if a questionnaire can detect allodynia on the abdomen and perineum.

Methods: Questions were posed to women with chronic pelvic pain to determine if pain in the skin was associated with heat, cold, tight pants, lying on the stomach, intimate activity, bath, shower shaving, prior tattoos and piercings. Women were tested for allodynia by the gentle application of a cotton tipped applicator across the abdomen and perineum in multiple directions. A positive test was defined as a sudden reproducible painful or unpleasant sensation. The results were evaluated for likelihood ratios and receiver operating characteristic curve analysis.

Results: There were 56 women recruited with chronic pain greater than six months, 31 with and 23 without allodynia. Three questions were significantly associated with abdominal allodynia (likelihood ratio ±95% C.I.): tight pants – 3.49 (1.71–7.14), lying on the stomach – 5.33 (1.8–15.84) and intimate activity (infinity), and perineum: tight pants 2.03 (1.10–3.76), lying on the stomach – 5.00 (1.38–18.17) and intimate activity 3.72 (1.67–8.29). When all three tests were positive ROC analysis showed the AUC (area under the curve to be 0.949 (0.841–1.00).

Conclusion: The test performance of the questions was significant and indicates the potential use of a simple diagnostic approach to evaluate sensory abnormalities in visceral pain as a cause of chronic pelvic pain.

WIP-0248 A PROSPECTIVE ANALYSIS OF AN ACUTE PAIN SERVICE IN A TEACHING HOSPITAL

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Objectives: To prospectively review the effects of an acute pain service (APS) in the pain improvement. The aim of this study was to survey postoperative and medical pain treatment in Uppsala University Hospital.

Methods: Patients were visited by APS at regular intervals. A standardized data collection template of demographic data, history, pain diagnosis, associated diseases, duration of treatment, type of treatment was employed. The outcome consisted

in pain scores recorded on visual analogue scale (VAS) before and after the treatment, treatment related complications.
Results: Patients (n = 350) (mean age 55 ± 4.3, female 56%, men 44%) were distributed as follow: medical 24%, psychiatric 3%, children 2%, oncology 13%, orthopedics 26%, surgical 25%, neurosurgical 9%. Of these, 48% of patients reported a pain score of moderate to severe pain on the first assessment by the specialist pain team, and 27% reported severe pain. After pain treatment on the last examination before discharge, they reported 25–30% less pain (P = 0.002). The median VAS scores decreased significantly from 96 (95% confidence interval, 34–53) to 63 (10–20) for the severe pain ($p < 0.000$), from 38 (31–38) to 24 (22–24) for the slightly pain. The APS treated cognitive deficits in 9% of the patients, recognized and treated opioids overdose in 4% of the patients and abstinence in 3% of the patients.
Conclusion: This study validates the importance of an APS in the reduction of pain intensity with a simultaneous decrease in analgesia related side-effects.

WIP-0302 OLIGOANALGESIA AND THE EFFECTIVENESS OF PAIN MANAGEMENT IN ACUTE MUSCULOSKELETAL PAIN PATIENTS

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Objectives: While acute musculoskeletal pain is a frequent complaint in the Emergency Department (ED), its management is often neglected, placing patients at risk of oligoanalgesia. Our aim is to investigate how often pain management is provided and how this affects pain relief.
Methods: This prospective cohort study (PROTACT) includes 697 adult patients presenting with acute musculoskeletal pain to the ED. Data regarding pain and pain management were collected using registries and questionnaires.
Results: Despite a high pain prevalence (98.9%), only 35.7% of all patients received analgesics and 12.5% received adequate analgesic pain management. Of those who received inadequate treatment, 72.3% did not receive analgesics while in pain and 38.7% received inappropriate analgesics. More than two-third of the patients had moderate-to-severe pain at discharge: 60.5% due to lack of analgesics and 39.5% due to insufficient dose of analgesics. Pain relief was higher in patients who received analgesics (difference: 0.83; 95% CI 0.53–1.11). Clinical relevant pain relief (−33%) was achieved in 19.7% of all patients and was higher in patients who received analgesics (difference: 8.8%; 95% CI 2.7–14.9). Non-pharmacological treatment was provided to a high percentages (78.9%) of patients.
Conclusion: Oligoanalgesia is a large problem in musculoskeletal patients. An insufficient proportion of patients receives analgesics and pain relief remains unsatisfactory. The importance of pain management, especially the use of analgesics in the ED is reflected by the relevant higher reduction of pain and in the proportion of patients with clinical effective pain reduction.

WIP-0210 POLYGRAPHY IN COMPARATIVE EVALUATION OF POSTSTIMULUS PAIN AND OTHER SENSATIONS IN HEALTHY SUBJECTS AND PATIENTS UNDER HEMODIALYSIS

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Objectives: The search of objective sensory characteristics in healthy volunteers as the answers after different modality stimulation and modification of these characteristics in patients under hemodialysis.
Methods: For the first time the complex registration was used on-line for physiological reactions in connection with some sensations trigged by focused ultrasound: the electroencephalogram (EEG), evoked brain potentials, nystagmoid eye movements, electrocardiogram (ECG), amplitude and rhythm of breath, blood oxygen level.
Results: It was shown that poststimulus somatic, hearing, olfactory sensations and pain were accompanied by changes in electrical activity on EEG, nystagmoid eye movements, amplitude and rhythm variants of breath. Latency of near threshold ultrasound stimuli for EEG deflection and tops of nystagmoid eye movements in healthy volunteers was about 500 ms. Patients under hemodialysis have more high thresholds of sensations, more long latency and lesser the amplitude of electrical activity and eye movements. Amplitude and rhythm of breath changing also were registered and had individual character.
Conclusion: The complex polygraphic registration can be used for practical evaluation of patient status according to changing of sensitivity. In some cases the method could be restricted by some polygraphic fragments, for example, by evoked potentials or nystagmoid eye movements only.
Acknowledgement: Supported by RHSF grant N 01201268178.

WIP-0575 VALIDATION OF HYBRID SPECT-CT IN IDENTIFYING THE PAIN PHENOTYPE IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Objectives: Regardless of the high prevalence of chronic low back pain (CLBP), the pain phenotype is unknown in >80% of these patients despites medical imaging. Recently, hybrid SPECT-CT was suggested to narrow this diagnostic imaging knowledge gap. This test is not validated for CLBP. We prospectively assessed the sensitivity of SPECT-CT.
Methods: The study received ethical committee approval. Patients with daily LBP during ≥3 months, with MRI not conclusive about the pain phenotype, were referred for SPECT-CT. The control group consisted of patients referred for SPECT-CT for other pathologies, if they had no LBP during the previous 3-months. All patients provided informed consent.
Results: Of the 200 included patients (94 CLBP and 103 control), the gender distribution was comparable in both groups. The SPECT-CT showed "hot spots" in 76.6% in the CLBP-group and 36.9% in the control group. Increased bone metabolism in facet joints and endplates was seen in 42.5% and 46.8% respectively in the CLBP patients and in 21.3% and

18.4% in the control group. The sensitivity of SPECT-CT in CLBP patients therefore is 76.6%.
Conclusion: Our findings suggest that SPECT-CT may be a complementary test for identification of the pain phenotype, with a sensitivity, of 76.6%. In the control group, we envisage almost 37% "false positives". The 'hot spots' as seen in both patient groups therefore are no indication of a pain phenotype, but only show increased bone metabolism. This is the first prospective comparative study of this kind.

WIP-0256 AUTOMATED PAIN RECOGNITION SYSTEM ON THE BASIS OF BIOPOTENTIALS AND VIDEO RECORDING

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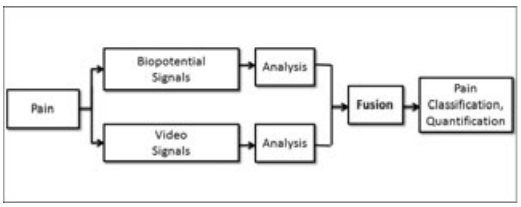
Objectives: The objective assessment of subjectively experienced pain has not been adequately solved so far. Aim of the reported research is the advancement of an automated pain recognition system using biopotentials and behavioral data.
Methods: Embedded into an experimental design four levels of painful heat stimuli between no pain and tolerance threshold by a Medoc Pathway Cheps were elicited in 90 participants under controlled conditions, biopotentials (electromyography, skin conductance, electrocardiogram) and video (facial expression and head pose) feature were used to measure the responses (see Figure 1).



Research questions: What kind of features and feature combinations are most relevant for a robust pain recognition? Does the fusion of biopotentials and behavioral data outperform separate pain recognitions by biopotential or behavioral data alone?
Results: The features of electromyography corrugator peak to peak, corrugator shannon entropy, inter-decile-range of brow-to-mouth distance signal and standard deviation of nasal winkling signal were chosen as the most selective. It was shown that the automatic recognition rates of the data fusion are significantly superior compare with separate biopotential or video signal analyses. In particular the detection rates were significantly improved with feature selection methods.
Conclusion: The data support the concept of automated, reliable and valid pain recognition of experimental pain. The application of this new diagnostic instrument pain monitoring in a clinical environment will be studied soon.

WIP-0282 IS THERE ANY CORRELATION BETWEEN INDIVIDUAL PAIN SENSITIVITY AND INTRAOPERATIVE DOSE OF FENTANYL?

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Objectives: To determine the effect of individual sensitivity to pain preoperatively on intraoperative doses of fentanyl.
Methods: We analyzed individual pain sensitivity in 59 patients. All these patients were operated on under general anesthesia the next day. We used algesimeter which is applying of mechanic stimulus with needles 1, 2, 3, 4, 5 mm to determine the level of individual reactions by visual analog scales (VAS). The stimulus is applied at the base of a thumb. Linear VAS; colour VAS with varying intensities of gray/black were used. The pain response was evaluated within a scale from 0 to 100 (with 0 as no pain and 100 corresponds to the highest, unbearable pain).
Anesthetization included: premedication, induction, myoplegia, intubation, ventilation with a mixture of oxygen supply, nitrous oxide and sevoflurane, anodyne – fentanyl. We used hemodynamic monitoring and ventilation systems, additional control: glucose, lactate, cortisol.
Statistical analysis was performed using the software package Statistica 7.0.
Results: The correlation is not found between the measured pain sensitivity and the dose of fentanyl during operations shorter than 60 minutes. The correlation is registered between the measured individual pain sensitivity and the dose of fentanyl in operations over 60 minutes.
Plasma cortisol levels before anesthesia and after the beginning of the operation were statistically different (Wilcoxon matched pairs test, $p < 0.0001$).
Conclusion: Statistical correlation between individual reactions to pain and fentanyl consumption is observed during operations over 60 minutes.

Pain Economics and National Health Systems

WIP-0551 A SURVEY OF ACUTE PAIN UNITS IN THE PORTUGUESE HOSPITALS

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Objectives: Describe the structure and function of Acute Pain Units (APU) in Portuguese hospitals.
Methods: We identified every hospital with surgical activity, of the National Health System (NHS), and sent the questionnaire via email to the Head Chief of Anesthesiology Service. The questionnaire had been elaborated base on the document publish by the Portuguese government about the organization of APU in 2012.
Results: We included 44 institutions – 47.73% had an APU and 52.27% didn't have. Institutions with APU: the "Nurse based" functioning model was adopted in nine APU, and the remaining 12 worked on an "Anesthesiologist based" model. The majority of the institutions with APU's have analgesic protocols, for "conventional" or "non-conventional" analgesia (19 in 21 APU's). Twenty Institutions with APU's had surveillance protocols to detect and manage complications. All of institutions with an APU commonly used differentiated analgesic techniques and devices. Institutions without APU: 52.17% have analgesic protocols for "conventional" or "non conventional" analgesia and 78.26% have surveillance protocols. Some institutions without APU use differentiated analgesic techniques.
Conclusion: Portuguese reality is far from the established goal of having an APU in every hospital with surgical activity. In a context of economical crisis, with financial contention policies, incitement of higher productivity with lower resources available and lower funds attributed to Health System, Portugal has not yet reached the goal outlined by recent government guidelines released in 2012.

WIP-0398 SURVEY ON CHRONIC PAIN SERVICES IN SOUTH CUMBRIA & NORTH LANCASTER, UK

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Objectives:

Background: The chronic pain service in our trust serves a population of 310,000 across three hospitals. A Psychologist was once an integral part of the team. But now patients requiring pain management programme (PMP) type approach were being referred to University hospitals with prior funding agreement.

Aim: To identify the availability of chronic pain services & the ways to improve the service in South Cumbria & North Lancaster.

Methods: Survey questions regarding the satisfaction, ways to improve service and their opinion regarding the chronic pain services were sent to all the General practitioners of South Cumbria & North Lancaster.

Results: About 80% of the responders were either very satisfied, satisfied or neutral with the service. 20% were either very unhappy or not satisfied with the service. 80% of the General practitioners felt they need more help on Psychology. 60% suggested the need for email helpline. 40% suggested the need for new Pain management programmes. 60% of the General practitioners recommended email helpline. 36% suggested the need for new triage techniques or telephone helpline. 72% felt better pain management can be delivered by educating staff in GP surgery.

Conclusion: A majority of General practitioners felt Psychology support is essential in managing chronic pain patients. There was also a need identified for Continuing Professional Development based education events for General practitioners. There were suggestions for setting up email helpline for General practitioners, so as to improve access to pain services in managing difficult issues and thus avoiding unnecessary referral to secondary service.

Conflict of interest.

WIP-0538 ECONOMIC IMPACT OF THE ADMINISTRATION OF IV/ORAL PARACETAMOL

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Objectives: This study aims to assess the economic impact of proper administration of paracetamol.

Methods: Evaluation of therapeutic charts of all patients (564) admitted to wards of surgical specialties (21), on a random day. Analysis of the number of patients on oral or IV paracetamol, administration scheme (fixed/SOS), type of diet (oral/parenteral).

Results: 52% (297) of 564 patients were prescribed paracetamol.

68.6% (204) of these by IV, 31.3% (93) patients by oral route.

76.4% (227) of patients receiving IV paracetamol presented an SOS scheme of up to 3id and 23.5% (70) a fixed 3id scheme.

63.7% (162) of all patients treated with IV paracetamol had an oral diet and 36.6% (93) of patients receiving oral paracetamol had an oral diet.

Pharmaceuticals and SAS	Price
IV Paracetamol1gr	0.66€
Oral Paracetamol1gr	0.02€
SAS	0.21€

The cost of prescription id IV paracetamol in patients with oral diet (162) corresponds to 141€ per day.

If these 162 patients were on oral paracetamol, the cost would be 3.24€ per day.

If all patients with an oral diet were prescribed oral paracetamol even just once a day, the end of the year cost would be reduced by 50,370€, nevertheless patients have schemes of up to 3id.

Therefore the savings could exceed 151,110€.

Conclusion: Paracetamol is used in the majority of patients admitted to the surgical wards.

The substitution of intravenous administration is recommended as soon as possible to reduce costs and avoid adverse effects.[1]

A significant cost reduction could be achieved using the oral as preferred route.

References:

1-UKMi-NICE-(11Fev2014) http://www.ukmi.nhs.uk

WIP-0408 FIVE YEARS ACCESS TO OPIOID MEDICATIONS IN EUROPE (ATOME) PROJECT, 2009–2014

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Objectives: In 2009, the Access to Opioid Medications in Europe (ATOME) project started with the objective to undertake applied research into the reasons why opioid medicines for moderate to severe pain and for the treatment of opioid dependence are not used adequately in 12 eastern European countries; to elaborate tailor-made recommendations to each country for improving the accessibility, availability and affordability of opioid medicines; and disseminate these to governments and other stakeholders.

Methods: The project is funded by the European 7th Framework Programme and is run by a Consortium of 10 organizations from 7 countries. The work has been divided in ten workpackages; for each of them are one or more consortium member organizations responsible. The major strategies to achieve the project objectives are:

- development of WHO policy guidelines on improving access to controlled medicines
- policy analysis with representatives from the target countries
- analysis of the national legislation to identify potential barriers to access to opioids
- organizing national symposia on access to controlled medicines
- reporting the findings of the project to the national governments in the 12 countries.

Results: In many of the target countries there is now awareness of the importance and need for access to opioids, including for the treatment of pain. Some countries changed their legislation and policies, for other countries ongoing developments were reported.

Conclusion: The outcomes of the project suggest that it raised awareness of the importance of controlled medicines and enhanced processes directed at improvement in the target countries.

Pain in Children

WIP-0512 ABDOMINAL EPILEPSY, MISDIAGNOSED AS PSYCHOGENIC PAIN, PRESENTING WITH SEVERE RECURRENT ABDOMINAL PAIN

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Objectives: We report a case of child with abdominal epilepsy (AE) who continued to suffer from severe recurrent abdominal

pain and cyclic vomiting for 2 years under the label of "psychogenic pain".
Methods: A 14 year old girl was referred to our algology department due to recurrent abdominal pain with nausea and vomiting for 2 years. Pain attacks was almost always associated with nausea and vomiting, used to last for 10–20 min, and recurred one to three times a month. She slept after these attacks. There was no alteration of consciousness and she had not experienced headaches. Her physical and neurological examination was normal. After exclusion of other cause of recurrent abdominal pain apart from abdominal migraine, a diagnosis of AE was kept in mind, and EEG was performed which failed to detect any abnormalities. The diagnosis of AE is essentially a clinical one however, EEG assesement a supportive evidence for the diagnosis of epilepsy. The presence of a normal EEG need not necessarily eliminate the diagnosis of AE. Sustained response to anticonvulsants has been accepted as one of the criteria fort he diagnosis of AE. Clinical findings allowed us to make a diagnosis of partial epilepsy with ictal abdominal pain and treatment with carbamazepine was initiated.
Results: The child showed a significant clinical improvement, and she has been asymptomatic for the past 7 months.
Conclusion: As conclusion, in children who experience recurrent abdominal pain, nausea and vomiting with or without EEG abnormalities, a possibility of AE should be considered after exclusion of other common ethiologies.

WIP-0469 THE ECONOMIC COST OF CHRONIC PAIN IN PRIMARY SCHOOL AGED CHILDREN IN IRELAND (PRIME-C)

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Objectives: Raftery et al. (2012) found that the economic cost of chronic pain in adults was almost 3% of Irish GDP in 2008. Children with chronic pain have been under-researched as a population.
This study aimed to investigate incremental costs incurred by parents of children who have chronic pain.
Methods: Surveys were distributed to 3050 children in 39 primary schools, randomly selected as a nationally representative sample. The surveys consisted of a child survey, one questionnaire for children aged 5–8 and one for children aged 9–12, and a parental/primary caregiver questionnaire. Responses from 2000 primary caregivers were analysed. Economic costs were compared between children with and without chronic pain.
Results: Multivariate and univariate analyses indicated a two- to four-fold increase in economic costs incurred by parents of children with chronic pain. Children with chronic pain were found to have incremental healthcare costs of €450–500 per annum, depending on the model used for analysis.
Conclusion: Children with chronic pain had higher usage of all healthcare services and their pain was a significant predictor of overall healthcare costs. Childhood chronic pain incurs an increase of up to €500 in healthcare costs per year.
Acknowledgements: This study is funded by the Health Research Board's Interdisciplinary Capacity Enhancement Award (Ref: ICE/2011/19).

WIP-0389 PAEDIATRIC BURN PAIN: A CLINICAL REVIEW OF THE CURRENT APPROACH AND ITS CHALLENGES

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Objectives: The aim of this review is to introduce the concept of burn pain in the setting of paediatric burn injury. Through the use of a comparative approach, the way in which management is currently being approached locally and internationally is outlined. The treatment challenges facing burn pain management are discussed and recommendations are made for future areas of research.
Methods: The scientific evidence for this review was obtained through a literature search between the years 2000 to December 2013 using PubMed, Medline, Ovid and Cochrane platforms.
Results: Inadequate acute pain management has been shown to predispose patients to develop psychiatric and chronic manifestations later in life. Burn pain is commonly viewed as a form of acute pain, while complex chronic pain syndromes which often follow are frequently overlooked. Within current protocol regimens, there is off-label use of analgesic drugs in the paediatric setting, most notably with the use of Gabapentin for analgesic and pruritic relief. It appears that the lack of appropriately designed paediatric specific burn pain assessment tools remains an inhibiting factor.
Conclusion: As burn pain is heterogeneous in origin and presentation, the acute and chronic manifestations need consideration within treatment modalities. The prevalence of burn injury in the low-middle income setting that is a large part of current day South Africa makes this an area of research to which allocation of resources is warranted. Burn pain poses additional challenges relating to its accurate classification and monitoring, as these have an impact on treatment outcomes.
Conflict of interest.

WIP-0269 2B ACTIVE: OUTPATIENT REHABILITATION FOR ADOLESCENTS WITH CHRONIC PAIN

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Objectives: Since current treatment does not fully cover the needs of fearful chronic pain patients, the aim is to evaluate the effectiveness and cost effectiveness of a multimodal rehabilitation program (MRP) in reducing functional disability (measured with the Functional Disability Inventory, FDI) for adolescents with chronic musculoskeletal pain (CMP) by comparing to care as usual (CAU).
Methods: A multicentre randomized controlled trial, allocating participants to MRP or CAU (ratio 1:1). Measurements at baseline, 2, 4, 10, and 12 months. *Participants:* Adolescents with CMP (12–21 years) indicated for outpatient multidisciplinary rehabilitation treatment from the Dutch regions of Maastricht, Breda and Rotterdam. Parents participate as well. *Intervention:* MRP is an outpatient individual rehabilitation program, provided by a multidisciplinary rehabilitation team. MRP consists of a 1) Graded Exposure (GE) module (7 weeks) that aims to improve functional ability and reduce pain-related fear, 2) a Combined hypermobility and GE (HMGE) module (15 weeks) for hypermobile pain patients that starts with physical training before exposure, and 3) a Parent Module (3 sessions) for assisting parents to support improvement in their adolescents. *Control:* CAU consists of the care currently

provided in Dutch rehabilitation centres, based on a national consensus report for treatment of adolescents with chronic fatigue and pain.
Results: Primary outcome measure is the mean difference in functional disability-score between MRP and CAU. Results are expected end 2016.
Conclusion: If effective, a new rehabilitation program for adolescents with CMP can be implemented in the Dutch rehabilitation setting.
Acknowledgments: Funding is provided by Fonds NutsOhra, Stichting Vooruit, Stichting Adelante Revalidatie.

WIP-0160 COMPARING THE EFFECT OF DEXMEDETOMIDINE AND MIDAZOLAM ON SEDITION IN CHILDREN WITH HEAD TRAUMA TO PERFORM CT IN EMERGENCY DEPARTMENT

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Objectives: This study aimed to compare the effect of the above mentioned drugs on sedition in children. Many of the children referring to the emergency complain of head trauma. Children usually require sedition to reduce their failure and fear, because of high activity and fear of performing CT. Dexmedetomidine and Midazolam are from short-acting drugs for this purpose.
Methods: Children referring to the emergency department were randomly divided into two groups. group A sedated with 0.05 mg/kg IV Midazolam and group B with 2 μg/kg IV Dexmedetomidine over 10 minutes (loading dose) and then repeat boluses 2 μg/kg IV over 10 minutes. Measurements included induction time, recovery time, efficacy, side effects, complications, and failure with each drug and vital signs and RAMSY scale. SPSS V.20 was used for data analysis. $p < 0.05$ was considered statistically significant.
Results: Totally, 100 patients participated in the current study (44 girls and 56 boys). The mean and standard deviation of age was 5.3 ± 2.5 years. During the study, just five patients (10%) from group A did not have appropriate sedition following the injection of first dose of Midazolam and received the second dose; but in patients of group B no case was reported. No significant difference was observed among blood pressure, heart rate, respiration and RAMSY Scale of the groups.
Conclusion: No significant difference was seen between efficacy of midazolam and dexmedetomidine in pediatric sedation. More researches should be done for generalization of our finding.

WIP-0352 LATE INTRAOPERATIVE PUPILLARY PAIN INDEX PREDICTS IMMEDIATE POSTOPERATIVE PAIN IN CHILDEN AS MEASURED BY AN OBSERVATIONAL SCALE

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Objectives: Optimizing appropriate postoperative analgesia is a challenge especially in very young children. The aim of this study was to see if Pain Pupillary Index (PPI®) could predict immediate POSTOPERATIVE PAIN in anesthetized children.
Methods: This is a retrospective and observational study from data recorded after balanced (sevoflurane-fenatnyl) anesthesia. An infrared portable pupillary algesimeter was used to obtain a PPI® measurement immediately before tracheal extubation. Ten minutes after extubation, upon arrival to the postanesthesia recovery unit (PACU), Visual Analogue (VAS) and/or an observational pain (LLANTO) scales were assessed and registered.
Results: Twenty children were included. Median age was 3.5 years. Intraoperativelly average fentanyl dose employed was 4 μg/kg. PPI® presented a statistically significant correlation $r = 0.62$ ($p = 0.0038$) with LLANTO scale but not with VAS.
PPI® is a very simple way to measure nociception/analgesia balance and it can be employed even in very young children when they are under residual anesthesia. PPI® was only correlated with LLANTO scale, because VAS is a subjective scale influenced by many psychological factors in children.
Conclusion: The measurement of PPI® immediately before extubation after sevoflurane-fentanyl anesthesia was significantly associated with observational pain intensity measurent on arrival in PACU. The performance of PPI® for immediate POSTOPERATIVE PAIN prediction can be a simple and effective way to assist physicians in optimizing acute pain management in young children.

WIP-0516 TREATMENT OF THE IDIOPATHIC SCOLIOSIS WITH BRACE AND PHYSIOTHERAPY

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Objectives: Scoliosis is a three-dimensional deformation of the spine with a lateral curvature or deviation greater than 10° and associated with vertebral rotation. The objective of this study was to define the effectiveness of braces and individual physiotherapy for the comprehensive treatment of idiopathic scoliosis in adolescents.
Methods: 57 children with idiopathic thoracic dextroscoliosis with the magnitude of the thoracic curve between 20–35°, treated in Orthopedic and Physiatrist Clinic as well as National Ortho-prosthetic Center within University Clinical Center of Kosova in Prishtina, during the period of 2003–2006, have been included in the retrospective analysis methodology. A specially designed questionnaire gathered: general data, clinical examination, treatment and 12 months evaluation.
The evaluation of the scoliosis magnitude was done in 4 levels, as follows: high improvement low improvement, no improvement and at last the worsening of magnitude of the curve.
The evaluation of the muscle strength and endurance was measured by chronometer (seconds) and it was categorized in 5 levels.
The treatment was tailored individually for each patient and based on the interdisciplinary approach.
Results: Inclusion of kinesitherapy in the comprehensive management of idiopathic scoliosis varied in the improvement of the muscle strength (satisfied and moderate) in almost 80% of the children while the correction of the curve was small in approximately 42.1% of cases.
Conclusion: For children with idiopathic scoliosis, who require braces, an exercise program helps chest mobility, muscle strength, proper breathing flexibility in the spine, correct posture and keeps muscles in tone so that the transition period after brace removal is easier.

WIP-0309 THE PREVALANCE, IMPACT AND COST OF CHRONIC NON-CANCER PAIN AMONG 5–12 YEAR OLD CHILDREN LIVING IN IRELAND – PRIME C (TIME 1)

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Objectives: No childhood will be without some pain, usually acute; it is the presence of chronic pain, associated with

significant limitations in social and physical functioning that can create developmental problems. Prime C aims to characterise the nature and prevalence of chronic pain amongst 5–12 year old children living in Ireland.
Methods: Questionnaires, developed from international psychometric survey items, were piloted extensively with children and schools, to ensure they were understandable, acceptable relevant and user friendly.
Cluster-systematic random sampling was used to select participants. Questionnaires were administered in primary school classes; parental surveys were completed at home.
Results: Sample size – n = 3050 in 39 primary schools.
Chronic pain was reported by 11% (n = 282) of children (5% by 5–8 year olds and 13% 9–12 year olds), but only 5% (n = 80) reported by parents.
Health-related quality of life (HRQoL) was significantly lower among children with chronic pain. Children with chronic pain had higher usage of all healthcare services and their pain was a significant predictor of overall healthcare costs. Parental chronic pain was a significant predictor of child healthcare costs. Child chronic pain was associated with significantly higher service usage and, depending on the model, mean costs associated with pain ranged between €400 and €500 per annum.
Conclusion: The prevalence of chronic pain among 5–12 year olds living in Ireland is significant; affecting the children's quality of life, associated with higher health service usage and higher direct economic costs.

Pain in the Elderly

WIP-0465 PHYSICAL THERAPY PROGRAM FOR OLDER ADULTS WITH CHRONIC SPINAL PAIN

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Objectives: The pragmatic aim of this study was to share and to discuss the results of the physical therapy program just applied for older adults with spinal pain in our department.
Methods: Twenty eight (13 Females and 15 Males; mean age: 69.5 ± 5.3 years) older adults suffering from chronic spinal pain, including neck and low back pain, participated in this study. The participants had neck pain (n = 12) or low back pain (n = 16). The pain intensity was measured with Visual Analog Scale (VAS). Disability level of the sample was measured using by Neck Disability Index and Roland Morris Disability Index. The Beck Depression Inventory was used to describe their depressive symptoms. All participants were asked to rate their satisfaction in terms of the physical therapy program. The physical therapy program was included: (1) Hot Packed; (2) Therapeutic Ultrasound; (3) Transcuteal Electrical Nerve Stimulation (TENS); (4) Soft Tissue Mobilization.
Results: After a 14-session physical therapy program, pain intensity, depressive symptoms and disability level decreased ($p = 0.0001$). On the other hand, their satisfaction improved after the program (mean: 8.58 ± 1.62).
Conclusion: A combined physical therapy program led to improving in terms of pain, depression and disability in older adults.

WIP-0310 REDUCING DISCOMFORT IN PERSONAL CARE HOME RESIDENTS WITH DEMENTIA: A PILOT STUDY OF A SOCIAL ASSISTIVE ROBOT INTERVENTION

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Objectives: To answer the research question, "Could the presence of PARO (a table-top robotic baby Harp Seal) reduce discomfort in residents with dementia in a personal care home?"
Methods: The study was conducted in two personal care home units in a large long-term care facility in Winnipeg, Canada during a six week period with four weeks of interventions. Residents with dementia who were identified as having discomfort experienced either an intervention with PARO (n = 9) or being read to by Research Assistants (n = 10), with pre- and post-measures of pain (Pain Assessment in Advanced Dementia Scale; Visual Analogue Scale; FACES Scale) and mood (Geriatric Depression Scale; Single Item Depression Question). A physiologic measure of salivary stress hormones was obtained through an oral swab. Data from residents' medication records were extracted notably analgesics and mood altering drugs (Medication Quantification Scale Version III). Personal care home staff completed measures of residents' behaviours (Cohen-Mansfield Agitation Inventory).
Results: The intervention with PARO did not result in statistically significant differences. We learned that it is possible to reliably obtain salivary samples from residents with dementia. Residents seemed to enjoy interacting with Research Assistants during both of the interventions.
Conclusion: A great challenge lies in selecting or developing measures which will capture outcomes of residents with dementia who are experiencing discomfort in a meaningful way.

WIP-0464 OPIOID PRESCRIBING IN THE ELDERLY PATIENT WITH AGE-RELATED ORGAN CHANGES

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Objectives: The aim of this investigation was to explore how organs with common age-related changes influence the the pharmacokinetics and phamacodynamic of analgesics, in particular opioids, and what we as physicians should consider when contemplating the prescription of strong opioids to elderly patients.
Methods: We have conducted a literature review using scientific journals, scientific books and publications on Pubmed, using the search terms (MeSH): Aged, aged over 80, elderly, opioids, geriatric, organs and opioids.
Results: One of the biggest problems in geriatric medicine is polypharmacy, wherein older patients often have a large number of different drugs simultaneously. Older patients are often prescribed significantly more medications than their younger counterparts. Many patients in nursing homes are treated with anxiolytics, sleeping pills and antidepressants. Of concern is that many of these medications are prescribed without a clear indication, have not had adequate dose adjustments or have toxic side-effects. At the same time there is often an under- prescription of important medications such as analgesics.
Conclusion: Ageing leads to a decline in the function of many of the body′s organs.
Regading opiods there is a lot we as physicians should consider when contemplating the prescription of strong opioids to elderly patients.

WIP-0423 COMPARATIVE ANALYSIS OF ARTHRITIS DURATION AMONG ELDERLY PATIENTS WITH GOUT IN YAKUTIA

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Objectives: A research project has been initiated to determine the incidence and characteristics of gout in Yakutia from 2007 to 2012. Patients hospitalized in the department of rheumatology of Yakutsk City Hospital with gouty arthritis were studied.

Methods: Patients are being studied by means of a questionnaire developed by the Institute of Rheumatology (Moscow). Data also being collected include: laboratory measures, radiographic assessment of feet and wrists; ultrasound of kidneys.
Results: Forty patients were registered and divided into two groups: elderly (9) and middle aged (33). Median age of the subjects is 64 versus 51 years, respectively. Duration of the last exacerbation of arthritis is 5 versus 6 weeks. Number of affected joints at the time of inspection is 3 versus 5; inflammation of the joints is 33 versus 45%. Laboratory data: ESR is 28 versus 22 mm/h; UA is 525 versus 483 m kmol/l; urea is 8 versus 6 mmol/l; creatinine is 129 versus 106 mkmol/l.
Conclusion: Elderly gouty patients have less prolonged exacerbation and number of inflamed joints; higher UA, urea and creatinine levels which requires individual approach of treatment.

Palliative Care

WIP-0141 MAPPING MORPHINE CONSUMPTION IN KIGALI UNIVERSITY TEACHING HOSPITAL, RWANDA

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Objectives: CHUK is the main referral hospital in Rwanda. CHUK seeks to deliver comprehensive care to patients with severe pain. But so far, injectable morphine is the only opioid form available at hospital. This situation leads to an insufficient management of chronic pain in needy patients.
A detailed examination of the morphine consumption by department is needed in order to help to target further initiatives on morphine use in CHUK.
Methods: A 12 months retrospective study on morphine consumption from May 2012 to April 2013 was done by reviewing the CHUK pharmacy records.
Results: During this period, 8733 vials of 1 ml (10 mg/ml) of morphine were used.
Anesthesia (31.09%), ICU (16.29%), Surgery (16.13%) and Emergency Departments (15.49%) were the first consumers of Morphine while Internal Medicine (7.75%), Gyn-Obs (1.6%) and Pediatrics wards (1.01%) were among the least ones.
Consumption is higher on the surgical and ICU wards probably because of the predisposition from the medical doctors to deal with acute pain while departments managing high number of patients with chronic life limiting disease including HIV/AIDS and cancers are paradoxically reported to be less consumers of morphine.
Conclusion: Patterns of consumption can help to identify the departments that are insufficiently taking opportunity of the presence of injectable morphine in CHUK pharmacy department. Health practitioners working in department that take care of medical chronic conditions shall be trained on the use of morphine. Morphine tablets shall be ordered and availed in order to increase the use of opoids in CHUK.

WIP-0128 AVAILABILITY OF ORAL MORPHINE AMONG CANCER PATIENTS REDUCED BED OCCUPANCY RATE IN DISTRICT HEALTH SYSTEM IN RWANDA

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Objectives: To demonstrate that lack of availability and so use of Morphine for moderate and severe pain increased the bed occupancy rate within the public health system and affected the holistic care.
Methods: We used the registration book from patients in need of palliative care who are referred to Kibagabaga Hospital from throughout the district and the country. At the end of March 2013, 100 patients have received inpatient palliative care. The bed occupancy rate was 85% in internal medicine with may unable to be discharged due to uncontrolled pain. After introducing Morphine among Cancer patients and patients with life-threatening, 80% have been discharged at home and received follow-up care at home; only 5% remaining in hospital. Preliminary data indicates a high level of satisfaction from patients and family members with services provided and a reduced tendency of patients with end-stage diseases to pursue costly treatment abroad.
Results: The bed occupancy rated at the Hospital dropped from 85% to 5% remaining in the hospital because of need of Oxygen which is not available at home. The average of inpatients before introducing Oral Morphine was 35 patients out 40 beds, now the average is between 2 and 3 patients.
Conclusion: The availability of Oral morphine relieves pain for cancer patients and is essential to holistic palliative care and Oral morphine availability and access can lead to a significant reduction in bed occupancy rate in the hospital.

WIP-0165 PERCEPTION OF PALLIATIVE CARE AMONG MEDICAL STUDENTS IN A TEACHING HOSPITAL

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Objectives: Palliative care is an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness. Palliative care must be a part of every medical personnel's practice. But still medical education curriculums have not included palliative care in its syllabus, sufficiently due to which most of the health professional are not aware about this specialty. The purpose of this study is to find out the perception of the medical students in palliative care in a teaching hospital.
Methods: A descriptive study was done among 270 undergraduate medical students studying in Institute of Medicine using a self structured pretested questionnaire. Data was entered in Microsoft Excel and analyzed by using SPSS 21.
Results: Of the total 270 undergraduate medical students only 152 has heard the word "palliative care". The perception about palliative care is 6.11%, 8.2%, 42.35%, 64.42% and 50.75% respectively from first year to final year. 210 (77.78%) don't know if palliative care medicine is included in curriculum of IOM. However, 227 are interested to learn about palliative care if got any opportunity.
Conclusion: The perception of PALLIATIVE CARE medicine is low in first couple of year of medical study. It is increased in clinically exposed students but is surprisingly more in fourth year than final year undergraduate medical students. However, it should be included in undergraduate medical study.

Postherpetic Pain

WIP-0215 TREATMENT OF POSTHERPETIC NEURALGIA WITH 5% LIDOCAINE MEDICATED PLASTER – FIRST PUBLICATION OF COMPLETE CLINICAL SAFETY SUMMARY

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Objectives: The topical analgesic 5% lidocaine medicated plaster (5% LMP) was approved for treatment of neuropathic pain associated with postherpetic neuralgia (PHN) based on six clinical efficacy and safety trials. An integrated summary of safety data from these trials is presented here.
Methods: Overall, 647 patients were exposed to 5% LMP from 1 day up to 5.44 years in 6 phase II/III trials. Drug-related AEs (DRAEs) were those treatment emergent adverse events (TEAEs) considered by the investigator to be at least possibly related to treatment with 5% LMP. Analysis of safety data was done descriptively.

Results: 9.8–12.8% of patients experienced at least one DRAE. DRAEs were mainly local reactions at the application site. The majority of the TEAEs and DRAEs were of mild or moderate intensity, resolved without further treatment after removal of the plaster, and did not lead to trial discontinuation. With regard to time of onset and duration of TEAEs, no specific pattern was observed. One serious DRAE (mental disorder due to general medical condition) and no drug related death were observed during the clinical trials.
Conclusion: 5% LMP demonstrated a very good safety profile and a favourable short- and long-term tolerability with a minimal risk for systemic adverse reactions.
Acknowledgement: I. Boesl and S. Koenig are employees from Grünenthal.
The trials were funded by Grünenthal, Hind Health Care and Teikoku.
Conflict of interest.

Postoperative Pain

WIP-0571 MODIFIED PECS BLOCK AS A PART OF MULTIMODAL PERI-OPERATIVE ANALGESIA IN SURGERY FOR CANCER BREAST WITH AXILLARY EVACUATION: A RANDOMIZED CLINICAL TRIAL

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Objectives: Pecs's block and its modification a novel approach aims to block at least the pectoral nerves, the intercostobrachial, intercostals III–IV–V–VI and the long thoracic nerve. to provide complete analgesia during breast surgery. The aim of our study was to prospectively compare this block when combined with general anesthesia (GA) and GA alone in modified radical mastectomy (MRM) surgery.
Methods: 120 patients of adult age group undergoing elective unilateral modified radical mastectomy (MRM) under general anesthesia were randomly allocated to two groups Group I: general anesthesia plus pecs block (n = 60) and Group II: general anesthesia alone (n = 60).
Results: Significantly lower VAS score as well as lower nausea and vomiting and sedation scores was observed in group I than group II. Statistically significant lower intraoperative fentanyl consumption was observed in group l than group II; number of patients who needed postoperative PCA morphine was significantly lower in group I than group II. In group l (pecs) lower morphine consumption after surgery was observed than in group ll (general) there was statistically less anesthesia time, less duration in PACU significant and number of patients who were discharged from the hospital before 24 hours was significantly higher in group I than in group II.
Conclusion: The combined Pecs I & II block is simple, easy to learn technique. produces excellent analgesia for radical breast surgery.

WIP-0419 KNEE AND LEG SURGERY – EFFICACY IN POSTOPERATIVE ANALGESIA

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Objectives: Our aim was to evaluate the effectiveness of the analgesic techniques for pain control postoperatively, for knee/leg surgery.
Methods: The records of 721 patients who underwent knee/leg surgery were analyzed retrospectively. Analgesic techniques used: intrathecal morphine (n = 4), local anesthetics (LA) with epidural morphine (n = 216), intravenous tramadol (n = 439), peripheral nerve block (PNB) (n = 62). Pain was classified at 0 and 24 h, with the numerical pain scale (0–10): no pain (0), mild pain (1–3), moderate pain (4–6) and severe pain (≥7).
Results: 0 hours: intrathecal morphine – no pain 100%; LA with epidural morphine – no/mild/moderate/severe pain: 84.1%/9.3%/4.4%/2.2%, respectively; intravenous tramadol – no/mild/moderate/severe pain: 77.3%/9.3%/8.4%/5%, respectively; PNB – no/mild/moderate/severe pain: 67.5%/6.5%/13%/13%, respectively. 24 hours: intrathecal morphine – no/mild pain: 75%/25%, respectively; LA with epidural morphine – no/mild/moderate/severe pain: 42%/27.1%/23.2%/7.7%, respectively; intravenous tramadol – no/mild/moderate/severe pain: 48.7%/34.7%/12%/4.6%, respectively and PNB – no/mild/moderate/severe pain: 45%/25%/18.3%/11.7%, respectively.
Conclusion: At 0 h, controlled pain (no pain/mild pain) was present in more than 85% of patients by all techniques, except for PNB, which is due to a period of learning. At 0 h and 24 h, morphine intrathecal showed good results, but the sample is too small and the abcense of pain evaluation at 48 h, doesn't allow us to conclude about the effectiveness of this technique. The epidural analgesia showed better efficacy at 0 h, but at 24 h the results shown the interference of accidents related to epidural catheter management. At 24 h, the results of epidural analgesia can't demonstrate the superiority of this technique, since the dynamic pain is not assessed. Further studies will be made to evaluate the effectiveness of the techniques in dynamic pain.

WIP-0261 HIP AND THIGH SURGERY – EFFICACY IN POSTOPERATIVE ANALGESIA

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Objectives:
Background: Our aim was to evaluate the effectiveness of the analgesic techniques in the postoperative period of hip/thigh surgery at Curry Cabral Hospital.
Methods: Methods: The records of 351 patients undergoing hip/thigh surgery, years 2010/2011/2012, were analyzed retrospectively. The analgesic techniques used were: intrathecal morphine (n = 4), local anesthetics (LA) with epidural morphine (n = 19), intravenous morphine (n = 4) and intravenous tramadol (n = 324). Pain was classified with the Numerical Pain Scale (0–10): no pain (0), mild pain (1–3), moderate pain (4–6) and severe pain (≥7). Pain was recorded at 0 h and 24 h postoperatively.
Results: At 0 hours: intrathecal morphine – no pain 100%, LA with epidural morphine – no pain 94%, moderate pain 6%; intravenous morphine – no pain 50%, mild pain 50%; intravenous tramadol – no pain 82.2%, mild pain 9.4%, moderate pain 7.1%, severe pain 1.3%. At 24 h: intrathecal morphine – no pain 75%, mild pain 25%; LA with epidural morphine – no pain 66.6%, mild pain 16.7%, moderate pain 16.7%; intravenous morphine – no pain 66.7% and severe pain 33.3%; intravenous tramadol – no pain 64.5%, mild pain 25.7%, moderate pain 9.5%, severe pain 0.3%.
Conclusion: Controlled pain (pain scale inferior/equal 3) is greater than 90% at 0 h. At 24 h, controlled pain is >75% for all techniques except for intravenous morphine, wich is the less effective. Intravenous tramadol at 0 h and 24 h was the most used and effective analgesic technique (controlled pain >90% of the patients).

WIP-0404 EFFICACY AND SAFETY OF COMBINED LUMBAR PLEXUS – SCIATIC NERVE BLOCK IN HIGH RISK PATIENTS FOR LOWER LIMB SURGERY?

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Objectives: Aim of our study is to assess the efficacy and safety of combined lumbar plexus- sciatic nerve block (LPSNB) for lower limb surgery in high risk patients (ASA III-IV) in comparison with general or neurexial anaesthesia.

Methods: Twenty patients (n = 20) mean age 72 years, ASA III-IV, with severe cardiac diseases were planned for lower limb surgeries including hip arthroplasties, between 2012 till 2013. Patients were randomly chosen to have combined (LPSNB) as technique for anaesthesia & analgesia. Twelve patients had single shot and eight patients had continuous catheter technique (CCT).

Results: Median pain score (VAS) was (0/10) intraoperatively in all patients. Only one patient required local infiltration during surgery. Seventeen patients (85%) had VAS (0/10) in PACU, fifteen patients (75%) had VAS of (0/10) at 4 hours, while ten patients (50%) had no pain at 12 hours. All eight patients (100%) in CCT group had no pain after 24 hours. There were no complications related to combined LPSNB except one patient had sedation score of 2 in PACU. There were no negative effects on the cardiac status of any patient. All patients were satisfied with the anaesthetic technique and pain relief provided for the surgery.

Conclusion: Considering the high efficacy and safety profile of LPSNB in our study, we recommend combined LPSNB for high risk (ASA III-IV) patients for lower limb surgery, provided the expertise is available. CCT is superior to single shot technique as pain relief is extended for 24–72 hours.

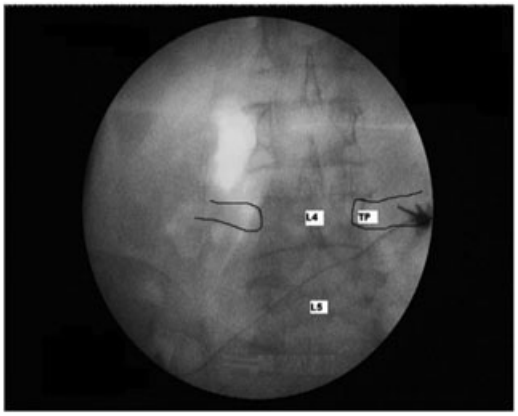

Fig-1: Radiograph showing block needle close to L4 transverse process.

		Pain Scale (VAS)				
		0	1	2	3	
Time	PACU	17	1	2	0	Number of patients
	4 Hrs.	15	2	2	1	
	12 Hrs.	10	2	4	4	
	24 Hrs.		10	0	10	

Table: Patients showing different Pain Scales on different times.

WIP-0161 EFFECT OF DEXMEDETOMIDINE ON POSTOPERATIVE PAIN AND RECOVERY IN PATIENTS UNDERGOING CERVICAL SPINE SURGERY

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Objectives: Dexmedetomidine, ia a potent, alpha-2 agonist that has sedative, analgesic, anxiolytic and amnestic effects without respiratory. Present study is planned to evaluate the effect of Dexmedetomidine as an intraoperative analgesic and sedative and its effect on post-operative extubation, recovery profile and pain in patients of cervical spine surgeries.

Methods: 35 adult patients with ASA I-II, with anterior cervical spine surgery were randomized. Study drug was started preinduction and continued till the last skin stitch. Dexmedetomidine was started at 0.2 μg/kg/h after loading dose of 1 μg/kg. BIS score kept between 45 and 55. Perioperative hemodynamics, intraoperative fentanyl and sevoflurane consumption, and postoperative recovery profile, pain, fentanyl consumption was observed.

Results: Total 35 patients were enrolled. Seventeen in the placebo and 18 in the study group. Time to emergence was earlier in Dexmed group (7.8 ± 2.4 minutes) vs 10.5 ± 3.7 minutes. Time to extubation was earlier in Dexmed group (9.8 ± 3.1 minutes) versus 13.2 ± 4.2 minutes.

Pain score was lower in Dexmed group compared to placebo at extubation (2.8 ± 9.6 vs. 26.2 ± 22.2; P = <0.001) and in ICU (7.2 ± 16.4 vs. 32.8 ± 16.3). Time for 1st analgesic dose in postoperative period was later in Dexmed group (46.6 ± 21.5 minutes vs. 18.7 ± 14.7 minutes).

Conclusion: Intraoperative use of dexmedetomidine in anterior cervical spine surgery results in a favorable recovery profile with reduced emergence/extubation time and postoperative pain.

WIP-0418 THE PHANTOM MENACE: IMPLEMENTATION OF A BEST PRACTICE GUIDELINE FOR THE PREVENTION AND TREATMENT OF ACUTE PHANTOM LIMB PAIN

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Objectives: Amputation of a limb is associated with significant pain and morbidity in the perioperative period. Pain commonly comes from the surgical site and from a phantom limb. Pains are pathophysiologically connected, poorly assessed, difficult to treat and cause considerable suffering.

Local audit (2012) provided evidence of poorly controlled phantom limb pain (PLP) in NHS Tayside (incidence of 83%). Our initiative aimed to reduce this incidence.

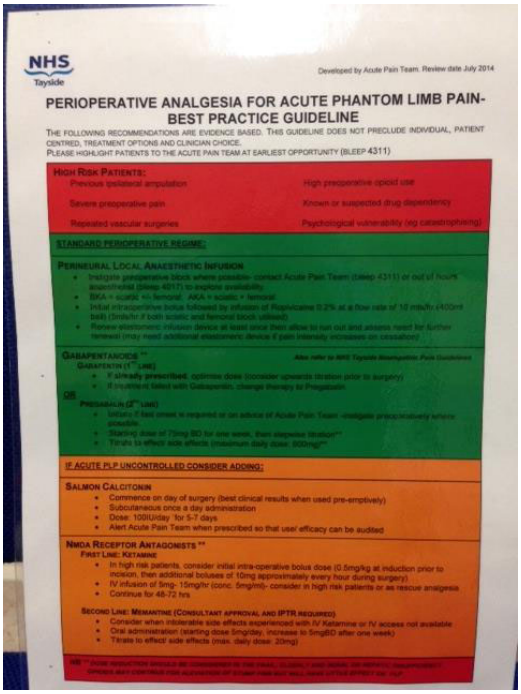
Methods: Following reflection on current practice, an extended literature review was carried out to evaluate the evidence pertaining to adjuvant treatment options. No published guidance was uncovered to inform the treatment of PLP in the perioperative period and the prevention of the development of persistent PLP.

A guideline for best practice was developed to provide a standardised, safe, evidence based treatment, taking cognisance of patient specific factors and contemporary research. This initial project has expanded to include a multidisciplinary program of education and ongoing audit of patient experience.

Results: Audit results are encouraging with patients reporting fewer opioid side effects, good perioperative pain relief whilst consistently achieving physiotherapy and rehabilitation goals. Prolonged follow up interviews are ongoing. Table shows levels of PLP on discharge.

Conclusion: Implementation of our Best Practice Guideline has improved the postoperative experience for our patients post amputation.

PLP Levels on Discharge	Not Bothersome	Slightly Bothersome	Moderately Bothersome	Very Bothersome	Extremely Bothersome
No of patients	14	5	3	4	0
% of patients	54	19	11	16	0



NHS Tayside

Developed by Acute Pain Team. Review date July 2014

PERIOPERATIVE ANALGESIA FOR ACUTE PHANTOM LIMB PAIN-BEST PRACTICE GUIDELINE

THE FOLLOWING RECOMMENDATIONS ARE EVIDENCE BASED. THIS GUIDELINE DOES NOT PRECLUDE INDIVIDUAL, PATIENT CENTRED, TREATMENT OPTIONS AND CLINICIAN CHOICE.
PLEASE HIGHLIGHT PATIENTS TO THE ACUTE PAIN TEAM AT EARLIEST OPPORTUNITY (BLEEP 4311)

HIGH RISK PATIENTS:
- Previous ipsilateral amputation
- High preoperative opioid use
- Severe preoperative pain
- Known or suspected drug dependency
- Repeated vascular surgeries
- Psychological vulnerability (eg catastrophising)

STANDARD PERIOPERATIVE REGIME:

PERINEURAL LOCAL ANAESTHETIC INFUSION
- Instigate preoperative block where possible- contact Acute Pain Team (bleep 4311) or out of hours anaesthetist (bleep 4017) to explore availability
- BKA = sciatic +/- femoral. AKA = sciatic + femoral
- Initial intraoperative bolus followed by infusion of Ropivicaine 0.2% at a flow rate of 10 mls/hr (400ml bag) (5ml/hr if both sciatic and femoral block utilised)
- Review elastomeric infusion device at least once then allow to run out and assess need for further renewal (may need additional elastomeric device if pain intensity increases on cessation)

GABAPENTANOIDS **
Also refer to NHS Tayside Neuropathic Pain Guidelines
GABAPENTIN (1st LINE)
- If already prescribed, optimise dose (consider upwards titration prior to surgery)
- If intolerance/ failure with Gabapentin, change therapy to Pregabalin

OR

PREGABALIN (2nd LINE)
- Initiate if best clinical is required or on advice of Acute Pain Team -instigate preoperatively where possible
- Starting dose of 75mg BD for one week, then stepwise titration**
- Titrate to effect/ side effects (maximum daily dose: 600mg)**

IF ACUTE PLP UNCONTROLLED CONSIDER ADDING:

SALMON CALCITONIN
- Commence on day of surgery (best clinical results when used pre-emptively)
- Subcutaneous once a day administration
- Dose: 100IU/day for 5-7 days
- Alert Acute Pain Team when prescribed so that use/ efficacy can be audited

NMDA RECEPTOR ANTAGONISTS **
FIRST LINE: KETAMINE
- In high risk patients, consider initial intra-operative bolus dose (0.5mg/kg at induction prior to incision, then additional boluses of 10mg approximately every hour during surgery)
- IV infusion of 5mg- 10mg/hr (conc. 5mg/ml)- consider in high risk patients or as rescue analgesia
- Continue for 48-72 hrs

SECOND LINE: MEMANTINE (CONSULTANT APPROVAL AND IPTR REQUIRED)
- Consider when intolerable side effects experienced with IV Ketamine or IV access not available
- Oral administration (starting dose 5mg/day, increase to 5mgBD after one week)
- Titrate to effect/ side effects (max. daily dose: 20mg)

NB ** [illegible]

WIP-0271 RECOVERY QUALITY EVALUATION IN GENERAL SURGERY

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Objectives: The aim of this study was to evaluate the quality of recovery in General Surgery (GS) patients using the "Quality of Recovery 40" (QoR-40) scale.

Methods: Prospective observational study of patients undergoing elective GS procedures between April 1 and May 31, 2013. QoR – 40 was fulfilled by the patient or the interviewer during preoperative visit and 24 h after surgery.

Patients were excluded if they had inability to communicate in portuguese, intellectual impairment, altered consciousness level or medical condition requiring Intensive Care Unit admission. Poor quality recovery was defined as pre and postoperative QoR – 40 value variation greater than two standard deviations. Descriptive and statistical analysis was performed using SPSS® program (t-student test, One-Way ANOVA or correspondent nonparametric tests) with 95% confidence interval.

Results: Sample included 133 patients. On average patients worsened 6 ± 16 (standard deviation) points in relation to preoperative QoR-40 value. Prevalence of poor recovery quality was 5% (n = 6). Patients showed improved emotional state after surgery. All other dimensions worsened except psychological support that revealed no change. Prevalence of nausea and vomiting was 40% and 23%, respectively. Patients with nausea had less pain ($p = 0.013$) but worse global recovery quality ($p = 0.102$). Regarding pain assessment, 20% of patients had severe pain.

Conclusion: Despite a low prevalence of poor quality recovery, the number of complications such as nausea, vomiting and severe pain should not be underestimated.

WIP-0392 LESSONS LEARNED FROM FIVE YEARS ACUTE PAIN SERVICE IN A UNIVERSITY HOSPITAL

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Objectives: An acute pain service facilitates in the provision of safe and effective pain management. It visits postoperative patients treated with a specialized pain management technique (PMT).

Study objective: to review the extent and efficacy of the PMT used in patients after thoracotomy, abdominal or extremity surgery.

Methods: A retrospective analysis was applied on prospective collected data of patients, who underwent thoracotomy, abdominal or extremity surgery in the Radboudumc in Nijmegen in January 2008-August 2013. Included PMTs: continuous epidural analgesia (CEA), patient-controlled intravenous analgesia (PCIA) and locoregional analgesia (LRA). The PMT and the dynamic pain scores (NRS 0–10) were recorded.

Results: Figure 1 shows for each selected type of surgery:
-the number of patients with CEA, PCIA or LRA.
-the dynamic pain scores during the first four postoperative days.

Conclusion: The dynamic pain scores were higher in PCIA compared with CEA in thoracic, abdominal and extremity surgery. In abdominal and extremity surgery PCIA was used more often than CEA.

No serious complications of CEA were seen but a definite conclusion cannot be drawn due to the number of patients with CEA.

WIP-0250 DOES THE SURGICAL TREATMENT FOR LUMBAR RADICULOPATHY FULFILL PATIENTS PREOPERATIVE EXPECTATIONS? A ONE-YEAR FOLLOW-UP STUDY

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Objectives: Examine the fulfilment of expectations of patients undergoing a microdiscectomy.

Methods: Twenty-three patients who underwent a microdiscectomy for lumbar radiculopathy were included. They completed pre-operatively an expectation questionnaire relative to the global expected change (GEC) but also to some more specific expected changes (regarding the pain in the leg (PLEC) and the walking capacity (WCEC)) by means of Likert scales (0 = no change expected, 3 = full recovery expected); a 0–10 numeric rating scale (NRS) and the Oswestry questionnaire assessed the instantaneous intensity of pain in the leg (IPL) and the disability, respectively.

At the one-year follow-up, participants completed a questionnaire to assess the global and specific changes by means of Likert scales as well as the NRS and the Oswestry questionnaire.

Results: Preoperatively, 74%, 83% and 83% of the patients expected a full recovery regarding GEC, PLEC and WCEC, respectively; their mean Oswestry score was 44.4 ± 11% and IPL was 6 ± 3.1/10.
At the 1-year follow-up, IPL level (2.4 ± 2/10) and Oswestry score (21.4 ± 27%) were significantly lower than preoperatively ($p < 0.001$). Although more than 85% of participants reported at least slight improvements, only 35%, 44% and 56% of the patients reported a full recovery for GEC, PLEC and WCEC, respectively.
Conclusion: Most patients reported improvements at the 1-year follow-up. While, in about 50% of the cases, the improvements failed to meet the patients' expectations, this is probably due in part to these expectations being very high, e.g., full recovery.

WIP-0450 CERVICAL EPIDURAL HEMATOMA DURING PERCUTANEOUS CORDOTOMY FOR UNILATERAL CANCER PAIN: A CASE REPORT

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Objectives: Spinal epidural hematoma is a rare, but potentially devastating, consequence of accessing the epidural space for anesthesia or interventional pain procedures. Cervical epidural hematoma during percutaneous cordotomy for cancer pain is reported in this case report.
Methods: Case report: 53-year-old man with soft tissue malignancy admitted with severe unilateral leg pain unresponsive to strong opioids. After preoperative evaluation, percutaneous cordotomy under CT guidance was planned. Using local infiltration anesthesia between the first and the second cervical vertebrae, the needle was introduced in the neck on the contralateral side to the pain under CT guidance. The needle was positioned so that its tip was directed to the anterior portion of the spinal cord. An insulated electrode was inserted to enter the spinal cord. During the procedure CT images suggesting epidural hematoma formation on the same side with the procedure was recognized. The procedure was completed (thermal lesion 80 degrees Celcius, 10, 20 and 30 seconds) after sensorial and motor stimulation. Immediate cervical MRI confirmed epidural hematoma formation. After the procedure he was pain free and he had no neurologic signs of spinal cord compression. He was neurologically stable during his close follow-up so no surgical managemet was required.
Results: -
Conclusion: This is the first reported case of cervical epidural hematoma formation during percutaneous cordotomy. CT guidance helped for the prompt recognition of this complication at the time of the procedure.

WIP-0449 PREOPERATIVE MIDAZOLAM REDUCES EARLY POSTOPERATIVE PAIN SCORES IN PATIENTS UNDERGOING OUTPATIENT UROLOGIC SURGERY

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Objectives: Preoperative medication, involves the psychological and a pharmaceutical preparation of patients to surgical procedures. The postoperative effects of preoperative midazolam application were evaluated in this prospective, randomized, double-blind study in outpatient urologic surgery.
Methods: Sixty-four male patients aged between 18–65 years undergoing daily urological surgery (varicocele, testicular sperm extraction, hydrocele) were included in the study. STAI test was performed in all patients prior to the operation room. 0.03 mg/kg midazolam was applied to the Group I 20 minutes before the surgical procedure, saline solution was applied to the Group 2. In the postoperative period vital signs, the degree of sedation (Ramsey Sedation Score), POSTOPERATIVE PAIN scores (VAS 0–10), side effects (nausea, vomiting) of the patients were recorded. Home readiness (PADS ≥ 9) of patients was also recorded. Between 4–6 hours postoperatively, STAI test was performed again.
Results: Groups were comparable with respect to demographic data and duration of surgery. Preoperative STAI values, postoperative Ramsey Sedation Scores, home readiness were similar in both groups. Although postoperative STAI values ?? were lower in group 1, the difference did not reach statistical significance. postoperative pain scores in Group II was significantly higher than Group I.
Conclusion: 0.03 mg/kg iv midazolam given preoperatively reduced pain scores in the early postoperative period without prolonging recovery in patients undergoing daily urological surgery.

WIP-0488 SAFE USE OF A CONTINUOUS INFUSION WITH INTRAVENOUS PATIENT-CONTROLLED ANALGESIA: REPORT OF MORE THAN 50,000 PATIENTS

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Objectives: This study was concluded to evaluate the safety and efficacy and patient satisfactory of the use of IV- PCA (electronic or single use- with or without basal infusion) in more than 50,000 patients outside of ICU with different surgical procedures.
Methods: This observational study was conducted from 2007 to 2013 in the Department of Anesthesiology and acute Pain service at Sadi hospitals, Isfahan, Iran. Most are adults undergoing major orthopedic, obstetric, or general surgical procedures, and approximately 47% receive PCA postoperatively. The hospital uses 24 hours NAPS (nurse of acute pain service) and preprinted PCA order sheets. Patients were examined one time preoperatively and every 15 minutes in first hour postoperatively and then every 30 minutes for next 4 hours and then every one hour until cessation. Patients were under complete monitoring (like pulseoximetry-sedation and pain score and vital sign and etc.).
Results: Among our patients, 43,507 (87%) were female and 6503 (13%) were males. The mean age of our patients was 27.32 ± 8.4 years. The results of clinical examinations were shown in Table 1. Only seven patients had respiratory depressions, who were treated without any sequel. We had zero mortality rate. The total means of clinical examinations were as followed: respiratory rate: 17 ± 1.9, Systolic blood pressure: 130.75 ± 37.90, Diastolic blood pressure: 75.06 ± 23.45, Heart rate: 95.05 ± 16.54, Saturation: 87.34 ± 5.76, Pain score: 3.45 ± 1.54. Almost all of our patients were satisfied.
Conclusion: Our study showed the safe use of different IV intravenous patient-controlled analgesia among more than 50,000 patients. Future studies are warranted.

WIP-0173 ACUTE SCIATIC NEURITIS FOLLOWING LUMBAR LAMINECTOMY: CASE REPORT

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Objectives: It is commonly accepted that the common cause of acute/chronic pain in the distribution of the lumbosacral nerve roots is herniation of a lumbar intervertebral disc unless prove otherwise.

Sciatic nerve injury and dysfunction is not an uncommon cause of lower extremity symptoms in a musculoskeletal practice. Recurrence of a sciatic neuropathy after a successful disc surgery can be due to many possible etiologies of along the sciatic nerve including recurrent disc.
Methods: The patient is a 59-year-old female with complaint of newly onset sciatica after complete pain resolution following a successful lumbar laminectomy.
In order to manage her newly onset pain, she had multiple pain management visits and ancillary treatment for the pain, including medication management and corticosteroid injection, which provided minimum relief.
Persistent sciatica and consistent physical examination findings urged us to perform a pelvic MRI to visualize suspected pathology, which revealed right side sciatic neuritis.
After a course of non-successful aggressive multimodality pain management, the patient had a trial period of the percutaneous spinal cord stimulation.
Results: The patient reported a complete response with almost 100% pain relief with permanent implant of SCS.
Conclusion: Review of the literature on sciatic neuritis shows this is the first case report of sciatic neuritis subsequent to lumbar laminectomy.

WIP-0481 A PROSPECTIVE TRIAL OF DORSAL ROOT GANGLION (DRG) STIMULATION WITH THE COMMERCIALLY AVAILABLE AXIUM NEUROSTIMULATOR SYSTEM (PREDICT)

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Objectives: Primary objective of this prospective trial is to evaluate the efficacy of spinal cord stimulation (SCS) of the DRG (Axium™) neurostimulator system in the treatment of intractable chronic pain while secondary objectives capture safety and quality of life outcomes.
Methods: Subjects at least 18 years of age suffering from chronic neuropathic pain for at least 6 months were enrolled. Under monitored anaesthesia care, subjects underwent minimally invasive placement of leads in the lateral epidural space of the neural foramen. Subjects with successful trial stimulation (>50% response) received fully-implantable system, completed visual analog scale (VAS) and quality of life questionnaires at baseline and at follow-up visits. Data at 1 month is presented as median ± standard error.
Results: Common diagnoses were peripheral nerve injury (PNI, n = 14) and complex regional pain syndrome (CRPS, n = 9). Thirty eight out of the 45 subjects (84.4%) had a successful trial. Leg and foot pain relief were 60.5% (±11.3%, n = 5) and 70.9% (±12.8%, n = 5), respectively, in CRPS subjects. EQ-5D index score improved from 0.317 ± 0.030 (n = 34) to 0.605 ± 0.064 (n = 14) ($p < 0.005$). In the PNI subset, reduction in pain was 64.3% (±9.7%, n = 14). One subject withdrew from the study because of inadequate pain relief.
Conclusion: Although the safety and efficacy results are preliminary, they confirm findings from previously completed prospective studies using SCS of the DRG for treating chronic pain.
Conflict of interest

WIP-0468 DOES ACUTE POSTOPERATIVE PAIN TRULY PREDICT CHRONIC POSTSURGICAL PAIN IN THE AMBULATORY SETTING?

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Objectives: In the Netherlands, 52% of surgeries are performed on an ambulatory basis. Studies have shown that acute and chronic postsurgical pain (APSP and CPSP) remain a problem after ambulatory surgery with incidences varying from 10 to 50%. This study evaluates the association between APSP and CPSP in patients with and without preoperative pain.
Methods: Over a period of eighteen months, 1274 patients undergoing ambulatory surgery were prospectively included. They were asked to complete three questionnaires; one week before surgery, four days after surgery and one year after surgery. Pain was assessed using an 11-point numeric rating scale (NRS). Moderate to severe pain was defined as a NRS > 3.
Results: A total of 859 patients answered the questions about pain in all three questionnaires. Of the 321 patients with preoperative pain (37.3%), 156 patients (48.6%) experienced APSP and 104 patients (32.4%) experienced CPSP. There was a statistically significant association between APSP and CPSP in this group of patients ($x^2 = 15.4$, $p < 0.001$). Of the 538 patients without preoperative pain, 77 (14.3%) experienced APSP and 26 (4.8%) experienced CPSP. There was no statistically significant association between acute and chronic postsurgical pain ($x^2 = 0.54$, $p = 0.46$).
Conclusion: Our study showed that APSP was only significantly associated with the development of CPSP if patients had also experienced preoperative pain. This emphasizes the importance of adequately assessing and treating pain in the preoperative phase.

WIP-0320 IMPACT OF EXTENDED PERIOPERATIVE CYCLOOXYGENASE (COX) – 2 INHIBITION ON CHRONIC PAIN AFTER SURGERY FOR BREAST CANCER

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Objectives: Chronic pain affects 25–60% of patients after breast cancer surgery (BCS) where nociceptive input from inflammation and peripheral nerve injury induces central sensitization and maintains pain. The inflammatory component of central sensitization is inhibited via COX-2, the neuronal component via nerve blockade. We investigated whether extended perioperative COX-2 inhibition reduces chronic pain after BCS under paravertebral nerve block.
Methods: Hundred and thirty eighty women for first lumpectomy/mastectomy were randomized to COX-2 inhibition (COX-2i: 2 × 40 mg parecoxib on day of surgery, thereafter 2 × 200 mg celecoxib/day until day five) or placebo (PLA). Pain prevalence and intensity were measured at 1, 3, 6 and 12 months via VAS (rest, arm movement, coughing). Factors for RM-ANOVA analysis: treatment, reoperation score (different for COX-2i vs. PLA; 83 vs. 56%) and axillary lymph node dissection (ALND, an accepted pain predictor).
Results: Forty-eight (51.4 ± 8.7 year) COX-2i and 46 (54.8 ± 11.0 year) PLA patients were analyzed. BMI, surgical procedure, ALND and chemo/radiotherapy were comparable between groups. Unexpectedly, pain prevalence was similar for COX-2i and PLA at 1 (67.4 vs. 70.5%), 3 (60.9 vs. 59.1%), 6 (46.7 vs. 53.5%) and 12 months (42.5 vs. 51.2%); there was no

difference in pain intensity at rest, movement, or coughing. ALND was linked to higher prevalence and intensity of pain.
Conclusion: Our results suggest limited impact of perioperative COX-2 inhibition on chronic pain after BCS under nerve block. The findings suggest that blocking nociceptive input from nerve damage may be key in preventing chronic pain, with little additional benefit from blocking the inflammatory component of central sensitization.
Conflict of interest

WIP-0410 INTRAPERITONEAL ADMINISTRATION OF LOW DOSES OF LOCAL ANESTHETICS FOR POSTOPERATIVE PAIN MANAGEMENT AFTER LAPAROSCOPIC SURGERY

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Objectives: Although pain after laparoscopic surgery is less intense than after open surgery, some patients still experience considerable discomfort. POSTOPERATIVE PAIN after laparoscopic surgery is an important limiting factor for a rapid return to normal >activity. In our study we demonstrate the efficacy and safety of intraperitoneally administration of low doses of local anesthetics.
Methods: Fifty patients, 35–57 years old, received 40 ml of 0.9 normal saline solution (group S), ropivacaine 0.2% (group R), levobupivacaine 0.25% (group L). A general anesthesia was performed with propofol, cisatracurium, mixture of air/O_2/sevoflurane and remifentanil in continuous infusion. The anesthetic solutions were intraperitoneally administered at the end of laparoscopic procedure. POSTOPERATIVE PAIN was assessed during the first 24 h (T_0 end of surgery, T_1 2 h, T_2 4 h, T_3 8 h, T_4 12 h, T_5 24 h) using Visual Analogic Scale (VAS 0–10).
Results: Pain was less intense in the group L, particularly in T_0-T_4-T_5 and rescue analgesic drugs consumption was lower in this group respect ropivacaine and normal saline groups. POSTOPERATIVE PAIN at deep inspiration was higher in ropivacaine group respect levobupivacaine and normal saline groups.
Conclusion: The efficacy of intraperitoneally administration of local anesthetics has been well demonstrated in many studies. In our study we showed that the use of lower concentrations of local anesthetics led to significantly lower pain scores particularly for what concerns levobupivacaine. Thanks to the use of lower concentrations it is possible to significantly reduce the plasma levels of local anesthetic absorbed from the periotoneum and consequently reduce the risk of toxicity.

WIP-0313 CHRONIC PAIN AFTER SURGICAL INGUINAL HERNIA REPAIR

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Objectives: The incidence of chronic pain after inguinal hernia has been estimated to be between 1% and 19%.[1,2,3] The exact cause of the post-herniorrhaphic pain is not clear.
Methods: A 21 year, man was referred to the chronic pain service with a 5 month history of pain in the left inguinal region. He had undergone an open surgical intervention of the hernia repair with mash. After two weeks pain was released and patient was discharged home without complications.The pain restarted after he lifted a heavy weight. It involved the lower abdomen, more markedly the left lower quadrant, inguinal region. Treatment of the patient included Lyrica, Diclovit, Nexium, Neurobion, Novalgin drops, but the benefit was very little, his analogue pain rating scale remained 7–8. Patient was referred for investigation and treatment, and the chronic pain service was consulted.
Results: A diagnostic and therapeutic ultrasound guided nerve block was indicated. Left side ilioinguinalis block under ultrasound is performed using 5 mL of 0.25% bupivacaine and 16 mg of methylprednisolone to block the ilioinguinal nerve and tender areas in the scar. Patient underwent a session of 4 blockades but no significant benefit from the other blockades. Fifty UI Botox in the Locus dolendi is administered. Two days after, patient referred that he had no benefit from this, so patient is advised for surgical treatment.
Conclusion: Chronic severe pain following inguinal hernia repair is a significant problem. It poses major diagnostic and therapeutic challenges to the clinician. Treatment options vary depending upon the nature of the pain and the physical findings.

WIP-0171 DOES PREOPERATIVE PSYCHOLOGICAL STATUS OF THE PATIENT AFFECT POST-OPERATIVE PAIN? – A PROSPECTIVE STUDY FROM THE CARIBBEAN

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Objectives: Patients with high anxiety states in the preoperative period often have higher post-operative pain despite adequate pain control during the intra-operative period. The aim of the study was to determine if the patient's preoperative psychological status affects pain experience in the post-operative period.
Methods: A prospective cross-sectional study was conducted in the elective surgical patients at the San Fernando General Hospital, Trinidad. A patient questionnaire consisting of demographics, the Hospital Anxiety and Depression Scale (HADS), and a combined pain scale was utilized to calculate the pre-operative expected pain score. Pain scores in the post-anaesthesia care unit at 4-hours and 24-hours, the maximum pain score, anaesthesia and surgical procedures, analgesia received post-operatively were recorded.
Results: 304 patients were studied. Significant positive correlations were found between the expected pain score and the actual pain scores at 4-hours and 24-hours post-operatively as well as the maximum pain score in 24 hour ($p < 0.05$). The expected pain score correlated well with age, educational level and the surgical specialty. The maximum pain score was influenced by the HADS scores of anxiety and depression, education level, surgical specialty, surgical duration and pre-operative pain.
Conclusion: Post-operative pain was influenced by the presence of anxiety and depression, the patient's preoperative expected pain score, educational level, pre-operative pain, surgical specialty and surgical duration. Some of these factors may be modifiable in the pre-operative period and should be addressed.

WIP-0371 HUMAN FACTORS RESULTS FOR IONSYS (FENTANYL TRANSDERMAL SYSTEM) FOR POSTOPERATIVE PAIN MANAGEMENT

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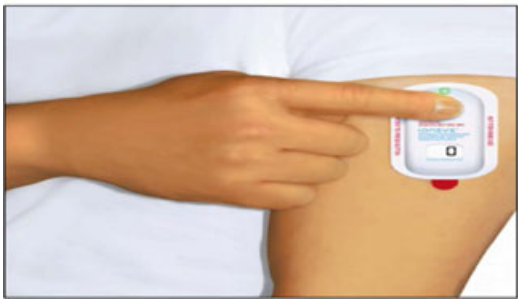
Objectives: IONSYS is patient-controlled analgesia used for management of acute post-operative pain. Fentanyl is delivered through the skin when the patient presses a button on the device. Usability of IONSYS was tested in three studies.
Methods: The product design (see Figures) was refined over multiple pilot usability studies. Three studies were completed to validate usability. Patient Study: 30 adult patients undergoing



treatment for post-operative pain received placebo IONSYS on their arm or chest. HCP Study: 31 pharmacists and nurses were asked to assemble and apply IONSYS to a mannequin; comprehend and respond to normal operation and alert states; and remove and dispose of IONSYS. Simulated Hospital Study: 30 healthy volunteers used IONSYS in a simulated hospital setting.

Results: Patient Study—100% were able to administer a simulated treatment using IONSYS and found the system convenient and very easy to use at both application sites.

HCP Study—The majority were able to assemble IONSYS in ≤1 minute and 100% of were able to properly use IONSYS. Overall, HCPs found IONSYS convenient and very easy to use.

Simulated Hospital Study—100% of subjects found IONSYS very easy to use. All nurses found that the instructions were clear and IONSYS was very easy to use.

There were no errors or near misses that could have led to potential unsafe use.

Conclusion: Patients, nurses, and pharmacists were able to use IONSYS with ease.

Conflict of interest

WIP-0184 TO EVALUATE TRAMADOL AS AN ADJUVANT TO ROPIVACAINE FOR POSTOPERATIVE ANALGESIA FOLLOWING ULTRASOUND-GUIDED TRANSVERSUS ABDOMINIS PLANE BLOCK (US-TAP) IN TOTAL ABDOMINAL HYSTERECTOMY

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Objectives: TAP block provides analgesia to parietal peritoneum, skin and muscles of the anterior abdominal wall. Use of adjuvants improves quality and duration of nerve blocks; reducing need of supplementary analgesics for postoperative pain. We evaluated tramadol as an adjuvant to ropivacaine for postoperative analgesia following US-TAP block in patients undergoing abdominal hysterectomy.

Methods: One-hundred female patients were allocated in this randomized, double blind controlled study to receive TAP block in addition to standard postoperative analgesia comprising IM diclofenac eight hourly & patient controlled IV morphine. Group R (n = 50) received 1.5 mg kg^{-1} of 0.75% ropivacaine with 0.5 ml of normal saline (maximum 150 mg or 20 ml) on each side. Group RT (n = 50) received 1.5 mg kg^{-1} of 0.75% ropivacaine with 0.5 ml (50 mg) tramadol. All patients received a general anaesthetic and, before surgical incision, bilateral US-TAP block was performed. Patients were assessed postoperatively at 0, 2, 4, 6, 10, 20, 30, 36 and 48 hours.

Results: Time to 1st request of morphine(hours) was significantly less in group RT as compared to group R, mean (±SD) (10.0 ± 4.5 vs. 17.48 ± 6.5, $p < 0.001$). Total morphine requirement (mg) in the first 48 postoperative hours was reduced (11.32 ± 1.54 vs. 8.48 ± 1.89, $p < 0.001$). Nausea score & postoperative antiemetic requirements were comparable ($p > 0.05$). There was no significant difference in side-effects like hypotension & bradycardia between the groups ($p = 0.406$).

Conclusion: Use of tramadol as adjuvant to ropivaciane for TAP block provides superior analgesia compared to ropivacaine alone for upto 48 postoperative hours after total abdominal hysterectomy.

WIP-0233 TREATMENT OF FAILED BACK SURGERY SYNDROME (FBSS) WITH CAPSAICIN 8% PATCH

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Objectives: Chronic pain from FBSS is of mixed etiology with the neuropathic elements predominating clearly on the inflammatory due to multiple traumatisms of small and/or larger nervous strains during surgery. The topical application of capsaicin patches 8% has given good results in chronic postoperative neuropathic pain (CNP) of diverse etiology. For these reasons we test the application of capsaicin 8% patch in FBSS.

Methods: Forty-five patients were treated with topical capsaicin patch 8% (34 men and 11 women (mean age 61.7 ± 6 years). All have been diagnosed during the last 4 years with FBSS after received MRI and clinical evaluation for diagnostic purposes. Neuropathic pain was assessed using DN4 questionnaire. Pre- and post-treatment pain intensity was assessed at week 2 and 12 after application using 11-point Visual Analogue Scale (VAS). Seven patients of 45 took Duloxetine or Pregabalin during the 12 weeks treatment with Capcaisin 8%.

Results: All patients have been diagnosed with CNP according to DN4. Pre-treatment mean VAS score was 7.4, while 2 weeks post-treatment mean VAS score was 5.4 (35% reduction) and 12 weeks post-treatment mean VAS score was 2.8. The reduction in pain score was 60%. No SAEs were reported except a transient erythema and burning sensation of all patients.

Conclusion: The capsaicin 8% patch reduces chronic NP due to FBSS, by 60% and this reduction is maintained for at least 12 weeks.

Conflict of interest

WIP-0536 PAIN AND SURVIVAL AFTER LOWER LIMB AMPUTATION IN HEMODIALYSIS PATIENTS

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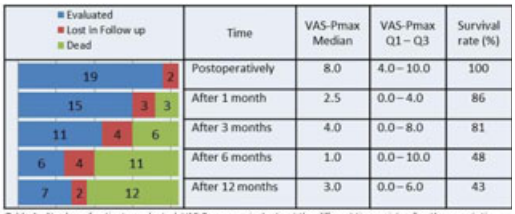
Objectives: The aim of this study was to assess pain, use of analgesics and survival after amputation in patients treated with hemodialysis.

Methods: Twenty-one patients treated with hemodialysis who underwent an amputation of the foot, leg above or under the knee were prospectively evaluated for pain and use of analge-



Time	VAS-Pmax Median	VAS-Pmax Q1 – Q3	Survival rate (%)
Postoperatively	8.0	4.0 – 10.0	100
After 1 month	2.5	0.0 – 4.0	86
After 3 months	4.0	0.0 – 8.0	81
After 6 months	1.0	0.0 – 10.0	48
After 12 months	3.0	0.0 – 6.0	43

Table 1 : Number of patients evaluated, VAS-Pmax, survival rate at the different time points after the amputation

sics immediately postoperatively and after 1, 3, 6 and 12 months. The maximal pain score on a visual analogue scale (VAS-Pmax) and administered analgesics were recorded.
Results: The VAS-Pmax and survival rates are presented in table 1. Three months after surgery, five patients (45%) regularly suffered from pain episodes with a VAS-Pmax ≥5/10. At 6 and 12 months the number decreased to two out of six and seven patients respectively.Phantom limb pain was present in 3 out of 14 patients (21%) 3 months after the amputation and in three out of seven patients (42%) after 1 year.
Three months after the procedure only two of the seven patients with a VAS-Pmax ≥3 were treated with adjuvant analgesics, one with weak and three with strong opioids, one patient did only get non-opioids and one patient did not get any analgesics.
Conclusion: The life expectancy after amputation in hemodialysis patients is limited. Many of these patients suffer from pain and do not always get an optimal pain treatment.

WIP-0267 INTRAOPERATIVE TRANSCUTANEOUS ELECTRIC NERVE STIMULATION FOR POSTOPERATIVE POSTERIOR NECK PAIN AFTER THYROIDECTOMY: A RANDOMIZED TRIAL

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Objectives: To evaluate the effect of intraoperative transcutaneous electric nerve stimulation (TENS) in the upper trapezius during thyroidectomy on reduction of posterior neck pain.
Methods: 20–60 year-old women of undergoing thyroidectomy without history of headache or neck pain within six months were allocated to randomly either the control or the TENS group. Numerical rating scale of posterior neck pain and wound pain at 30 minutes, 6, 24 and 48 hours after surgery were asked.
Results: Table 1 Intensity and numerical rating scale of posterior neck pain and wound pain in the control and TENS groups at 30 min, 6, 24, 48 hours after surgery

	Control (N = 50)	TENS (N = 50)	*P*
Intensity (mA)	0 ± 0	17 ± 6	<0.001
Posterior neck pain 30 min	3.5 (4 [0–10])	0 (2 [0–6])	<0.001
Posterior neck pain 6 hours	4 (2 [0–8])	2 (4 [0–8])	<0.001
Posterior neck pain 24 hours	3 (2 [0–6])	1 (3 [0–5])	0.001
Posterior neck pain 48 hours	2 (4 [0–6])	0 (2 [0–5])	0.002
Wound pain 30 min	6 (3 [3–9])	6 (1 [0–8])	>0.999
Wound pain 6 hours	5 (2 [1–7])	5 (2 [3–7])	>0.999
Wound pain 24 hours	3 (1 [2–6])	3 (1 [2–7])	>0.999
Wound pain 48 hours	2 (1 [0–5])	2 (1 [0–6])	>0.999

Values are mean ± SD or median (IQR [range]).
P value is a Bonferroni adjusted value.
Conclusion: Intraoperative TENS was easy, safe and effective in reducing postoperative posterior neck pain in patients undergoing thyroidectomy.

WIP-0187 5% LIDOCAINE PATCH FOR POSTOPERATIVE ANALGESIA AFTER MEDIAN STERNOTOMY

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Objectives: We hypothesized that application of 5% lidocaine patch might reduce the POSTOPERATIVE PAIN and morphine consumption in patients undergoing median sternotomy.
Methods: After local ethic committee approval and written informed patient consent, 100 patients were randomized to receive a lidocaine or placebo patch at the ICU arrival. For patients assigned to receive the lidocaine patch (n = 50), the patch was applied closely by each lateral side of the wound for 48 h. In the placebo group (n = 50), the placebo patch was applied at the same location. Two patches were used for 48 h in each group. Postoperative morphine consumption, the numeric rating score (NRS) for pain at 6, 12, 24 and 48 h after patch apply were recorded. The incidence of nausea or vomiting and the duration of ICU stay were collected. Data were compared with *t*-tests or x^2 test.
Results: There was no difference between groups in patient demographics, duration of surgery and duration of ICU stay (Table 1). Compared to placebo group (7.4/6.3/6.1/5.3 at 6/12/24/48 h after patch apply), the NRS were significantly lower at all times (2.3/2.1/2.1/1.8, $p < 0.05$, respectively) in lidocaine group. There was a significant difference in the amount of cumulative consumed morphine (34.0 ± 22.1 vs. 17.1 ± 14.4 mg in placebo vs. lidocaine group, $p < 0.05$). Moreover, the incidence of nausea or vomiting was significantly lower in lidocaine.
Conclusion: Application of a lidocaine patch 5% for median sternotomy can reduce the POSTOPERATIVE PAIN and morphine consumption without side effect.

WIP-0245 RISK FACTORS FOR MODERATE AND SEVERE PERSISTENT PAIN IN PATIENTS UNDERGOING TOTAL KNEE AND HIP ARTHROPLASTY: A PROSPECTIVE PREDICTIVE STUDY

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Objectives: Persistent post-surgical pain (PPSP) is a major clinical problem with significant individual, social and health care costs. The aim of this study was to examine the joint role of demographic, clinical and psychological risk factors in the development of moderate and severe PPSP after Total Knee and Hip Arthroplasty (TKA and THA, respectively).
Methods: This was a prospective study wherein a consecutive sample of 92 patients were assessed 24 hours before (T1), 48 hours after (T2) and 4–6 months (T3) after surgery. Hierarchical logistic regression analyses were performed to identify predictors of moderate and severe levels of PPSP.
Results: Four to six months after TKA and THA, 54 patients (58.7%) reported none or mild pain (Numerical Rating Scale:

NRS ≤ 3), whereas 38 (41.3%) reported moderate to severe pain (NRS > 3). In the final multivariate hierarchical logistic regression analyses, illness representations concerning the condition leading to surgery (osteoarthritis), such as a chronic timeline perception of the disease, emerged as a significant predictor of PPSP. Additionally, post-surgical anxiety also showed a predictive role in the development of PPSP. Pre-surgical pain was the most significant clinical predictive factor and, as expected, undergoing TKA was associated with greater odds of PPSP development than THA.
Conclusion: The findings on PPSP predictors after major joint arthroplasties can guide clinical practice in terms of considering cognitive and emotional factors, together with clinical factors, in planning acute pain management before and after surgery.

WIP-0396 QUALITY IMPROVEMENT THROUGH STANDARDISATION – THE HINCHINGBROOKE EXPERIENCE FOR PAIN RELIEF FOLLOWING JOINT ARTHROPLASTY

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Objectives: A multidisciplinary team of anaesthetic, surgical, nursing, physiothearpy and pharmacy staff undertook a clinical scoping exercise to improve patient experience and introduce enhanced recovery protocol after joint arthroplasty at Hinchingbrooke hospital.
Methods: Peer reviewed development of analgesic guidelines was undertaken.
This was accompanied by an ongoing audit on the parameters of pain control and associated effects with introduction of new guidelines.
The results showed superior pain control, early mobilization and enhanced patient satisfaction. The findings were shared with different stakeholders along with education of staff in the wards.
Results: It was identified that a combination of pre-operative analgesia, use of spinal anaesthesia with local anaesthetic & diamorphine along with nerve blocks and posterior capsular infiltration in knee replacements (0.125–0.25% L-Bupivacaine) provided the best results.
The average length of patient stay decreased from 5.5 days pre project to 3.5 days post project accompanied by early mobilsation and better patient satisfaction with pain control. The introduction of tranexemic acid decreased the rate of blood transfusions from 35% to 9%. Patient satisfaction improved from 82% pre project to 89% post project for hip replacements. For knee replacements the satisfaction scores improved from 77% to 92%.
Conclusion: A committed MDT, introduction of a standardised analgesic pathway, sharing the results of the current practice and those achieved by a change of practice with the participating team members went a long way towards completing the feedback loop and improving clinician ownership of the patient experience.
All these factors are vital for achieving quality improvement.

WIP-0346 EFFECT OF DEXMEDETOMIDINE ON HAEMODYNAMICS, FENTANYL REQUIREMENT AND RECOVERY PROFILE IN PATIENTS OF LAPAROSCOPIC CHOLECYSTECTOMY

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Objectives: Even in healthy patients laparoscopic cholecystectomy is fraught with haemodynamic instability due to creation

Figure 8: Relationship of Heart Rate with Time

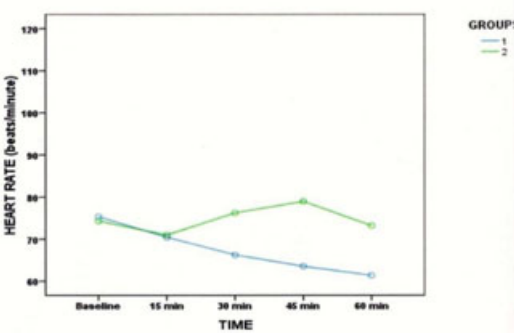
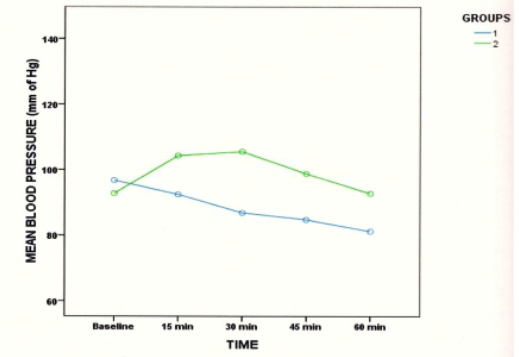


Figure 11: Relationship of Mean Blood Pressure with Time



of pneumoperitoneum, an integral part of laparoscopic procedures. Alpha-1 agonists (clonidine) have been used for haemodynamic stability in other surgical procedures. Presented prospective randomized double blind clinical trial explores the effects of dexmedetomidine on haemodynamics, fentanyl requirement and recovery in patients of laparoscopic cholecystectomy.
Methods: Hundred ASA I and II patients were randomly allocated to two groups of 50 patients each. Group I received bolus dexmedetomidine 0.7 µg m/Kg over 10 min while Group II received normal saline similarly. Patients were premedicated with midazolam and glycopyrrolate. Induction was with lignocaine and infusion propofol after which the designated drug was given. Then endotracheal intubation was performed using vecuronium 0.1 mg/kg. Maintenance of anaesthesia was with propfol and vecuronium. Time points for determining sedation (Ramsay Scale) and pain (Numerical rating scale) were 0, 15, 30, 45 and 60 minutes after patients reached PACU.
Results: After 60 minutes in the PACU.

Group (n = 50)	Ramsay Score (Sedation)	Numerical Rating Scale (Pain)
Dexmedetomidine	3	2 (1)
Normal saline	2	4 (1)

Conclusion: Dexmedetomidine provides better haemodynamic stability in ASA I and II patients undergoing laparoscopic cholecystectomy.
Fentanyl requirement is reduced.
Dexmedetomidine produces greater sedation in early postoperative period.

WIP-0377 ASSOCIATION BETWEEN PREOPERATIVE AND ACUTE POSTOPERATIVE PAIN IN HYSTERECTOMY PATIENTS

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Objectives: The research question of this study was to assess the association between preoperative pain and acute POSTOPERATIVE PAIN 4 days after hysterectomy.

Methods: Data were collected for a prospective multicenter cohort study on wellbeing after elective hysterectomy. Main inclusion criteria were: age <66 years and absence of malignancy. Patients completed a baseline questionnaire in the week before surgery and kept a pain diary until postoperative day 4. Pain was assessed using Numeric Rating Scale (NRS), scores were dichotomized (0–3 no pain, 4–10 pain) for chi-square analysis.

Results: Four hundred and nineteen Women were included with a mean (SD) age of 47 (7.3) years. Type of anesthesia was general (344), combined general-epidural (15), and spinal (60). Type of surgery: laparotomy (69), vaginal (177), laparoscopic assisted vaginal hysterectomy (75), total laparoscopic hysterectomy (91). Preoperative pain score, assessed as average pain over last week related to the indication for hysterectomy, was 3 (median, IQR 0–5). A NRS score of 4–10 was reported by 179 women (43%). 358 Patients provided pain diaries until day 4, median pain score was 2 (1–4). POSTOPERATIVE PAIN (NRS 4–10) on day 4 was reported by 92 (26%) patients. The odds ratio for acute POSTOPERATIVE PAIN in patients with preoperative pain related to the surgical indication was 2.44 (95% confidence interval 1.50–3.95).

Conclusion: Preoperative pain was reported by more than 40% of women undergoing hysterectomy for benign indication. They have an increased risk of 2.4 for acute POSTOPERATIVE PAIN on day 4.

WIP-0195 ACUTE PAIN SERVICES AND POSTSURGICAL PAIN MANAGEMENT IN THE NETHERLANDS: A SURVEY

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Objectives: Acute POSTOPERATIVE PAIN is still inadequately managed all over the world. This study aimed to investigate the organization of Dutch Acute Pain Services (APSs) and to review the recommended quality improvement measures by the Dutch Hospital Patient Safety Program (DHPSP).

Methods: Information was gathered by a digital questionnaire, sent to contact persons of all 96 Dutch hospitals performing surgical procedures.

Results: Completed questionnaires were received from 80 hospitals (83%), of which 90% have an acute pain service. Ninety seven percent of APSs are organized by the department of anesthesiology. Several professions work in APSs, but most are nurses and nurse anesthetists of which 80% work under supervision of anesthesiologists. Important duties of the APS are regular patient rounds checking complex pain techniques (100%), supporting improvement of quality of pain management of the hospital (89%), pain education (100%) and pain research (21%). With regard to the recommendations by the DHPSP: ninety-seven percent of hospitals have a protocol for pain after surgery; pain assessment is performed in 99% of the hospitals. No access to regular in hospital pain training is provided in 46% of the hospitals. Thirteen percent of the hospitals offer no patient information about pain management.

Conclusion: In the Netherlands, almost all hospitals have an APS. Both the way they are locally organized and the activities they employ differ. Further studies are needed to specify which patient and non patient related activities of APSs influence the pain levels of postoperative patients.

WIP-0350 IMPACT OF EXTENDED PERIOPERATIVE CYCLOOXYGENASE (COX)-2 INHIBITION ON QUALITY OF LIFE AFTER SURGERY FOR BREAST CANCER

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Objectives: Many patients develop chronic physical symptoms like pain, fatigue and insomnia after breast cancer surgery (BCS). Affected patients report lower scores on functional scales and decreased quality of life. We investigated whether extended perioperative COX-2 inhibition (to reduce systemic inflammatory inputs) has effects additional to extended nerve (paravertebral) block (PVB; to reduce neural inputs) after BCS. Outcome measures were chronic physical symptoms, functional levels and quality of life.

Methods: 138 women for first lumpectomy/mastectomy were randomized to COX-2 (CX2: 2 × 40 mg paracoxib on day of surgery, thereafter 2 × 200 mg celecoxib/day until day five) or placebo (PLA). EORTC QLQ-C30 and BR-23 questionnaires evaluated symptoms, daily living functioning and quality of life at baseline, 1, 3, 6 and 12 months after BCS. Factors for RM-ANOVA analysis: treatment, reoperation score (different for CX2 vs. PLA; 83 vs. 56%) and axillary lymph node dissection (ALND; an accepted pain predictor).

Results: 48 CX2 (51.4 ± 8.7 years) and 46 PLA (54.8 ± 11.0 years) patients were analyzed. BMI, surgical procedure, and chemo- or radiotherapy were comparable between groups. Unexpectedly, we failed to demonstrate a difference in physical symptoms, functional scales or quality of life for CX2 vs. PLA. Consistent with previous findings, ALND was linked to increased symptoms and decreased functional scales.

Conclusion: Our findings suggest limited additional effect of perioperative COX-2 inhibition on chronic physical symptoms and functional limitations after BCS under PVB. The results indicate that nociceptive input from nerve damage may be dominant for chronic symptom development after BCS, with little additional benefit from blockade of inflammatory inputs.
Conflict of interest

WIP-0179 INCIDENCE OF PAIN IN CATARACT SURGERY

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Objectives: Cataract surgery is the most commonly performed surgical procedure. Most of these patients are elderly and have pre-existing aches and sores, which make it difficult for them to stay still on the operating table without aggravating their pain. Even though there are studies looking into the eye pain after cataract surgery, not many studies have looked into pain in various other parts of the body, mainly caused by the surgical

positioning. We wanted to assess the incidence of pain following cataract surgery in our institute.
Methods: This survey was done on 100 patients having phacoemulsification for cataract at Moorfields eye hospital in London.
Results: Out of the 100 patients surveyed, 28 reported pain in the immediate postoperative period. Of these three had pain in the eye and 25 had pain in various other parts of the body including neck, hip, back and shoulder. This pain is generally attributed to the positioning of the patient. Upon further questioning 28% agreed that they would like to be given 1 gram of oral paracetamol as preemptive analgesic in future before any surgery.
Conclusion: Most of the patients presenting for cataract surgery are elderly people with pre existing pain problems in various parts of the body. These patients should be identified in the pre assessment clinic and should be advised to take their normal analgesics on the day of surgery. In addition they should be supplemented with other forms of oral analgesics to improve their experience.

WIP-0149 THE EFFECT OF TRAMADOL ADDED TO LIDOCAINE USED FOR INTRAVENOUS REGIONAL ANESTHESIA ON THE ANESTHESIA QUALITY AND POST-OPERATIVE ANALGESIA
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Objectives: To determine the effect of tramadol added to lidocaine used for RIVA on the anesthesia quality and post-operative analgesic properties.
Methods: Group-1: 3 mg kg^{-1} lidocaine was mixed with 40 mL saline and this solution was administered for RIVA purposes while 40 mL saline IV was simultaneously administered. Group-2: 3 mg kg^{-1} lidocaine + 50 mg tramadol was mixed with 40 mL saline and this solution was administered for RIVA purposes while 40 mL saline IV was simultaneously administered. Group-3: 3 mg kg^{-1} lidocaine was mixed with 40 mL saline and administered while IV 50 mg tramadol was mixed with 40 mL saline and administered.
Results: The onset times of sensorial and motor blocks were different among three groups at a statistically significant level. They were significantly lower in Group 2 in comparison with Group 1 and Group 3 ($p < 0.05$). The duration of post-operative analgesia was lower in Group 1 as compared to Group 2 and Group 3 at a statistically significant level ($p < 0.05$). The quality of anesthesia assessed by the patient, anesthetist and surgeon was higher in Group 2 as compared to Group 1 and Group 3 at a statistically significant level.
Conclusion: It was observed that tramadol added to lidocaine for RIVA purposes precipitated the onset of sensory and motor blocks, prolonged the post-operative analgesia duration, reduced the post-operative analgesics consumption and enhanced the anesthesia quality.

WIP-0148 COMPARISON OF THE ANESTHESIA QUALITY OF SCIATIC NERVE BLOCK AND THE CONCOMITANT FEMORAL NERVE BLOCK VIA ANTERIOR AND POSTERIOR APPROACH ACCOMPANIED BY USG
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Objectives: Comparison of the sciatic nerve block and simultaneous femoral nerve block conducted in patients with anterior and posterior approaches in patients with malleolar fractures in terms of anesthesia quality and post-operative analgesic properties.
Methods: Forty patients with malleolar fractures in the ASA I-II class were included in the study. The patients were divided into two groups: anterior sciatic + femoral block Group 1 ($n = 20$) and posterior sciatic + femoral block Group 2 ($n = 20$). The anterior and posterior sciatic nerve block was achieved using the convex probe of USG with the visualization of the sciatic nerve, then a femoral block was achieved using the straight probe with the visualization of the femoral nerve.
Results: There were no statistically significant differences between Group 1 and Group 2 with respect to the parameters that were checked. On the other hand, the patient satisfaction in Group 1 was higher at a statistically significant level ($p < 0.05$).
Conclusion: There are no differences between anterior and posterior sciatic nerve blocks delivered as accompanied by USG in malleolar fractures with respect to anesthesiology quality and post-operative analgesic properties; however, the patient satisfaction is higher in the case of anterior sciatic nerve block.

Rehabilitation and Disability

WIP-0480 RESPONSIVENESS AND INTERPRETABILITY: A HEAD-TO-HEAD COMPARISON OF THE QUEBEC BACK PAIN DISABILITY SCALE AND ROLAND MORRIS DISABILITY QUESTIONNAIRE
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Objectives: The aim of this study was to compare the responsiveness and interpretability of the Portuguese Versions of the Quebec Back Pain Disability Scale (QBPDS-PT) and Roland Morris Disability Questionnaire (RMDQ), in patients with CLBP undergoing physical therapy.
Methods: Both questionnaires were completed by 132 CLBP patients at the baseline and after 6 week of a multimodal physical therapy treatment. At the follow-up, the clinical change was estimated using a seven-point perception of change scale. Responsiveness was assessed through anchor-based methods (correlation coefficients and ROC Curves). The influence of individual factors at baseline in responsiveness and interpretability were examined.
Results: A slightly superior discriminative ability of the QBPDS-PT was founded but this difference was not statistically significant ($p = 0.854$). The MCID values founded were about 2.5 points for QBPDS-PT, and six points for RMDQ-PT (approximately 1.5 points in the original 0–24 scale). There is a trend for the RMDQ-PT to be more responsive than the QBPDS-PT for patients with low levels of disability and low severity at the baseline, whereas the QBPDS-PT seems to be more responsive for patients with high levels of disability and severity. However, these differences remained none statistically significant.
Conclusion: Both questionnaires perform similarly in their ability to detect change after a six-week multimodal physiotherapy treatment. The differences observed on the effects of baseline on questionnaires' responsiveness should be explored in further research.

WIP-0500 MUSCULOSKELETAL DISORDER FROM PAIN TO SICK LEAVES AND DISABILITY PENSION
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Objectives: The aim of this observational study is to point out influence of musculoskeletal disorders and pain on long sick leaves and subsequent disability retirement. Chronic pain is

distressing for patients and a burden on health systems and society. The shares of disability pension are higher in Croatia than in other EU countries, it is 21% of all pensioners versus 13% in EU.
Methods: We collect data from Croatian pension register and Croatian Health Insurance Fund for one year period, 2013. Group of disease are compared according to International Statistical Classification of Diseases and Related Health Problems (ICD-10) and its proportion in sick leave and disability pension.
Results: Croatian Health Insurance Fund reports seak leaves rate for 2013 according to ICD-10 disease code and it's shown in figure 1. The musculoskeletal disorders have the highest percent of sick leaves cases, 30%. Within the musculoskeletal disorders discopaty appears more frequently, Figure 2. In December 2013, Croatia had 255. Three hundred and eighty-five beneficiaries of invalid pension claimed according to the Retirement Insurance Law. The musculoskeletal disorders participate with 12%.

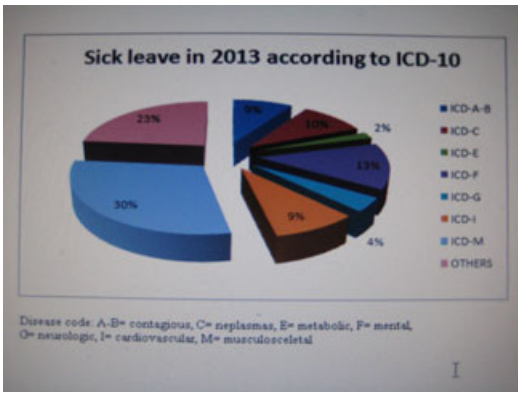

Figure 1. Percentage of sick leaves cases in 2013 for different disease groups.

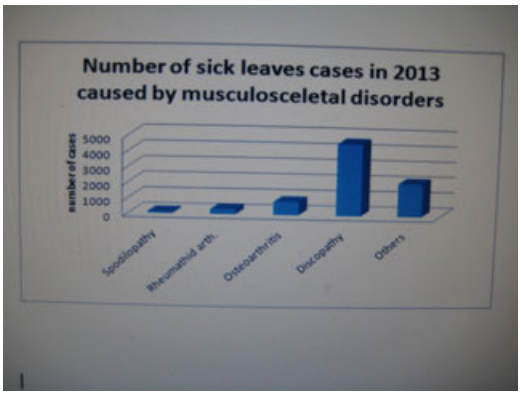

Figure 2. Number of sick leaves cases caused by different musculoskeletal disorders

Conclusion: Chronic pain goes hand in hand with musculoskeletal disorders. Analyzing national data demonstrates different aspects of its negative impact on healthcare and society. Therefore, that implies needs for think over national strategy for prevention and better treatment such conditions.

WIP-0237 PROGNOSTIC FACTORS FOR RECURRENCES IN NECK PAIN PATIENTS UP TO ONE YEAR AFTER CHIROPRACTIC CARE

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Objectives: The objective of this study was to assess the number of self-reported recurrences of neck pain after a chiropractic intervention over a one-year period. Additionally we investigated the prognostic factors for recurrence of neck pain after a chiropractic intervention.
Methods: Recruited were patients with neck pain fit for chiropractic manipulative treatment. The status of the patient was collected independently three, six and twelve month after the initial treatment. Outcome measures were, recurrence of neck pain, use of pain medication, gender, work status, having previous episodes of neck pain, trauma onset. Patients with an age of 45–59 years have the highest likelihood of having persistent neck pain. An additional outcome measure was therefore being in the age group 45–59 years. The treatment was not standardized.
Results: A total of 549 patients were used for analysis (mean age 42.0 ± 13.1 years, 344 women). One year after treatment a total of 499 participants labeled themselves as 'recovered' and 50 reported "recurrent" neck pain (mean age 45.0 ± 13.6 years, 32 women). The logistic regression model with recurrence as dependent variable revealed that age (OR = 0.35, p = 0.04, CI 0.12–0.98) and a previous history of neck pain (OR 1.97, p = 0.027, CI 1.08–3.61) may influence the outcome (Nagelkerke R^2 = 0.68).
Conclusion: Ten percent of the patients reported recurrences of neck pain after chiropractic intervention. Therefore, it seems to be an appropriate treatment for patients suffering from neck pain. Prognostic factors for recurrences of neck pain are previous episodes of neck pain and being 45–59 years old.

WIP-0175 MEDICATION ASSISTED STEP SCHEME WITH ACUPUNTURE, THERAPEUTIC LOCAL ANALGESIA AFTER TRANG FOR THE TREATMENT OF APOPLEXY, BRAIN HYPOXIA APPALLIC SYNDROME

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Objectives: Where as many patients in spite of medication assisted therapy still suffer from discomfort, we have managed to relieve them of their pain with the step scheme consisting of acupuncture, therapeutic local analgesia according to Trang consisting of blockage of Ganglion Stellatum, Ganglion cervicale superius, lumbar border cord, plexus brachialis, plexus lumbosacralis, spinal nerves as well as PDA and local infiltration of the spastic muscles and points and Vietnamese special massage. Phytotherapy, physiotherapy.
Methods: Many stroke patients with unconsciousness could be brought back to consciousness with acupuncture alone. A

patient in a coma for three months, where the EEG almost was a zero line, with a daily combination treatment started spontaneously breathing after 3 days and after 3 months could normally eat, walk and understand. Another young patient, who after a motorcycle accident, was in a complete apallic syndrome with tetraplegia and joint spasms for 2 years, could be treated with our therapy so that he is now under care at home and the health insurance has saved 1.204.000 Euro! Patients with hemiplegia and walking problems were also treated with the combination therapy so that they do not require any foreign help.
Results: Our results show that the combination therapy should be a compulsory treatment for apoplexy, apallic syndrome and brain hypoxia so that the helpless stroke patients can be somehow helped and also effectively reduce the cost of treatment which is borne by solidarity community.
Conclusion: The side-effect free TLA and the combination therapy with extra acupuncture points will be accurately demonstrated.

WIP-0225 THE PACT TRIAL: PATIENT CENTERED TELEREHABILITATION. DEVELOPMENT OF AN USER-CENTERED TELEREHABILITATION IN PATIENTS WITH PHANTOM LIMB PAIN FOLLOWING LOWER LIMB AMPUTATION

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Objectives: The aim of the PACT study is to develop a telerehabilitation for patients with phantom limb pain following lower limb amputation and to test its cost-effectiveness.
Methods: An iterative user-centered approach was used to develop the telerehabilitation service (Fig. 1). First, we used semi-structured interviews to elicit clinical experiences of 11 patients with phantom limb pain and 10 therapists regarding the application of mirror therapy and their requirements concerning the content of the telerehabilitation. Second, we developed a criterion checklist to review these user requirements. Third, based on the chosen user requirements the first prototype of the telerehabilitation was designed. Subsequentially, the prototype was tested on its usability and technical performance. Constant user feedback guided the redesign of the prototype until a final version of the telerehabilitation was achieved.
Results: The final version of the telerehabilitation consists of several functions, that are designed as applications ("apps") for mobile devices:
-monitoring of phantom limb pain (Fig. 2)
-videotraining for self-delivered mirror therapy (Fig. 3)
-augmented reality training
-relaxation exercises & mental practice (audiotraining)
-communication with therapist & other patients (e.g. e-mail, videoconferencing)

Figure 1. Overview of the different phases of the PACT study.

Figure 2. Monitoring of phantom limb pain

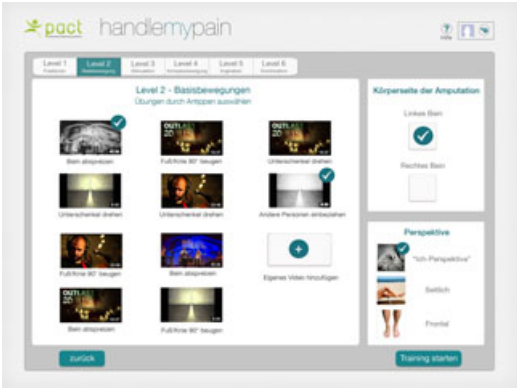

Figure 3. Example from the videotraining for mirror therapy.

Conclusion: A user-centered approach was applied to develop a telerehabilitation service to treat phantom limb pain following lower limb amputation. The telerehabilitation will be evaluated on its cost-effectiveness in an upcoming multi-center randomized controlled trial.

WIP-0262 INTERPROFESSIONAL REHABILITATION IMPROVES DISABILITY IN ADULTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN COMPARED TO MULTIDISCIPLINARY REHABILITATION: LONG-TERM RESULTS FROM A MULTICENTRE, QUASI-EXPERIMENTAL STUDY

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Objectives: The main aim was to analyse the long-term effectiveness of an interprofessional rehabilitation program (PASTOR) for adults with chronic non-specific low back pain (CLBP) compared to the multidisciplinary orthopaedic rehabilitation (MOR).
Methods: A multicentre quasi-experimental study with 3 measurement time points (baseline, 3 weeks, and 12 months) was implemented. 680 adults aged 18–65 with CLBP were consecutively recruited in three inpatient rehabilitation centres in Germany. The effects of MOR (control group) were assessed

first. Subsequently, PASTOR was implemented and evaluated in the same centres (intervention group). It consisted of 6 interprofessional modules, which were provided on 12 days in fixed groups. Both interventions lasted 3 weeks with 48 hours of therapy on average. Primary outcome was disability, which was assessed with the Hannover Functional Ability Questionnaire (FFbH-R) at 12 months. The study received ethical approval by the institutional review body (Re.-No.3807). Participants have signed written informed consent.
Results: In total 536 participants were assigned to PASTOR (n = 266) or MOR (n = 270). At 12 months, complete data for 368 participants was available. The adjusted between-group difference in the FFbH-R at the end of rehabilitation was 4.53 (95% CI 1.91–7.16) and at 12 months 6.58 (95% CI 3.38–9.78), corresponding to significant small-to-medium effect sizes of d = 0.36 (p = 0.001) and d = 0.42 (p < 0.001) in favour of PASTOR.
Conclusion: PASTOR improves the long-term effectiveness of inpatient rehabilitation in the management of CLBP.

WIP-0305 BACK ON TRACK; CHRONIC LOW BACK PAIN REHABILITATION PROGRAM IN PRIMARY CARE

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Objectives: To assess the difference in effectiveness (Δfunctional disability) and cost-effectiveness between the primary care intervention "Back on Track" and usual primary care in patients with chronic low back pain (CLBP) experiencing moderate levels of functional disability (WPN2 classification).

- To assess whether the "Back on Track" intervention will improve functional disability in patients with CLBP experiencing moderate-high levels of functional disability (WPN3-classification).

Methods: A Randomized-Controlled Trail will evaluate the primary objective (n = 82) and a pre-post test design will evaluate the secondary objective (n = 30). The "Back on Track" intervention, provided by primary care physiotherapists, is based on a biopsychosocial approach used in secondary care. Usual primary care comprises physiotherapy consultations according to the Dutch guideline for low back pain (KNGF). Main study parameters are functional disability, costs (medical & societal) and quality-adjusted life-years at baseline (T1), post- treatment (T2), and three months follow-up (T3).
Results: It is hypothesized that the "Back on Track" intervention will be more (cost-) effective in reducing functional disability in WPN2-classified patients than primary care usual. In addition, the "Back on Track" intervention is expected to improve functional disability in patients with WPN3- classifications.
Conclusion: This study might provide useful information about physiotherapy interventions in primary care for specific subgroups of patients with CLBP. The results could potentially improve the management of CLBP-patients resulting in reduction of large waiting lists and (medical & societal) costs.

Treatment Approaches: Interventional

WIP-0548 SIMPLICITY RADIOFREQUENCY (RF) DENERVATION FOR SACROILIAC (SI) JOINT PAIN: 2 YEAR DATA

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Objectives: Pain arising from SI joint constitutes 13–25% of all low back pain causes[1]. "Simplicity" technique allows RF denervation of SI joint by creating a "strip" lesion. This 2 year retrospective study investigates effectiveness and its effect on quality of life.
Methods: Data was collected from Barts Health NHS Trust, London, UK during period 2011–13. Patients diagnosed with SI joint pain (50% or more pain relief for more than 2 months following fluoroscopic guided therapeutic SI joint injections with 2 ml of 0.25% bupivacaine + 40 mg Methylprednisolone) underwent L5 medial branch RF denervation along with lateral branches of S1–4 by simplicity probe. Pain scores and SF12 questionnaires before and at 12 months were collected and analysed using nonparametric signed rank tests.
Results: 16 of 26 patients who underwent procedure successfully completed data.
Pain scores and SF12 score (N-16)

	Before intervention	After intervention	P value
Mean pain score	8.8	4.3	<0.001
General health			
Poor and Fair	68.8%	18.8%	0.002
Very good and excellent	0%	50.1%	
Bodily pain			
None-mild	6.3%	56.6%	
Moderate-severe	93.7%	43.8%	0.003
Restriction of activities			
Vigorous activities	93.8%	18.8%	0.002
Moderate activities	87.5%	25%	0.005
Health limiting social activities			
A good bit of time- all the time	62.5%	2.5%	0.007
None of the time- some of time	27.5%	58.5%	

Conclusion: This case series suggests that Simplicity RF denervation for SI joint pain may provide effective pain relief up to 1 year and improve quality of health in carefully selected patients. Randomized controlled trials are warranted to confirm the findings.

WIP-0176 THE POTENTIAL CONTRIBUTING EFFECT OF KETOROLAC AND FLUOXETINE TO A SPINAL EPIDURAL HEMATOMA FOLLOWING A CERVICAL INTERLAMINAR EPIDURAL STEROID INJECTION

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Objectives: Spinal epidural hematoma (SEH) is a rare complication with incidence ranging from 1.38 in 10,000 to 1 in 190,000 epidurals. Current American guidelines state that nonsteroidal anti-inflammatory drugs (NSAIDs) should not be withheld prior to epidural anesthesia.
Methods: We report a case wherein intramuscular ketorolac and oral fluoxetine contributed to a SEH and tetraplegia following a cervical epidural steroid injection. A 66 year-old female with radiculopathy presented for evaluation. Cervical MRI revealed multi-level neuroforaminal stenosis and degenerative intervertebral discs. Utilizing a loss of resistance to saline technique, an 18-gauge Tuohy-type needle entered the epidural space at C6–7. After negative aspiration, 4 mL of saline with 80 mg of Methyl-prednisolone was injected. Immediately thereafter, the patient reported significant neck pain with no neurologic status changes. Intramuscular ketorolac was given to treat pain.

Results: She developed a sudden onset of acute tetraplegia. Platelet and coagulation studies were normal. MRI showed an epidural hematoma extending from C5 to T7. She underwent a bilateral C5-T6 laminectomy with epidural hematoma evacuation.
Conclusion: Chronic renal insufficiency, spinal stenosis, female gender, and increasing age are risk factors for SEH following epidural anesthesia. In the present case, hemostasis was compromised by the combined antiplatelet effects of ketorolac, fluoxetine, fish oil, and vitamin E. Although the increased risk of bleeding for the alternative medications are minimal, they are well documented. Withholding NSAIDs, fluoxetine, fish oil, and vitamin E in the peri-procedural period is relatively low risk but it should be considered for all patients with multiple risk factors for SEH

WIP-0224 THE COMPARISON OF THE EFFICACY OF RADIOFREQUENCY NUCLEOPLASTY AND TARGETED DISC DECOMPRESSION IN LUMBAR RADICULOPATHY: A RETROSPECTIVE REVIEW

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Objectives: The aim of this study is to compare early and long term efficacy of lumbar radiofrequency thermocoagulation (RFTC) nucleoplasty and targeted disc decompression (TDD) in patients with lumbar radiculopathy in whom previous conventional therapy failed.
Methods: The medical records of 37 patients undergoing TDD and 36 patients undergoing lumbar RFTC nucleoplasty were retrospectively examined. Visual Analogue Scale (VAS), Numerical Rating Scale (NRS), Functional Rating Index, Backache Index (BAI), Oswestry Lumbar Back Pain Disability Index (OLBPDI), and Rolland-Morris Lumbar Back Pain Questionnaire (RMLBPQ) scales were used before treatment, and at 1, 6, and 12 months after the procedure. The North American Spine Society Satisfaction Scale was used at the twelfth month after the procedure.
Results: Statistically significant postoperative improvement in all pain scores was evident in both groups. Whereas VAS scores at the first, sixth, and twelfth months and NRS scores at the sixth month were slightly higher in RFTC nucleoplasty group, the VAS and NRS scores remained at lower levels in TDD group. A statistically significant reduction in analgesic consumption, and disability scores were observed in both groups.
Conclusion: The current study indicated that minimally invasive procedures, such as RFTC nucleoplasty and targeted disc decompression, which are performed for lumbar radiculopathy are effective and safe methods that can be used in hernia nucleus pulposus as an alternative to surgery. These procedures can yield a more rapid and long-term functional recovery, decrease in analgesic requirements, and increase in quality of life, respectively.

WIP-0239 DELAYED BILATERAL LEGS CONVULSIONS FOLLOWING PERCUTANEOUS EPIDURAL ADHESIOLYSIS FOR POST LUMBAR SURGERY SYNDROME: A CASE REPORT

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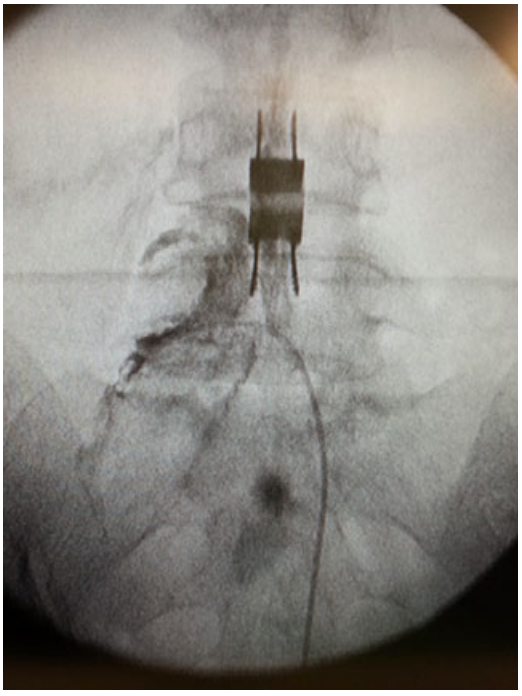
Objectives: Percutaneous epidural adhesiolysis has been conducted frequently in interventional pain management for post lumbar surgery symdrome. We described a 52 year-old female with chronic low back pain post lumbar surgery who developed



delayed bilateral legs convulsions after percutaneous epidural adhesiolysis.
Methods: Under sedation, percutaneous adhesiolysis was performed by NaviCath catheter via sacral approach under fluoroscopy guidance. Normal saline, 3% saline, marcaine with steroid were used as injectate to a total amount of 50 cc. Urografin 60% about 8 cc was used as contrast media due to temporary shortage of Omnipaque as previously used. The whole procedure lasted 40 minutes and no significant adverse responses or intrathecal puncture were found intraoperatively.
Results: Two episodes of bilateral legs convulsions developed 3 hours after surgery which lasted about 60 and 90 seconds respectively. The tonic-convulsions were confined to bilateral legs without hemodynamic instability or change of consciousness. The patient soon spontaneously recovered to normal neurological status after that event and was discharged on the next day.
Conclusion: Subtle dural tear with the use of Urografin may be the possible causes of convulsions. We suggest avoid ionic contrast media such as Urografin in percutaneous adhesiolysis and keep alert for potential side effects postoperatively.

WIP-0240 THE EFFECTS OF MODIFIED RETROLAMINA BLOCK IN PATIENTS CONTRAINDICATED WITH NEURAXIAL BLOCK

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Objectives: Many interventional neuraxial procedures performed in many patients. Retrolamina block, also called paravertebral lamina technique, had been used in POSTOPERATIVE PAIN or traumatic pain. In patients contraindicated neuraxial block, modified retrolamina block was performed and the effect was assessed.
Methods: The patients visited from March, 2012 to August 2013 were evaluated retrospectively. Inclusion criteria were the patients in modififed retrolamina block performed, the patients contraindicated with neuraxial block. Exclusion criteria were

the patients escaped records. Modified retrolamina block was performed under fluoroscopy. Entry point was surface of interspinous space. Needle trajectory was caudal, lateral, ventral direction. End point of needle was lamina of foramen posterior margin. After hydrodissection with 0.2% mepivacaine 10 ml, dye 5 ml injected under fluoroscopy for confirmation spread of drug. After confirmation, triamcinolone 10 mg, hyaluronidase 1500u, 0.2% mepivacaine 10, 20, 30 ml in cervical, thoracic, lumbar spine, respectively, were injected. Visual analogue scale (VAS) score, Oswestry disability index (ODI), neck disability index (NDI), the Leeds assessment of neuropathic symptoms and signs (LANSS) were assessed.
Results: Total 65 patients were evaluated. VAS scores were 7, 5, 4, 4 in before injection, 2 week, 1 month, 3 month after injection, respectively. Side effects were post injection back pain. There was no severe complication.
Conclusion: Modified retrolamina block was effective and there were no severe complications.

WIP-0152 USE OF SPINAL CORD STIMULATORS IN PATIENTS WITH IMPLANTABLE CARDIAC DEVICES

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Objectives: Back pain is a leading reason for medical visits and a wide array of tests and treatment modalities exist for its management including medication, spinal cord injections, spinal surgery and neuromodulation via spinal cord stimulator placement. As the population ages, increasing numbers of patients seeking treatment for back pain have comorbidities including advanced cardiac disease that may have necessitated the prior placement of implantable permanent pacemaker and cardiac defibrillator devices. Spinal cord stimulators have been demonstrated to be an effective therapy for forms of chronic back pain, however, limited data exists describing interactions between spinal cord stimulators and implantable permanent pacemaker devices or documenting their safety in such a patient population. Our goal is to recommend guidelines for the use of SCSs in patients with PPMs.
Methods: We will review the current literature and describe recommendations regarding the use of SCS in patients with PPM as well as guidelines for testing the devices after implantation and with follow up. We will describe the preparations made to reduce the likelihood of interaction between the devices.
Results: We present the case of successful implantation of a spinal cord stimulator in an 88 year-old male with chronic low back pain who had a previously implanted permanent pacemaker device for sick sinus syndrome.
Conclusion: SCSs can be implanted safely and successfully in patients with implantable cardiac devices if measures are undertaken to ensure the appropriate testing is done.

WIP-0576 THE THERMAL EFFECTS OF PULSED RADIOFREQUENCY PARAMETERS

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Objectives: To provide an empirical basis for selection of pulse parameters in Pulsed Radiofrequency (PRF) methods for the treatment of neuropathic pain.
Methods: Ex vivo animal tissue models are used to study the thermal effects of selecting different pulse rate, pulse width, and voltage settings for both temperature-controlled and non-temperature-controlled PRF output.
Results: For a given temperature limit, selection of a higher pulse rate, lower pulse width, or lower voltage setting reduces sub-millimeter temperature spikes at the distal point of the electrode, but does not appear to affect gross tissue heating. Without temperature control or substantial reduction in PRF pulse parameter values, the application of PRF in different ex vivo tissues produces substantially different temperatures at the electrode active tip.
Conclusion: For a given temperature control limit, increasing the pulse rate, decreasing the pulse width, or decreasing the voltage reduces sub-millimeter temperature spikes, without substantially affecting the gross tissue heating that limits exposure of nerves to PRF electric fields. Temperature monitoring and control during PRF procedures ensures gross tissue temperatures below the neurolytic range over a range of tissue conditions.

WIP-0531 THE EFFECTIVENESS OF PULSED RADIOFREQUENCY VERSUS COMBINATION THERAPY WITH OZONE THERAPY IN THE TREATMENT OF PLANTAR FASCIITIS

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Objectives: Plantar fasciitis involves pain and inflammation of a thick band of tissue, called the plantar fascia that runs across the bottom of the foot and connects the heel bone to the toes. Plantar fasciitis is one of the most common causes of heel pain. The study aims to evaluate the effectiveness of applying Pulsed Radiofrequency (PRF) in the management of plantar fasciitis, as well as the efficacy of ozone, accordingly.
Methods: The study involved 20 patients at the Pain & Headache COE, International Medical Center, KSA. The first group (N = 12) all underwent heel PRF which was applied to the joints, with the following settings: 5 pps; 50 ms; 65 V temp: 42°C for 10 minutes. The second group (n = 8) went through heel PRF plus the treatment of ozone therapy by 10 cc of ozone. Patients were followed up to one year period. Inclusive criteria: 8 females, 12 males; ages between 40–70 years old, with mean of 55 years; and patients who already failed 9–12 sessions of ExtraCorporeal Shockwave (ECSW) or ankle injection. Exclusive criteria: patients older than age 80; pregnant women; patients with uncontrolled diabetes and blood pressure; patient taking anti-coagulant; and other neurological deficits.
Results: An average improvement of 75%, according to the numeric pain scale, was seen in patients who were treated early on by heel PRF only, however 85% in the second group.
Conclusion: Patients with heel pain who went through the combination therapy had more significant improvement than those who went through early heel PRF only, with benefits lasting for more than 6 months.

WIP-0345 INADVERTENT INTRATHECAL INJECTION DURING CAUDOEPIDURAL BLOCK

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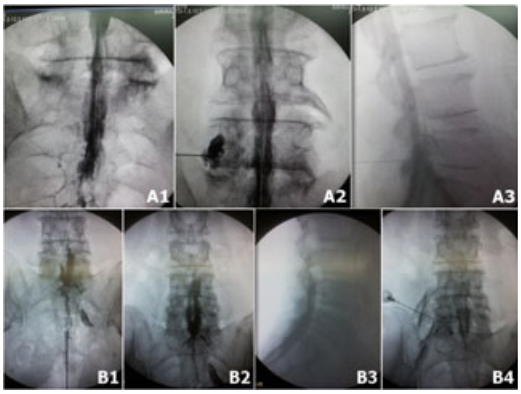
Objectives: To present an uncommon adverse event in caudoepidural steroid injection.
Methods: In 2013, two cases with inadvertent intrathecal injection during caudoepidural block were reviewed.
Results: Case A: A 62-year-woman presented with chronic radicular pain on left leg with the L4–5 and L5-S1 herniated nucleus pulposus. The caudal injection was performed under fluoroscopic guidance with contrast media. Unfortunately, the fluoroscopic imaging with a glass-like homogeneous appear-



ance in central canal relating to intrathecal injection were not recognized during the procedure. A mixture of 0.5% bupivacaine 2 ml and 3% hypertonic saline 10 ml were injected after negative aspiration of blood and CSF. Subsequently, a mixture of 0.5% bupivacaine 7.5 mg and methylprednisolone 20 mg was injected. Three minutes later, the patient complained of dizziness, numbness up to her neck with severe hypotension. Resuscitation without intubation was successful.

Case B: A 77-year-old woman with spinal stenosis and left L4, L5 radiculopathy was undergone caudal injection. Imaging showed epidural needle tip were placed at S3–4 level. The imaging was recognized as an inadvertent intrathecal spreading of contrast media. Therefore epidural needle was withdrawn without injection and transforaminal epidural steroid injection at left L4 and L5 nerve roots were then implemented. The vital signs were stable without either headache or neurological deficits.

Conclusion: Fluoroscopic imaging with anteroposterior and lateral views is necessary for caudoepidural block to determine the accidental intrathecal injection which is a rare preventable adverse event.

WIP-0258 THE EFFECT OF ACUPUNCTURE IN INTRACTABLE TROCHANTRIC BURSITIS

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ObjectivesAim: To evaluate the effect of acupuncture for treatment of intractable trocantric bursitis.

Trochantric bursitis is an inflammation in bursa between gluteus maximus muscles and tensor fascia lata which could happen inperson with muscle imbalance, overload through prolonged walking and in some cases with prolonged sideling in hard surfaces. It presents with pain over or posterior to greater trochanter and in examination with tenderness in these sites.

Although conservative management such as lifestyle modification, physiothrapy including hot pack, ultrasound and infrared could be effective in most patients, some cases are intractable.

Methods: Forteen patients with intractable trochantric bursitis underwent to acupuncture for seven session, with duration 30 minutes and frequency 3 times aweek. Pain score were recorded as Visual Analogue Scale (VAS) before and after intervention.

We used traditional acupuncture points and ashy points.

Results: Pain score decrease significantly from mean 7.4 to 2.8 ($p < 0.05$) with no complication.

Conclusion: Acupuncture could be a safe and effective method of management of trochantric bursitis.

WIP-0257 THE EFFECT OF KINESIO-TAPING IN MANAGEMENT OF INTRACTABLE TENNIS ELBOW

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Objectives: Aim: To evaluate the effect of kinesio-taping in treatment of intractable tennis elbow.

Background: Cuntineous overload of lateral epicondyle causes inflammation named tennis elbow which presents with pain in bony origin of extensor carpi radialis brevis and in examination with tenderness and positive tennis elbow test. Treatment includes anti-inflammatory drugs, physiothrapy and esteroid injection, some cases are intractable.

Methods: In this study 32 patients with intractable tennis elbow who were referred to pain clinic were managed by kinesio-taping, a non-allergic adhesive elastic tape with new method (Homayouni's method including space correction mechanical correction and unload) for three times with one week interval. Pain score was recorded before and after intervention using Visual Analouge Scale (VAS).

Results: Patients responsed to this management significantly. Mean Pain score decreased from 8.1 to 2.3 ($p \leq 0.05$) with no complication.

Conclusion: Kinesio-taping is a safe and effective method for management of intractable tennis elbow.

WIP-0518 LONG TERM PAIN CONTROL WITH PULSE RADIOFREQUENCY TREATMENT IN CERVICOGENIC HEADACHE

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Objectives: Cervicogenic headache(CH) is one sided, beginning from the posterior of the head and neck. Disappearing of the pain with blockade of the greater occipital nerve(GON) is important in diagnosis and treatment.

Methods:

Case: An 86 years-old male patient with severe, strictly right-sided headache, existed for 3–4 years is presented. At the beginning headache was mild and responded to pain killers. Frequency and severity of pain gradually increased (VAS7–8) and it didn't disappear with using simple analgesics at the last month. Headache was increasing with neck movements and wasn't accompanied by autonomic symptom. In his history, there was a cervical fracture that has been controlled with conservative treatment ten years ago. In cervical vertebra MRI; in C1 atlas basis and odontoid migration to superior; in levelC1–3, C4–5listesis were observed. Patient did not have any neurological deficits.

Results: CH had been diagnosed and because of the precision of right GON, blockade with 2 ml 0.5% bupivacaine was performed and his pain completely improved and he was followed in terms of pain score(VAS), duration, frequency. In first follow-up week, he had short-term(VAS2–3) pain everyday. Same procedure was repeated. In second week, he has 2times VAS4–5 headache. After two times diagnostic block with local anaesthetic, GON pulse radiofrequency procedure was performed to this patient42°, for 10 minutes. We still follow-up the patient, he has felt fullness and weight(VAS2–3) in his head sometimes for one year but he has no severe pain after the treatment.

Conclusion: In CH patient with severe pain, GON pulse radiofrequency provided long term pain control.

WIP-0284 RADIOFREQUENCY DENERVATION OF GENICULAR NERVES FOR TREATMENT OF INTRACTABLE KNEE PAIN (CLINICAL SERIES)

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Objectives: Radiofrequency denervation of genicular nerves has been found to be effective for patients with knee osteoarthritis without joint instability by Choi et al. (2011).
Aim: To evaluate the usefulness of radiofrequency denervation of genicular nerves in patients with intractable knee pain for whom joint replacement is unsuitable or has been unhelpful.
Methods: We performed 11 radiofrequency denervation (RFD) procedures on 9 patients with intractable knee pain between August 2011 and December 2013.
Mean age 69 years (43–82), 5 female, 4 male, mean duration of symptoms- 12 years (4–20).
All patients were diagnosed with knee osteoarthritis – 8/9 of degenerative origin, 1/9 was post traumatic.
2/9 had total knee replacement, 1/9 – partial knee replacement; 6/9 were unsuitable for joint replacement surgery due to multiple co-morbidities.
We performed X-ray guided RFD to superior medial, superior lateral and inferior medial genicular nerves.
We recorded self-reported change in pain and mobility before and after treatment, during 6 monthly follow-ups in clinic.
Results: Mean VAS pre-treatment was 8.7.
Complete pain relief and more than 50% improvement in mobility from 4 weeks to 14 months was reported by 7/9 patients.
1/9 patients reported 30% improvement in pain.
1/9 patients did not report improvement in pain and mobility. There were no complications. 6/9 patients found the RF treatment uncomfortable.
Conclusion: Genicular nerves RFD can improve the clinical outcomes for patients with intractable knee pain for whom joint replacement surgery is unsuitable or unhelpful.

WIP-0456 INCIDENCE OF INTRAVASCULAR INJECTION DURING CERVICAL MEDIAL BRANCH BLOCKS WITH DIGIAL SUBTRACTION ANGIOGRAPHY

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Objectives: The most definitive diagnosis of neck pain caused by facet joint can be made by CMBBs. However, intravascular injection should be carefully monitored because it can increase the false-negative block on diagnosing cervical facet joint syndrome. In addition, intravascular injection can cause neurologic deficits such as spinal infarction and cerebral infarction. DSA is a radiological technique that can clearly visualize the blood vessels from surrounding bones or dense soft tissues.
The aim of this study was to investigate the rate of detection of intravascular injection during cervical medial branch blocks (CMBBs) with digital subtraction angiography (DSA) and static image of conventional fluoroscopy.
Methods: This is a prospetive observation study. Seventy two patients were included and a total of 178 CMBBs was observed under DSA and static image of conventional fluoroscopy.
Results: The detection rate of intravascular injection in the DSA image was significantly greater, compared to that in the static image (10.7% vs 1.7%, $p < 0.001$).
Conclusion: The use of DSA can improve detection rate of intravascular injection during CMBBs. Therefore this can increase the accuracy and validity of CMBBs.

WIP-0487 THE DETECTION RATE OF INTRAVASCULAR INJECTION DURING TRANSFORAMINAL EPIDURAL BLOCK USING DIGITAL SUBTRACTIN ANGIOGRAPHY, COMPARED TO THE REAL-TIME FLUOROSCOPY

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Objectives: Transforaminal epidural block (TEB) with steroid is one of the effective treatments in managing spinal nerve root pain. However, intravascular injection of particulate steroids can cause fatal neurologic complications such as spinal infarction and cerebral infarction. In this study, therefore, we investigated the detection rate of intravascular injection during TEB using digital subtraction angiography (DSA), compared to the real-time fluoroscopy.
Methods: This is a prospective observation study. We examined 316 patients who received transforaminal epidural block (TEB) for spinal root pain. After the corfirmation of final needle position using biplanar fluoroscopy, 2 ml of nonionic contrast media was injected at the rate of 0.5 ml/sec under a real-time fluoroscopy screening intravascular injection. 30 seconds later, 2 ml of nonionic contrast media was injected at the rate of 0.5 ml/sec under DSA.
Results: A total of 316 TEBs was performed including 87 cases of cerivcal TEB and 229 cases of lumboscral TEB. The detection rate of intravascular injection in the DSA image was not different compared to that in the real-time fluoroscopy (14.2% vs 11.4%, $p > 0.05$).
Conclusion: This study did not demonstrate any benefit of DSA, compared with real-time fluroscopy duirng TEB.

WIP-0375 THE RADIATION EXPOSURE OF RADIOGRAPHER RELATED TO THE LOCATION IN C-ARM FLUOROSCOPY-GUIDED PAIN INTERVENTIONS

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Objectives: Although, physician may be nearest position from radiation source during C-arm fluoroscope-guided interventions, radiographer is also close to fluoroscope. We prospectively investigated the radiographer's radiation exposure related to the location.
Methods: The effective dose (ED) was measured using a digital dosimeter on the radiographer's left chest and the side of table. We observed the location of the radiographer in each procedure then the locations were classified according to Groups A, M and P. Data about age, height, weight, sex, exposure time, radiation absorbed dose (RAD), and ED at radiographer's chest and the side of table were collected.
Results: There were 51 cases of Group A, 116 cases of Group M and 144 cases of Group P. No significant differences were noted in the demographicdata such as age, height, weight, and male to femaleratio, exposure time, RADandED at side of table. The ED of Group P (0.5 ± 0.8 μSv) was the least amount in the groups (Group A: 1.6 ± 2.3 μSv, Group M: 1.3 ± 1.9 μSv; p.

WIP-0241 THE EFFECT OF NATURAL-THERAPY YOGA ON THE PEOPLE IN CHRONIC NECK-SHOULDER-PAIN: A RANDOMIZED CONTROLLED TRIAL

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Objectives: This study is the result of a randomized clinical trial to examine the effects of the Natural-therapy YOGA for

mental and physical stability and muscular-skeletal correction, comparing with those of the self-exercise program, on relieving pains of the patients in chronic neck-shoulder-pains.
Methods: 35 as the intervention group and 36 as the control group of 71 volunteer patients in this study took tests respectively four times as a whole before the baseline and at 4th, 8th and 12th week, and their data were collected by measuring those effects. Assessing the pressure-pain threshold, splenius capitis, trapezoius, levator scapula, sternocleidomastoid, scalenus were measured by the pressure algometer, the NDI (neck disability index), and the VAS (visual analog scales).
Results: Total scores of the pressure algometer showed significant differences between groups, periods and interactions. Both groups showed periods significant scores. Significant changed-scores between groups appeared at spots of trapezoius, levator scapula, and scalenus of them. Of respective muscles, left Levator scapula and right scalenus showed significant differences in all conditions. Right and left trapezoius, right levator scapula, and left scalenus showed significant differences not interactions but periods and groups. Right splenius capitis showed changes between not groups but interactions and periods. The NDI scores showed significant differences not interactions but periods and groups. VAS were not groups, but in respective periods and interactions.
Conclusion: These proved that the effects of the natural-therapy YOGA on relieving neck-shoulder-pains were stronger than those of the self-exercise program.

WIP-0364 INTRA-ARTICULAR PLATELET RICH PLASMA (PRP) IN KNEE OSTEOARTHRITIS: PRELIMINARY DATA

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Objectives: Platelet rich plasma (PRP) is an autologous blood product by a selective removal or exchange of either packed red blood cells, leucocyte-rich or platelet-rich layers, or plasma, with a continuous flow blood separator machine.
Methods: Author evaluated retrospectively 85 patients with moderate to severe mono/bilateral gonarthrosis, performing an initial assessment by WOMAC, NRS and kinetic study of gait, being reevaluated 1 year after receiving an intrarticular injection of PRP. PRP was injected in knee(s) 15 days after the intrarticular administration of steroids and bupivacaine.
Results: In the initial patient evaluation, pain reported a WOMAC result of 9.0 ± 2.2, 3.53 ± 1.5 for stiffness and functional capacity of 34.9 ± 13.4. Values of NRS are 75.1 ± 23.4. Comparing the kinetic gait data with healthy individuals, in patients author observed: lower speed on walk, increased support, increased braking force and less oscillation, propulsion and takeoff. After the four intrarticular injections, patients reported less pain (WOMAC 5.44 ± 2.6) with an EVA significant decrease (56.4 ± 19) and significant improvement in functional capacity (WOMAC 30.55 ± 12). They also showed an increase of the velocity, significant increase in braking and propulsion forces and decreased antero-posterior oscillation strength, approaching to normality. However, the overall improvement experienced achieved the normal result for final evaluation (> 90%).
Conclusion: Change of NRS and WOMAC reveals the clinical useful of intrarticular injections of LA and steroids to achieve an immediate pain relief, while the intrarticular administration of PRP contributes to balance the intrarticular environment and to maintain the analgesic for long time.

WIP-0351 CONVENTIONAL RADIOFREQUENCY TREATMENT OF GENICULAR NERVES FOR MANAGEMENT OF REFRACTORY KNEE JOINT PAIN

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Objectives: Neurotomy using conventional radiofrequency (RF) of genicular nerves can be a therapeutic option when conservative treatments such as pharmacological therapy, rehabilitation and/or intraarticular infiltration (hyaluronic acid, steroids and/or local anaesthetic) fail and prosthetic surgery is limited in elderly patients with other comorbilities. The aim of this study is to determine the effectiveness of this treatment.
Methods: Prospective non-randomized study involving patients with: a) moderate-severe knee joint pain lasting more than 1 year, b) non-effectiveness of conservative treatment and c) no prosthetic surgery indication or painful arthroplasties.
Under scopic control the superior lateral, superior medial and inferior medial genicular nerves were localized and confirmed by stimulation; afterwards, RF (80°C; 90 seconds) was applied. Primary outcome was pain relief (visual analogue scale) and secondary outcomes included side effects, analgesic consumption and quality of life (questionnaire SF-12) measured at baseline and four weeks.
Results: Mean age was 79 years. Nine cases were recluted. Eight of them underwent RF due to osteoarthritis and one due to painful prosthesis. VAS score 3.6 (2.5- 6.8) was statistically significant ($p = 0.017$) when compared with baseline VAS 9 (7.35–10). No side effects were observed. No statistically significant changes were found in secondary end points.
Conclusion: RF neurotomy of genicular nerves may be an effective treatment in refractory knee joint pain. Further studies with a greater sample size and a long-term following are needed to confirm our results.

WIP-0491 ADVANCED LUMBAR SPONDYLOARTHROPATHY TREATED WITH PLATELET RICH PLASMA INJECTIONS

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Objectives: Spinal stenosis is an important cause of lumbar pain in old patients, being the leading cause of spine surgery older than 65 years. Several nonoperative treatments had been used with low level quality evidence.
The aim of this report is to present a case of advanced degenerative lumbar spondyloarthropathy treated successfuly with platelet rich plasma (PRP) injections.
Methods: The patient was a 74 years old man with lumbar pain radiating to the left thigh through the last 2 years. The pain was triggered by standing and walking and associated with thigh numbness and usually relieves with rest, typical of neurogenic claudication. The physical examination showed patellar and Achilles tendon reflexes diminished and a painless straight leg raise test. The lumbosacral magnetic resonance image (MRI) showed an advanced degenerative spondyloarthropathy, with facet joints and flavum ligmentum hypertrophy and spine stenosis, compressing the nerve root of the left L3 level. The patient had been submitted to all kinds of nonoperative treatments and declined the surgical approach. We perform two sessions of spinal PRP injections (intradiscal, transforaminal and at the lumbar facet joints), within a 2 months interlude.
Results: We noticed a significant pain score improvement (Visual Analogic Scale from 6 to 1 and Oswestry Disability Index from 50 to 18). The control MRI, done 1 year after the procedures, revealed an impressive spondyloarthropathy regression.

Conclusion: Regenerative therapy probably acts at the inflammatory features of spondyloarthropathy and should be considered for larger studies involving the spine column.
Conflict of interest

WIP-0303 TREATMENT OF LOWER BACK AND LEG PAIN USING THE RACZ CATHETER-MATSUMOT WAY (S1 TRANSFORAMINAL APPROACH)

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Objectives: We frequently experience refractory cases of adhesive S-1 radiculopathy resistant to the sacral hiatus approach. In some of these cases, adhesions could not be removed even by epiduroscopy. We report the findings of our study in which adhesiolysis performed by the Matsumoto Way (the S1 transforaminal approach) was effective in such cases. A part of this report was also presented at the WIP 2012 (Miami).
Methods: The Matsumoto Way is an adhesiolysis procedure performed by inserting an Epimed VERSA-KATH® catheter through the posterior sacral foramen (the S1 transforaminal approach).
Results: The Matsumoto Way was applied to 36 cases with adhesive S-1 radiculopathy. After the procedure, the patients were followed up for 12 months. A marked decrease in VAS and improvement in ADL (improvement in ODI scores) were observed.
Conclusion: With the Matsumoto Way, the conventional Racz Catheter Procedure has been further advanced and improved. Compared to the conventional approach (via the sacral hiatus), the Matsumoto Way is more advantageous in the following respects: 1) it may lower infection rates (the insertion site is farther from the anus): 2) it can easily be performed with fluoroscopy and the techniques can be acquired in a short time; 3) it can shorten the time spent on manual procedures: 4) the catheter is more likely to stay in place at the affected site: 5) compared to the lumbar transforaminal approach, the catheter shifts less; and 6) it is appropriate for cases non-responsive to the sacral hiatus approach.

WIP-0527 A PROSPECTIVE HUMAN OPEN LABEL, PILOT INVESTIGATION INTO CHARACTERIZING QST RESPONSE FOLLOWING DRG BLOCK AND PRF

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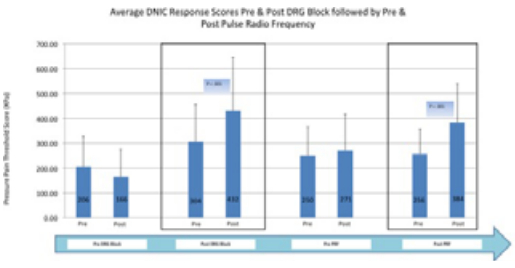
Objectives: This study investigated changes in peripheral and central sensitization (QST) in patients with unilateral lumbar radiculopathy, disc herniation of more than 6 months duration, following diagnostic dorsal root ganglion block (DRG) and pulsed radiofrequency (PRF).
Methods: After regulatory approval 23 patients undergoing diagnostic DRG block (n = 23) and PRF (n = 10) were recruited to undergo QST pre and post procedures at Pain & Anaesthesia Research Centre, St Bartholomew's Hospital, London UK.
Flouroscopic guided, diagnostic DRG block was performed with 1 ml of 0.25% bupivacaine and 20 mg methylprednisolone. PRF was performed with 20 G, 10 mm active tip Neurotherm RF cannula, (sensory 50 Hz, PRF 5 Hz at 45 volts, current variable 50 to 350 mA for 3 minutes).
QST measurements (pain pressure threshold and conditioned pain modulation response) were performed on the maximal painful and contralateral area of the dermatomal distribution, one week before and after procedures. Pain DETECT questionnaire data was collected before and after procedures.
Results: Conditioned pain modulation response reduced pre PRF (250.4 kPa baseline, 271.4 kPa cuff in situ) increasing after the procedure (baseline 256.1 kPa cuff in situ 383.9 kPa, $P < 0.001$), suggesting 'normalisation' of conditioned pain modulation response following the treatment.
PPT response ($P < 0.001$) and Pain Detect (16.7 ± 8.6 vs 4.9 ± 2.9, $p < 0.013$) were also significantly improved after both procedures.
Conclusion: This pilot study characterizes peripheral and central sensitization following DRG block and PRF treatment.



WIP-0537 NEED FOR SURGERY AFTER INTERLAMINAR AND TRANSFORAMINAL EPIDURAL INFILTRATIONS FOR ACUTE UNILATERAL CERVICAL RADICULAR PAIN

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Objectives: Epidural infiltration with steroids is a well-known treatment for acute cervical radicular pain. This study evaluates whether there is a difference in the need for surgery within one year between the interlaminar and transforaminal approach.
Methods: All patients that underwent cervical interlaminar (CEI) or transforaminal epidural infiltrations (TFI) in 2011–2012 were identified. Only patients with unilateral cervical radicular pain who never had neck surgery before were included. They all needed to be in-hospital referrals from orthopedics, physiotherapy or neurosurgery.
All CEI were performed with methylprednisolone. The TFI were done under digital subtraction with dexamethasone. Maximum 3 infiltrations were performed.
Results: Table 1 shows the patients treated with CEI and TFI and the proportion that underwent cervical spine surgery within 1 year ($p < 0.005$).
Table 1: Patients only treated with CEI or TFI *(or at the minimum the first time)*

	Total number of patients	Patients getting surgery	Proportion getting surgery
CEI	191 *(200)*	34 *(37)*	17.8% *(18.5%)*
TFI	57 *(60)*	22 *(23)*	38.5% *(38.0%)*

Table 2 Patients referred by physiotherapy and only treated with CEI or TFI *(or at the minimum the first time)*

	Total number of patients	Patients getting surgery	Proportion getting surgery
CEI	83 *(87)*	12 *(13)*	14.4% *(14.9%)*
TFI	37 *(40)*	15 *(15)*	40.5% *(37.5%)*

Conclusion: Cervical spine surgery is significantly more performed in patients treated with TFI for radicular pain in the upper extremity than in those ones receiving CEI.

WIP-0529 ULTRASOUND GUIDED STELLATE GANGLION BLOCK USING DEXAMETHASONE DECREASES LOCAL ANAESTHETIC REQUIREMENTS – A CASE REPORT

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ObjectivesBackground: Stellate Ganglion block is fraught with complexity of the anatomy and potential risks. The advent of Ultrasound has led to the ability to perform real time imaging, in order to place the injection accurately and safely.
Aim: To observe the usefulness of adding dexamethasone for stellate ganglion block placed using ultrasound.
MethodsCase 1: A patient with chronic cardiogenic chest pain presented to pain clinic. Stellate ganglion block was done under ultrasound guidance. The procedure was performed with a 13 MHz frequency probe. An inline needle technique with lateral to medial approach was used at level of C6 vertebra. Around 2.5 ml of mixture containing Dexamethasone 6.6 mg and Bupivacaine0.5% was used. Patient reported almost immediate decrease in VAS pain score from 7 to 3. He also developed significant Horner syndrome.
Case 2: This patient developed CRPS following injury in her arm due to an electric shock. A Stellate ganglion block using the same method as above was successful in alleviating the pain.
Results: Stellate ganglion block usually requires around 6 to 8 ml of local anaesthetic to work effectively. This volume can cause blockade of recurrent laryngeal nerve causing hoarseness and interfere with swallowing. Adding Dexamethasone decreases the amount of local anaesthetic needed to produce the same effect.
Conclusion: Using low volumes of local anaesthetics with Dexamethasone and ultrasound guided placement helps produce effective pain relief and decrease the risk of complications.

WIP-0314 SLEEPING DISORDER TREATED WITH LED-LIGHT AND SOUNDS

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Objectives: Patients with chronic pain experiences severe problems with night sleep. The use of sleeping pills do not solve the problem. It is known that light with wavelength of 480 nm (blue colour) resets the brain – and light treatment have been used in treatment of sleep disorders.
"Hepion" ia s LED-screen with 1024 RGB-diodes with the ability of generating all colours. It is possible to use background colour with an overlaying pendulum of another colour. Finally there are two laudspeakers – and the system can generate different frequences known as solfeggio tunes with connection to older Gregorian music tradition.
Methods: We have treated a patient with "Hepion-system". The patient has had chronic pains for many years and her night sleep was very bad – with only 4 hours of sleep, waking up again and again during the night. She was treated two times with an interval of 24 hours. We used 1/2 hour with a background colour of 625 nm and a pendulum with a colour of 520 nm, a tune of 528 Hz combined with chirping and the sound of running water. These settings were the patient preference.
Results: After the first two treatments, she had good night sleep of 6–7 hours without waking up. This effect lasted the next 4 days. Thereafter she had 4 more treatments. This has dramatically chanced her sleeping pattern, and we continue with treatment once a week.
Conclusion: The result favours future research in sleep problems in pain patients with the use of LED-light, music tunes and sounds

WIP-0236 PHENOL LUMBAR SYMPATHETIC BLOCK IN DIABETIC LOWER LIMB ISCHEMIA

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Objectives: Patients with diabetic lower limb ischemia have painful ulceration or incipient gangrene of the lower limb with intractable rest pain. 99mTc sestamibi scintigraphy has been used in the evaluation of skeletal muscle perfusion in patients with peripheral artery diseases. Although there exist many clinical methods for evaluating the therapeutic response of foot, 99mTc sestamibi which is a skeletal muscle perfusion and metabolism agent has not previously been used for diabetic foot ischemia.
The aim of this study was to show how the correlation is between 99mTc sestamibi scintigraphy and clinical outcome of Phenol lumbar sympathetic block in diabetic lower limb ischemic pain.
Methods: We examined whether chemical sympathectomy could relieve pain and arrest gangrene in 9 diabetic patients with severe pain (VAS:9). 99mTcm sestamibi foot scintigraphy was performed in all the patients in before and one month after therapy. Images were both evaluated visually and the percentage increases in uptake values were also calculated by semiquantitative analysis.
Results: In all patients, intractable rest pain was significantly decreased (VAS:3) and mild to moderate hyperperfusion were visually seen in 99mTc sestamibi images after therapy (6 mild, 3 moderate). There was also increase in the semiquantitative uptake values compared with pre-therapy (between 10%–34%). Age and sex did not affect the results.
Conclusion: Phenol sympathectomy in diabetic lower limb ischemia should be considered as an alternative to surgical sympathectomy for decreasing intractable rest pain and there is a sufficient correlation between clinical outcome and a 99mTc sestamibi scan.

WIP-0525 EFFECTIVENESS OF THE MILD® PROCEDURE IN A PAIN MANAGEMENT CENTER IN SWITZERLAND

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Context: Lumbar spinal stenosis (LSS) is the first indication for spine surgery in older than 65 years old. The prevalence is higher with increasing age, reaching 14.3% over 60 years old. The average life expectancy is 85 years old for males and 89.5 years old for female by 2050 in Switzerland. The MILD® (Minimally Invasive Laminar Decompression) procedure is an emerging modality for treating patients suffering from symptomatic LSS.
Objective: The aim was to evaluate the effectiveness of the MILD® procedure in a pain management center in Switzerland.
Methods: Case series involving 8 patients with LSS demonstrated on MRI. The patients underwent the MILD® procedure between September 2013 and February 2014. Patients were evaluated at baseline and at 1, 2 and 4 months follow-up. The primary outcomes evaluated were the NRS (Numerical Rating Scale) and the ODI (Oswestry Disability Index). Secondary outcomes included the ZCQ (Zurich Claudication Questionnaire), the SF12, suppLESI (supplemental lumbar epidural steroid injections) and PO LOS (PostOperative Length of Stay).
Results: All patients completed the 4 months follow-up. At 4 months, the mean reduction of the NRS was 5.0, ODI 31%. Patients had improvement in the SF12 (v2 phs 15.5, v2 mhs

55.5) and ZCQ (pain 2.65, comfort 2.2). Mean PO LOS was 1.2 days.
Conclusion: Our study does not have enough power to demonstrate the effectiveness of MILD®. Other studies have found positive results. MILD® could substitute more invasive procedures such as open laminectomy decompression when contraindicated in debilitated patients.

WIP-0540 ENDOSCOPIC EPIDURAL ADHESIOLYSIS: ROLE OF PREOPERATIVE LUMBOSACRAL MRI IN PATIENTS SELECTION

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Objectives: We hypothesise that MRI documentation of a) epidural fibrosis b) sacral hiatus size c) lumbar spine canal size might be used to improve patient selection for endoscopic epidural adhesiolysis (EEA).
Methods: We present results of a retrospective clinical outcome audit of EEA in patients with chronic leg and/or back pain unresponsive to epidural steroids. Lumbosacral MRIs prior to EEA were assessed for epidural fibrosis, and osseous anterior-posterior (AP) spinal canal diameters at lumbar (L5) and sacral (S3 or S4) levels.
Results:
a Of 14 FBSS cases: ten had fibrosis on MRI– in 4 EAA was technically successful, at six months 2 had >50% relief, 1 mild relief, 1 no relief. Four had no fibrosis on MRI – in 2 EAA was technically successful, neither had pain relief.
b In 3 from 53 cases, sacral hiatus stenosis prevented insertion of the endoscope; MRI imaging revealed a significant smaller AP size of the terminal portion of the sacral canal in these 3 cases (3.8 ± 0.2 mm) vs (5.9 ± 1.0 mm).
c MRI AP L5 canal size was significantly smaller (14.3 ± 2.4 mm) in subjects who benefited from EEA compared to those who did not (16.7 ± 3.0 mm).
Conclusion: Pre-operative MRI scan may help patient selection for EEA. Patients with a narrow (<4 mm) sacral canal may not be suitable for EEA. Further work is needed to determine the relevance of lumbar epidural diameter and fibrosis.
Conflict of interest

WIP-0444 A COMPARATIVE STUDY OF PATIENT CONTROLLED SEDATION USING KETAMINE-MIDAZOLAM AND FENTANYL-MIDAZOLAM COMBINATIONS VERSUS PROPOFOL DURING REGIONAL ANESTHESIA

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Objectives: This is a prospective randomized study of patient controlled sedation (PCS) in patients undergoing urologic and lower abdominal procedures under regional anaesthesia and to compare the combination of ketamine and midazolam with fentanyl and midazolam during PCS.
Methods: After informed consent one hundred and twenty patients of ASA 1 and 2 posted for urological and lower abdominal procedures were randomly allocated to one of the three groups to receive 2 ml bolus from 20 ml on demand during surgery:

Group 1: Propofol (10 mg/ml)
Group 2: Midazolam (0.25 mg/ml) + fentanyl (12.5 mcg/ml)
Group 3: Midazolam (0.25 mg/ml) + ketamine (5 mg/ml)

Results: During PCS midazolam-ketamine group patients had better haemodynamic stability compared to midazolam-fentanyl group and were less anxious.
Patients in all the three groups were comparable.
More patients of propofol group moved during surgery and had greater PCS demands.
60% patients used PCS within 30 minutes of the start of surgery while 90% patients used PCS within 60 minutes. Fifteen patients (12.5%) did not use PCS.
During surgery 49% patients were awake and relaxed and had sedation score of 1.
Conclusion:
1. PCS technique was easily comprehensible to our patients.
2. Patient satisfaction with PCS was comparable in all the three groups.
3. Females demanded PCS significantly earlier (15 minutes) than the males (30 minutes).
4. PCS with midazolam-ketamine combination is equally efficacious as PCS-propofol with advantage of good haemodynamic stability.

WIP-0167 FURTHER RESEARCH ON THE EFFICACY OF A NEW NAVIGABLE PERCUTANEOUS DISC DECOMPRESSION DEVICE (L'DISQ) IN PATIENTS WITH LUMBAR RADICULAR PAIN (2-YEAR FOLLOW-UP)

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Objectives: To evaluate the efficacy of a new navigable percutaneous disc decompression device (L'DISQ) in patients with lumbar disc herniation with radicular pain.
Methods: 19 patients (male = 14, mean age = 42.84 ± 13.50) with persistent low back/radicular pain refractory to conservative treatments were treated using L'DISQ. The tip of L'DISQ can be accurately placed into herniated nucleus by fluoroscopic guidance. Plasma energy induced by radiofrequency was used for ablation. Before each ablation, brief electrical stimulations were preceded to ensure safety and static ablation was performed, then. All the patients had been diagnosed as intervertebral disc herniation through physical examinations and MRI study. Clinical outcome was determined by visual analogue scale (VAS), passive straight leg raise test (SLR), Oswestry disability index (ODI) and Roland-Morris disability questionnaire, (RM), pain-related quality of life (Bodily Pain scale in Short Form-36 version 2, SF-36 BP), assessed at 1 week, 1 month, 6 months, 1 year, and 2 year.
Results: The VAS fell from 7.05 ± 1.39 to 2.21 ± 2.07 scores at 96 weeks post procedure. At 96 weeks the ODI had fallen from 43.76 ± 16.56 to 15.60 ± 14.16%, and the RM from 13.32 ± 5.22 to 3.11 ± 4.88 points. The SF-36 BP dropped significant improvement from 34.83 ± 7.42 to 50.57 ± 7.70 scales. No major procedure-related complications were reported.
Conclusion: Following decompression with L'DISQ we measured clinically significant pain improvement and decreased disability for patients with both low back and radicular pain caused by protruded and extruded discs.

WIP-0387 THE ANATOMY OF LUMBAR DISC HERNIATION, IS IT AN INFLUENTIAL FACTOR ON THE EFFECTIVENESS OF EPIDURAL STEROIDS?

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Objectives: It is unknown whether the anatomy of lumbar disc herniation (LDH) influences the effectiveness of epidural steroids. Our aim was to evaluate whether the anatomy of LDH is related to effectiveness of this treatment

Methods: A prospective, observacional study was performed in patiens with lumbar radicular pain due to LDH. Patients were treated with epidural steroids (triamcinolone 60 mg) and local anesthetics (ropivacaine 0.15%) by interlaminar, caudal or transforaminal route with fluoroscopy guidance.

We define three anatomical groups based on TC/MR location: 1. CENTRAL ZONE: central, posterior or midposterior; 2. SUBARTICULAR ZONE: paracentral, midlateral or posterolateral; and 3. FORAMINO-EXTRAFORAMINAL ZONE: lateral, transforaminal, foramino-extraforaminal and extraforaminal.

We compared visual analogue scale (VAS) scores pre and post-treatment (30 days after epidural steroids injection) in the three groups. Statistical analyses were performed using ANOVA lineal model for two factors.

Results: We studied 153 patients: 44.4% males, 55.6% females. Mean age was 51.69 ± 14.89 in group 1; 52.15 ± 16.80 in group 2; 59.23 ± 13.73 in group 3.

PreVAS was 6.88 ± 1.36 in group 1; 7.03 ± 1.97 in group 2; 7.18 ± 1.74 in group 3. Post VAS was 4.5 ± 2.6 in group 1; 3.95 ± 2.83 in group 2 and 3.89 ± 2.75 in group 3. No statisically differences were found between groups ($p < 0.393$). However there was a trend towards significance in groups 2 and 3 in postVAS scores.

Conclusion: We found no relationship between LDH anatomy and effectiveness of epidural steroids but further studies in larger series are needed to assess the trend in subarticular and foramino-extraforaminal zones.

WIP-0504 TRANSAORTIC CELIAC PLEXUS NEUROLYSIS – PRELIMINARY STUDY

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Objectives: Celiac plexus block (CPB) is one of the most effective procedures for the management of severe abdominal pain, either due to pancreatic cancer as well as other upper malignancies.

The transaortic approach is the simple single needle approach through the aorta. The needle tip exits aorta where celiac plexus resides.

We used this approach in our 20 cases to do a preliminary study for simplicity, preciseness, as well as effectiveness as compared to classical method of bilateral needles approach.

Methods: After approval from the Ethic Committee, twenty patients suffering from cancer of pancreas or other upper abdominal malignancies were selected suffering from severe abdominal pain, not responding to maximum dose of oral morphine or unable to use morphine due to severe constipation or nausea and vomiting with normal bleeding profile and absence of calcification in aorta on MRI or CT scan.

Left sided 15 cm long 22G single needle is inserted 3.5 to 5 cm lateral to midline at L1 level. Alcohol 75% was used for chemical neurolysis (25 to 30 ml) after local anesthetic.

Results: All the 20 patients had effective pain relief soon after the procedure. X-rays chest of all the patients were taken to exclude neumothorax and found normal. Seven patients had acute diarrhea and one patient had intercostal neuritis after 24 hours of the block.

Conclusion: Transaortic CPB approach is simple, precise and more effective than the classical two needles method with minimum complications.

WIP-0459 FACTORS INFLUENCING PATIENTS ACCEPTANCE OF THE INTERVENTIONAL PROCEDURES FOR PAIN MANAGEMENT, A REPORT FROM IRAN

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Background: Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. The relief of pain should be recognized as a human right that chronic pain should be considered as a disease in its own right. Interventional pain management is a new technique which has received a lot of attention recently. However in Iran most of the patients refuse to use the interventional pain management therapies. Here we aimed to study the underlying reasons for pain management among Iranian patients.

Method: We performed a cross sectional study on an established group of patients diagnosed with chronic pain syndrome which were candidates for the interventional pain management.

Findings: The study included re were 386 patients, with the mean age of 52.88 ± 16.72. There were 198 (51.3%) women and 188 (48.7%) men. A total of 201 (52.1%) of them (111 women (55.2%) and 90 men (44.8%)) were candidates for the interventional pain procedures. In 3 month follow up, 42 (20.8%) of them, 22 (52.4%) women and 20 (47.6%) men refused the pain treatment. All of them were on a pharmacological regimen before the recommendation of interventional procedure. The cost of procedures (25, 59.5%) as well as the fear from long term complication (33, 88%) was important reasons for refusing pain treatment.

Conclusion: The high cost of these procedures, were the most important factors influencing the patients decision.

WIP-0200 TRAPPED & STRETCHED RACZ INTRODUCER CANNULA

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Objectives: RACZ catheter is used for patients with complex radicular and back pain. Aim of this presentation is to describe a stretching of a RACZ introducer cannula & how we removed it successfully.

Methods: This was a 63 yrs old lady, presented with back pain. For 'pain mapping' and epidural injection, I used an epimed introducer cannula (ref 135–1735) to access epidural space via caudal or S1 foramina. First access was via the caudal route but catheter remained in the posterior epidural space. Anterior epidural space accessed through the S1 foramen but the caudal cannula was left in situ to use if required.

Results: The cannula in S1 foramen was removed first. While withdrawing the caudal cannula some resistance was felt and the cannula got stretched. Although patency remained intact, since the lumen became small could not introduce the RACZ catheter back to reinforce the cannula. Reinforcing with smaller wire and forcing to remove caused further stretch & partial break. Finally we opened the skin up to the caudal space and cut the catheter at the point of stretch. Then reintroduced the RACZ and successfully removed the intact cannula.

Conclusion: Although precise cause for this event is unknown the possible hypothesis may be high viscosity of contrast which caused catheter to stick to the surrounding tissues.

Predicting complications is difficult but keeping the RACZ catheter in situ while removing the cannula may help to avoid similar incidence.

WIP-0369 ANAPHYLAXIS TO HYALURONIDASE DURING EPIDUROPLASTY

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Objectives: Hyaluronidase is widely used inpercutaneous epidural adhesiolysisto disrupt adhesions, and reduce oedema. We present the first reported case of anaphylaxis to hyaluronidase.
Methods: A 22 yr old female presented with continuous back pain despite spinal fusion for spondylolysthesis at L5/S1. Past medical history included penicillin allergy and asthma. During the procedure she received gentamycin, lidocaine, bupivacaine, hyaluronidase, Omnipaque and was exposed to iodine, chlorhexidine and latex.
Results: Within minutes the patient complained of tingling in the abdomen, chest tightness and difficulty breathing. On examination her torso, face, arms and legs were flushed. Her toes and finger tips were cyanosed. She developed wheeze and severe hypotension of 67/40mmhg. The patient remained anxious but maintained GCS of 15/15. The procedure was abandoned and the reaction treated. Serial tryptase showed a maximum rise to 40 ng/ml with a baseline of 7 ng/ml. Subsequent skin prick testing for hyaluronidase showed a strong positive with 12 × 7 mm wheal and 35 × 40 mm erythema.
Conclusion: Hyaluronidase has been used widely in anaesthesia for eye operations and pain management procedures. There are case reports of allergic reactions [(1)] but no incidence of anaphylaxis reported. This report is the first case of confirmed IgE mediated anaphylaxis to hyaluronidase and highlights the need for meticulous attention to monitoring, availability of resuscitation equipment, including adrenaline 1:1000 and trained support staff in order to manage unexpected adverse events.

1. Dieleman M et-al (2012) High incidence of adverse reactions to locoregional anaesthesia containing hyaluronidase after uneventful ophthalmic surgery Acta Ophthalmologica 90: e245–e246.

WIP-0318 INTRATHECAL OPIOID PUMP IMPLANT IN SEVERE HYPERKYPHOSIS DEFORMITY FROM CUSHING'S DISEASE: A CASE REPORT

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Objectives: Endogenous glucocorticoid-induced osteoporosis of Cushing's Syndrome causes trabecular bone loss, vertebral body collapse, pathologic fracture and kyphotic spinal malalignment. Spinal opioids are a possibility treating painful multiple pathological vertebral fractures. Severe hyperkyphotic deformity can be a technical limit to the pump implant and intrathecal drug delivery.
Methods: A 52-years-old man suffering from Cushing's Syndrome with ectopic ACTH secretion is came to after many years of treatment of the primary disease referring progressive severe back pain resistant to drugs and worsening back deformity with a condition of over-curvature of the T12-L1 thoracolumbar junction (85 ° Cobb Angle). Ineffective pain therapy was based on association of high dosage of transdermal fentanyl, oral transmucosal fentanyl citrate for breakthrough pain, added with pregabalin and tramadol.
Results: 4 attempts with change level and angle of punctures were necessary to obtain desidered cranial progression of intrathecal catheter to the right level (a problem was caudal progression of catheter). 15 days of preventive measures to post-dural puncture headache and back hygroma formation were necessary (1 PDPH transient acute episode occurred). The pump was found upturned at first refill (suspected and confirmed with ultrasound vision) due to abdominal body laxity after massive weight loss of central obesity and after bilateral surrenalectomy. Effective intrathecal opioid analgesia was progressively achieved.
Conclusion: Hyperkyphosis could be a limit to the implant and intrathecal drug delivery. Prolonged preventive measures after more than one dural puncture could be necessary. Ultrasound is a good option to identify correct position of pump.
Conflict of interest

WIP-0317 COMBINED INTRADISCAL AND DORSAL RADICULAR GANGLIA'S PULSED RADIOFREQUENCY TREATMENT FOR LUMBAR RADICULOPATHIES

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Objectives: Intradiscal Pulsed RadioFrequency (I-PRF) and Dorsal Radicular Ganglia Pulsed RadioFrequency (DRG-PRF) each alone has beneficial effects on low back and leg pain. No evaluations exist for the two combined treatments to solve lumbar radiculopathies. The purpose of this study was to establish the clinical benefit of combining together I-PRF and DRG-PRF in a limited series of patients affected by lumbar radiculopathies.
Methods: Forty-two consecutive adult patients with lumbar radiculopathies were evaluated. For one or more vertebral levels we combined a DRG-PRF (3 cycles for 120 sec at 42 °C) after each equivalent I-PRF treatment (900 sec at 42 °C). The primary outcome collected measures were a numeric rating scale (NRS) for pain, the Oswestry Disability Index (ODI) and Roland-Morris Disability Questionnaire (RMDQ) for disability. The secondary outcome measures were reduction of analgesic consumption and physical therapy, patient's satisfaction to treatment. Clinical assessments of these measures were performed at 1, 3 and 6 months. Attention was made for age, single and multiple levels of treatment.
Results: Pain and disability scores were significantly decreased when compared with the baseline values and with significant changes in all secondary measures at all points of follow-up. Poor results were revealed with older age and evidence of a minor efficacy was found with multiple levels of treatment.
Conclusion: I-PRF and DRG-PRF combined treatments could be more efficacious together in reducing pain scores, analgesic consumption, improving functional outcome of patients with lumbar radiculopathies.
Conflict of interest

WIP-0501 MANAGEMENT OF PATHOLOGICAL FEMORAL SHAFT FRACTURE USING PULSED RADIOFREQUENCY OF FEMORAL NERVE

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Objectives: We had a conundrum of pain secondary to a pathological fracture of femoral shaft from bony metastases in a terminal 60-year-old cancer patient. Not keen on surgical fixation, she initially settled for a femoral nerve catheter with a continuous infusion of 5 ml per hour of 0.1% Ropivacaine. This afforded few days of adequate analgesia but it was impractical to continue for weeks, hence she opted for a trial of Pulsed Radiofrequency (PRF) of Femoral Nerve.
Methods: A 22-gauge 10 mm radiofrequency needle was inserted under ultrasound guidance transverse to femoral nerve posteriorly and anteriorly. In each position, sensory stimulation between 0.3 to 0.5 milliamperes ascertained proximity to femoral nerve. PRF (42 degrees Celsius) for 2 minutes was

applied in 2 positions anteriorly and further 2 positions posteriorly, always transverse to the femoral nerve. A total of 8 minutes PRF was applied and 20 ml of 0.25% plain bupivacaine was injected before the final PRF due to discomfort.
Results: Up to 3 weeks post procedure, patient reported adequate analgesia and satisfaction. Pain scores on 11-point numerical rating scale dropped from 5/10 to 0–2/10 at rest and from 9/10 to 3–4/10 on movement associated with decreased usage of breakthrough oral morphine.
Conclusion: PRF has been used to treat surgically unfit patients with chronic hip pain but unlike ours. PRF of femoral nerve in well informed, terminally ill patients with pathological fractures of the femur could be considered.

Treatment Approaches: Neuromodulation

WIP-0433 EFFICACY OF SPINAL CORD STIMULATION IN PATIENTS WITH CHRONIC BACK AND LEG PAIN: TWO YEARS EXPERIENCE

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Objectives: The aim of this study is to present the data of our SCS therapy with two years experience and to evaluate the efficacy in controlling back and leg pain.
Methods: 18 patients with back and leg pain were treated. First, patients were undergone a trial including placement of percutaneous leads sequentially near the anatomic midline between T8-T11. After a successfull trial over 1–2 weeks, the leads were then connected to a rechargeable implantable pulse generator. The patients were evaluated as follows; visual analog scale (VAS), Oswestry Disability Index (ODI) and North American Spine Society Index (NASS) for back and leg pain and adverse events.
Results: Subjects were evaluated at 6, 12 and 24 months during post implantation period. Average pain reduction on a point numerical rating scale VAS from 9.44/10 to 4.5/10 for pain. Functional status and quality of life as measured using ODI showed similar improvements. Results showed that SCS met with the expectations. Reported serious adverse events were typical for SCS treatment consisted of pocket pain (n = 1), infection (n = 2) and loss of pain relief (n = 1).
Conclusion: Despite a small number of patients, these findings suggest that SCS of the spinal cord may be an effective treatment for back and leg pain in patients due to failed back surgery syndrome and posttraumatic neuropatic leg pain. These results need to be confirmed by data gathered from other centers and long term follow – up of treated patients with SCS.

WIP-0280 NOVEL TECHNIQUE OF DRG STIMULATOR THROUGH SACRAL HIATUS – 2 CASE REPORTS

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Objectives: Spinal cord stimulation (SCS) of the dorsal root ganglion (DRG) targets the primary sensory neurons entering at distinct spinal levels, this therapy has shown an enhanced ability to steer paresthesias towards typically hard to treat painful regions such as a distal, lower and upper extremities unlike conventional SCS.
We present two case reports of successful DRG stimulator lead placement through sacral hiatus. We discuss the advantages and challenges encountered
MethodsCase 1: 30 year old Female presented with Left L5 distribution refractory neuropathic pain to our pain clinic. She had previously undergone L2/3 and L4/5 dissectomy with four level laminectomy for acute cauda equine syndrome.
Case 2: 57 year old male with history of refractory neuropathic right foot pain. He had background history of multiple back surgery for spinal fusion and plating.
Results: We proceeded with a Dorsal root ganglion stimulation (Spinal Modulation) trial through sacral hiatus route which required long sheath to pass the DRG leads to Left sided L5 foramina. Both Patients had more than 70% pain relief in 1 week trial. Therefore stage 2 DRG (implantation of pulse generator) was completed.
L5 DRG is difficult because of deep interlaminar space, steep angle of epidural access needle making a tendency for the lead to dip into the ventral half of the foramen. Epidural access via sacral hiatus ensures a smooth un hindered transit of lead delivery sheath towards foramen making lead steering very easy.
Conclusion: DRG stimulation through Sacral hiatus may be a promising treatment for the relief of chronic, intractable neuropathic pain.

WIP-0281 LONG TERM ANALGESIC EFFICACY OF SPINAL CORD STIMULATION (SCS): A FIVE YEAR FOLLOW UP

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Objectives: This prospective audit was designed to observe the long term analgesic efficacy of SCS implanted for the management of a variety of chronic pain syndromes in a single centre.
Methods: 67 patients underwent SCS implantation between 2005 and 2013 at Sheffield university hospital interdisciplinary pain centre. The statistical difference in pain scores is measured pre-implantation and at annual follow up. The pain was recorded on a visual analogue scale (VAS) for direct pain related to the chronic pain syndrome and a subjective measure of pain relief that may not be related. A p value < 0.05 is considered significant.
Results: All patients demonstrated a significant improvement in pains scores over the study period. There is a significant

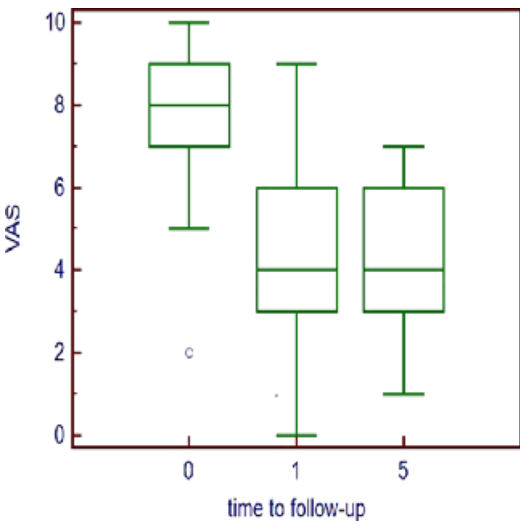

Figure 1. A box and whisker plot demonstrating the decline in VAS pain scores reported pre implantation (0) at year one and five following SCS implantation.

reduction in VAS pain score following implantation (figure 1), $P < 0.00001$, that is maintained at five year follow up. Similarly there is a significant difference in indirect pain relief reported by patents between: standard treatment before SCS 3.6 (SD 2.3) and at one year follow up, 7.0 (SD 2.1), $p < 0.000001$. This pain relief is maintained over the five year study period.

Conclusion: SCS provides significant pain relief for the patients with refractory pain treated according to national guidelines which is demonstrated one year after implantation and is maintained at five year follow up.

WIP-0283 THE IMPACT OF SPINAL CORD STIMULATION (SCS) ON PSYCHOLOGICAL FACTORS AND THE RELATIONSHIP WITH PAIN RELIEF

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Objectives: The association between chronic pain and measures of physical and psychological well being are understood. This prospective audit was designed to observe the long term psychological effects following SCS implantation for chronic pain syndromes. We observed the relation between the analgesic effect and sleep, anxiety and depression during first year post SCS implantation.

Methods: 63 patients (Neuropathic pain, 15; FBSS; 32, CRPS; = 16) underwent SCS implantation between 2005 and 2013 in a university hospital interdisciplinary pain centre. Pain scores and sleep disturbance were measured on a 10 point numeric scale; anxiety and depression using the Hospital Anxiety and Depression scale (HADs). The values were collected prior to implantation and at 3, 6 and 12 months follow up.

Results: There were no measureable differences in recorded values between groups before implantation. Following implantation, pain scores improved in all groups. This improvement was maintained over one year; 8 ($\pm$ 1.3) to 4.6 ($\pm$ 2.3), $p < 0.0001$. Sleep quality improved in from mean 7.5 ($\pm$ 2.5) to 3.9 ($\pm$ 2.9), $p < 0.0001$. HADs also demonstrated improvement at one year, $p = 0.02$. Pain improvement was greater in the FBSS compared with other groups but there were no differences between groups for sleep quality, anxiety or depression.

Conclusion: Pain, sleep, anxiety and depression improved significantly during one year follow up following SCS implantation. However, pain relief in patients with FBSS demonstrated the greatest improvement compared with the other two groups.

WIP-0431 TREATMENT OF POST-SURGICAL KNEE PAIN WITH DORSAL ROOT GANGLION (DRG) NEUROSTIMULATION

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Objectives: For intractable, neuropathic, post-surgical pain, spinal cord stimulation (SCS) can be an adequate treatment. However, achieving precise paresthesias in concordance with the painful region can be challenging. DRG neurostimulation may be more effective in obtaining adequate coverage of the painful regions.

Methods: Two patients with intractable, post-surgical, neuropathic knee pain received a DRG neurostimulator after successful diagnostic saphenous nerve blocks trial periods. In both patients a good stimulation pattern was reached. Pain on a 0–10 numeric rating scale (NRS-P), level of satisfaction, and quality of life (EQ-5D index; 0 [worst] – 1.0 [best]) scores were collected.

Results: Patient 1 reported during 3 months of treatment, that the NRS-P decreased from 8 to 4. the EQ-5D index improved from 0.236 to 0.764. Additionally, all pain medications were stopped.

Patient 2 experienced significant allodynia prior to implant,. After 5 months, DRG neurostimulation reduced NRS-P from 7 to <1. The EQ-5D index increased from 0.236 to 1.000.

Both patients reported a high level of satisfaction with DRG neurostimulation stating they would "absolutely" undergo the treatment again.

Conclusion: DRG neurostimulation achieved effective control of intractable, neuropathic pain across the saphenous nerve distribution after knee surgery and improved quality of life. These case reports support the findings of other reports and justify further studies about the effectiveness of DRG stimulation for neuropathic pain.

WIP-0189 AN MRI COMPATIBLE SPINAL CORD STIMULATION SYSTEM ENABLED EARLY DETECTION OF A POST-OPERATIVE GENERATOR SITE INFECTION AND FACILITATED THE PLANNING FOR SURGICAL REVISION

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Objectives: Spinal cord stimulation (SCS) remains an effective treatment for refractory chronic pain, but necessitates placement of prosthetic hardware that can serve as a nidus for infection. Infection ranks amongst the top reasons for revision, with an incidence between 2.5 and 14%. Until recently, the epidural leads of the SCS system precluded patients from obtaining an MRI, thereby limiting the use of imaging to assess infectious complications.

Methods: On post-operative day (POD)#25, a 55-year old male who underwent an uneventful implant of a SCS system presented to the emergency department with syncope. On POD#26, he developed a systemic inflammatory response syndrome, and an MRI of the spine revealed inflammatory changes deep to the SCS generator, without similar findings over the course of the epidural leads.

Results: On POD#27, the SCS system was removed. The absence of MRI signal abnormalities along the course of the leads, or at the level of neural axis, enabled us to limit the area of debridement to the generator, and obviated the need for surgical exploration along the course of the leads into the epidural space, an approach which would have required entry into the vertebral column and would have required neurosurgical involvement.

Conclusion: To our knowledge, this case represents the first report of the use of MRI in detecting surgical site infection in a patient with an SCS in situ, and underscores the importance of this advancement in technology enabling early detection of an infectious complication, providing guidance for tailoring antimicrobial therapies and limiting the extent of surgical dissection.

WIP-0439 COMPARISON OF TRANSFORAMINAL AND EPIDURAL PULSED RADIOFREQUENCY STIMULATION (PRF) OF DORSAL ROOT GANGLIA (DRG) FOR LUMBAR RADICULOPATHY

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Objectives: We compared long-term efficacy for chronic lumbar radiculopathy of the classical transforaminal PRF with a new epidural bipolar PRF.

Methods: Seventy (38 F/32 M; age range 31–80) consecutive patients suffering from chronic lumbar radicular pain were randomized to undergo fluoroscopy-guided PRF either by: 1) a 22-G 5 mm active needle, placed in the intervertebral foramen, or 2) by a bipolar epidural catheter (Pulstrode, Bioampere Research Padua, Italy) driven in the epidural space through the sacral hiatus to the target ganglion in the intraforaminal position. After electrically induced paresthesias overlapped the painful area (sensory threshold 0.2–0.5 V; impedance 200–600 ohm), PRF was applied for 300 seconds (voltage 35–80 V; target current supply 100 mA; target temperature <42°C). Patients were assessed before and up to 12 months after PRF with a 0–10 Numeric Rating Scale (NRS) for pain and the Oswestry questionnaire. Statistics were carried out with chi-square and *t* test ($P < 0.05$).

Results:

	Transforaminal PRF 35	Epidural PRF 35	*P*
Failed target	8 (23%)	2 (6%)	0.001
Average Voltage	42 ± 8	72 ± 14	< 0.001
Follow Up after 365 days			
Patients with Pain Relief >50%	16 (46%)	26 (74%)	0.04
NRS	6.6 ± 1.5	3.5 ± 0.8	< 0.001
Oswestry score	48 ± 8%	18 ± 4%	< 0.001

Conclusion: Compared to transforaminal PRF, epidural PRF allowed significantly ($P < 0.05$) higher stimulation voltage and determined better long-term improvement in disability and pain scores. Epidural PRF appears to improve the DRG tagetting, in a fashion better tailored on the patient features.

WIP-0252 NOVEL DESIGN OF A WEARABLE DEVICE BASED ON PULSED RADIOFREQUENCY FOR WRIST PAIN

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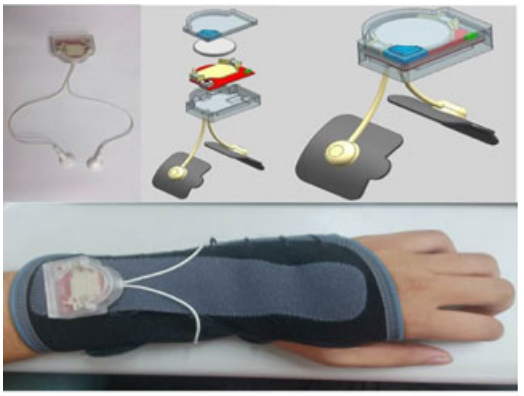
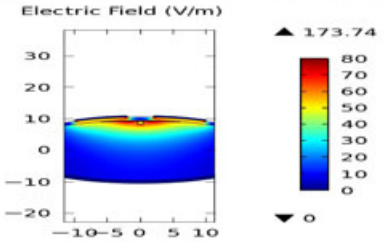
Objectives: Median nerve compression causing carpal tunnel syndrome contributes to the majority of wrist pain. Due to the superficial location of median nerve in anatomy and the well-known applications of pulsed radiofrequency in pain management, we design a prototype of a miniaturized stimulator based on transcutaneous pulsed radiofrequency (TPRF) integrated with a wrist brace for wrist pain.

Methods: A 16-bit microcontroller (Texas Instruments, MSP430F2012) was selected to produce the pulsed radiofrequency wave as RF generator. By internal processing such as switch control, charge pump, band pass filter and amplifier, high frequency pulsed sine wave and low frequency wave can both be produced for external output. We used the Finite Element Analysis (FEA) software to setup the environment parameters on skin, ligament and nerve which can simulate TPRF effects on median nerve.

Results: The stimulator was 34.6 × 26.6 × 5.8 mm in size and connected to two transcutaneous patches for stimulation. The parameters were as follows: Pulsed Radiofrequency: Pulsed Frequency:2 Hz, Pulsed Duration:25 ms, Frequency:500 KHz, Amplitude:±2 V~±3.3 V and Low Frequency: Low Frequency:1 Hz, Amplitude:+3.6 V. The FEA simulation showed that the electric field can penetrate skin, soft tissue and cover median nerve with highest intensity.





Conclusion: We design a prototype of a miniaturized stimulator integrated with wrist brace. TPRF stimulation on median nerve by simulation showed favorable results. This device can provide alternative high and low frequency stimulation for pain relief and be a modality for further clinical applications on pain management.

WIP-0422 SPINAL CORD STIMULATION EFFICACY DURING TRIAL PREDICTS PERMANENT SYSTEM EFFICACY AT 3-MONTHS

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Objectives: End-of-trial efficacy is thought to predict long-term efficacy of permanent spinal cord stimulation (SCS). The present analysis examined the relationship between trial outcomes and 3-month SCS outcomes.

Methods: EMP^{3}OWER, a multicenter, IRB-approved, post-market clinical study, enrolled and consented patients before SCS trial. After an SCS trial of approximately 6 days, on average, patients reported pain on the numerical rating scale (NRS) and patient reported percentage of pain relief (PRP). Patients with PRP≥50% received a permanent implant. NRS, PRP, quality of life (QoL), and satisfaction were measured 3-months after permanent SCS implant.

Results: In this ongoing study, 538 patients completed the trial. Sixty-seven (12.5%) patients failed the trial, and 21 (3.9%) did not receive the permanent implant for other reasons. Patients with trial PRP in the 90 to 100% range had higher 3-month PRP than those with lower trial PRP [$F(5, 287) = 3.65$, $p = 0.003$]. The average 3-month PRP was below 50% for patients whose trial PRP was 50–59%. End-of-trial

PRP was inflated approximately 10–15% over 3-month PRP, on average. Higher end-of-trial pain relief was associated with improved QoL, higher satisfaction, and higher PRP at 3-months (significant correlations, all $p < 0.05$).
Conclusion: In support of common practice, trial outcomes represented 3-month permanent SCS outcomes. Patients with marginal end-of-trial efficacy may be more likely to have poor efficacy 3-months after receiving the permanent implant. These results inform patient assessment for both research and clinical practice.
This study was supported by St. Jude Medical.
Conflict of interest

WIP-0420 HIGHER LEVELS OF CATASTROPHIZING AND ANXIETY MAY INFLUENCE EFFICACY OF SPINAL CORD STIMULATION

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Objectives: The Pain Catastrophizing Scale (PCS) and the STATE-TRAIT Anxiety Inventory (STAI) are self-reports that measure a patient's pain catastrophizing and anxiety. Our aim was to determine if greater catastrophizing or anxiety has a deleterious relationship with SCS efficacy.
Methods: As part of the ongoing, IRB-approved, multi-site, post-market EMPOWER study, 387 patients signed informed consent prior to receiving a permanently implanted SCS device, with follow-up at 6- and 12-months post-implant. Patient reported pain relief (PRP), satisfaction, quality of life (QOL), PCS and STAI were measured at each follow-up. According to Sullivan (2009), patients with a PCS score of >30 were classified as having clinically significant catastrophizing.
Results: Patients with PCS > 30 at 6-months post-implant had a lower 6-month PRP ($p < 0.001$) and were 5 times more likely to report dissatisfaction with their SCS device ($p < 0.001$, OR = 5.46). Additionally, at 6-months, those who were clinically catastrophizing were 3 times more likely to report deterioration in QOL following SCS ($p < 0.002$, OR = 3.12). Finally, at 6-months, patients with greater anxiety were associated with lower PRP, satisfaction and QOL (negative correlations, all $p < 0.001$). Results were similar at 12-months post-implant.
Conclusion: In this analysis, patients with greater catastrophizing or anxiety were less likely to have adequate pain relief, improved quality of life and satisfaction with SCS. These results indicate that pain relief and pain-related mental health may interact to influence the overall efficacy of SCS.
This study was supported by St. Jude Medical.
Conflict of interest

WIP-0411 BURST SPINAL CORD STIMULATION PROVIDES SUPERIOR OVERALL PAIN RELIEF COMPARED TO TONIC STIMULATION

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Objectives: Burst spinal cord stimulation (SCS) combines higher-frequency stimulation within traditional tonic SCS parameters. This study compared pain relief during burst SCS and tonic SCS.
Methods: At 4 IRB-approved sites, 22 patients receiving stable pain relief with tonic SCS signed informed consent and were re-programmed to receive burst SCS and followed for 14 days. A paired t-test compared the overall daily pain intensity on the Visual Analog Scale (VAS) during stable tonic stimulation and at the end of 14-days of burst stimulation. Patients were also asked to express their preferred stimulation type. Finally, as an additional analysis, differences in paresthesia coverage between tonic and burst stimulation were also investigated.
Results: Overall average VAS scores were reduced from 53.5 (±20.2) mm during tonic stimulation to 28.5 (±18.1) mm during burst stimulation ($p < 0.001$). Paresthesia was reduced in 19 of 20 reporting patients while using burst stimulation; 15 of these 20 patients reported no paresthesia during burst SCS. Nineteen of the 21 reporting patients expressed preference for burst vs tonic SCS.
Conclusion: Compared with tonic, burst SCS provided more effective pain relief in these patients and also reduced paresthesia. The great majority of patients preferred the stimulation produced by burst over tonic. Burst SCS is an effective alternative therapy for pain relief.
This study was supported by St. Jude Medical through a sponsored clinical research study. At the time of this submission, burst stimulation is not a currently approved stimulation mode for SCS.
Conflict of interest

WIP-0421 COMPARISON OF SCS TREATMENT WITH AND WITHOUT PRIOR SURGERY

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Objectives: Currently, spinal cord stimulation (SCS) falls after surgery on the continuum of care for pain. Although SCS has been shown to be clinically effective for patients following surgical interventions, few studies have reported data for patients without prior surgery.
Methods: Interim data were analyzed from 621 consented patients enrolled in the EMP^{3}OWER IRB-approved, prospective, open-labelled clinical study. Patients who had undergone surgery prior to SCS (n = 404, SCS+surgery) were compared with those without prior surgery (n = 217, SCS-only). Percentage of patient-reported pain relief, Numerical Rating Score (NRS), Pain Disability Index (PDI), Short Form McGill Pain Questionnaire (SF-MPQ), Pain Catastrophizing Scale (PCS) and the Stateand Trait Anxiety Inventory (STAI) were compared using descriptive statistics.
Results: Seventy-one percent of the SCS+surgery group and 79% of the SCS-only group reported an average pain relief of >50% after 12 months of treatment. SCS+surgery patients reported a mean NRS of 5.29 ± 2.55, a 27% change from baseline, as compared to 4.33 ± 2.91 reported by the SCS-only patients, a 41% change from baseline ($p = 0.022$). The mean PDI scores of the SCS-only patients were also significantly lower than the SCS+surgery patients ($p = 0.046$). SF-MPQ, PCS and STAI Scores were not significantly different.
Conclusion: Patients without prior surgery reported greater pain relief on the majority of pain measures during SCS than patients previously who had undergone surgery. Therefore, SCS may provide an effective option for some chronic pain patients prior to surgical intervention.
This work was supported by St. Jude Medical.
Conflict of interest

WIP-0412 DEVELOPMENT OF NEW PAIN AFFECTS THE LONG-TERM PATIENT EXPERIENCE WITH SPINAL CORD STIMULATION

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Objectives: Pain conditions are often progressive with a changing pain profile. This study sought to examine outcomes for patients who developed a new area of pain while using a spinal cord stimulation (SCS) device.

Methods: EMPOWER, a multi-site, IRB-approved, post-market clinical study, consented patients prior to SCS trial. At enrollment, patients reported medical history and areas of pain. At 3-, 6-, and 12-month follow-up visits, patients reported pain areas using standard body maps and post-implant patient reported pain relief (PRP). Patients also rated quality of life (QoL) and satisfaction, both on 5-point likert scales. A patient was considered to have new pain if a pain area was identified outside the baseline pain profile that could not be covered by reprogramming at follow-up.

Results: A total of 156 patients completed the follow-up. At the 12-month follow-up, 13 patients (8.3%) reported new pain. A non-parametric test revealed that patients reporting new pain had a significantly lower PRP ($p = 0.04$). Seven patients with new pain were satisfied or very satisfied with the SCS treatment, and 7 patients with new pain reported improved or greatly improved QoL with the device. Three- and 6-month outcomes were similar to 12-months for patients with new pain.

Conclusion: Patient pain may evolve over time leading to inadequate coverage by the SCS device which may increase the risk for inferior overall long-term pain relief.

This study was supported by St. Jude Medical.
Conflict of interest

WIP-0254 THE TREATMENT OF OROFACIAL PAIN BY USING THETA BURST RTMS STIMULATION

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Objectives: In our previous experimets 10 Hz and 20 Hz rTMS stimulations were used for the teratment of different types of OROFACIAL PAIN. All patients had drug resistant orofacial unilateral neurogenic pain with duration greater than one year. It was found out that 20 Hz rTMS stimulation is more effective than the 10 Hz stimulation. Now we tested the theta burst stimulation as another possible tool of for pain treatment.

Methods: 19 patients with OROFACIAL PAIN participated in the study. We stimulated motor cortex area corresponding to the hand on the painful side. They underwent quantitative sensory testing before and after the stimulation. The intensity of pain was evaluated in all patients before, during and after rTMS or shame stimulation by means of a visual analogue scale. Thermal and tactile sensory tresholds and allodynia as a consequence of OROFACIAL PAIN were measured.

Results: In VAS measurement the theta burst stimulation was more effective than the shame stimulation. The effect of theta burst stimulation was still observed 14 days after the stimulation. During the measurement of thermic sensitivity, theta burst stimulation was not significantly improved.

The measurement of tactile stimulation was significantly effective after real burst stimulation if compared with shame stimulation.

Conclusion: Repetitive transcranial stimulation (rTMS) is non-invasive technique, that allows safe and painless stimulation of the brain cortex. High frequency rTMS theta burst stimulation was also effective in the chronic OROFACIAL PAIN and could represent another possibility for the treatment of different types of OROFACIAL PAIN.

WIP-0545 A NOVEL TECHNIQUE TO DELIVER EPIDURAL PULSED RADIOFREQUENCY FOR THE MANAGEMENT OF PERSISTENT LUMBAR RADICULAR PAIN IN FAILED BACK SURGERY SYNDROME – A CASE REPORT

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Objectives: Radicular pain can be treated with pulsed radiofrequency (PFR) to dorsal root ganglia (DRG) but this technique may be complicated by abnormal anatomy. Here we describe a case report where we successfully treated lumbar radicular pain in a patient with failed back surgery syndrome (FBSS) using a guidable radiofrequency injection electrode with a metallic coil active tip and embedded temperature sensor (RCE-E401519, Cosman Medical, Inc., USA).

Methods: A 56 year old woman with a background of spinal fusion L4-S1 and persistent radicular leg pain had previously short lived analgesia from a caudal epidural with subsequent failed attempts at a DRG block due to difficult anatomy. A recent MRI of the Lumbar spine confirmed Left L5 nerve root compression and excluded fibrosis or arachnoiditis. Under fluroscopic guidance, a guidable RF injection electrode was introduced via the sacral hiatus. Stimulation at the left L5 DRG reproduced the patient's pain and PRF was then applied (42°, 12 minutes).

Results: The patient reported immediate excellent pain relief, which was maintained for 6 weeks (at time of writing). This was supported by the reported reduction of the analgesic medication usage, increased activity and improved sleep symptoms.

Conclusion: When PRF is technically difficult due to abnormal anatomy from previous spinal surgery, using the conventional transforminal route, an interlaminar technique may provide an effective alternative.

WIP-0443 SAFETY OF HF10™ SCS: A REVIEW OF THE ELECTRICAL, HISTOLOGICAL AND CLINICAL EVIDENCE

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Objectives: Introduced in 2009, the Senza® spinal cord stimulation (SCS) system delivers HF10 SCS stimulation with frequencies up to 10 kHz. Evidence of safety for this device is presented.

Methods: Safety is assessed with regards to device design and electrical safety, pre-clinical and clinical study results, and physician experience.

Results: Design and Electrical Safety: Tissue damage occurs as a result of stimulation pulse charge density and charge per phase exceeding the safe range. The Senza system minimizes

irreversible chemical reactions by utilizing charge-balanced waveforms and inert electrode materials. Charge per phase and charge density of HF10 SCS are well within the established safe range and much lower than traditional low-frequency SCS.
Histological Evidence: A caprine histological study of HF10 SCS showed no stimulation-related damage to all evaluated structures, including dorsal nerve rootlets, connective tissue, and spinal cord.
Clinical Evidence: After 24 months, no patient showed any evidence of neurologic deficit or dysfunction attributable to prolonged delivery of HF10 SCS therapy. Reported adverse events were similar in nature and frequency to those seen with traditional low-frequency SCS systems.
Physician Experience: The Senza SCS system has been implanted in over 2000 patients in Europe and Australia, with some patients implanted for over 4 years. Cumulative experience has demonstrated no device failures associated with the delivery of HF10 SCS, including no lead or battery failures.
Conclusion: In conclusion, the Senza SCS system was designed specifically to safely deliver HF10 SCS (10 kHz) stimulation. Pre-clinical evidence, clinical study results and physician experience support the safety of this device.
Conflict of interest

WIP-0521 TREATMENT OF PAIN AFTER SPINAL CORD INJURY (SCI) WITH INTRATHECAL MORPHINE – PRESENTATION OF FOUR PATIENTS

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Objectives: Severe pain is frequent complication after SCI. A major part of SCI subjects (77–86%) reports pain six months after injury, half of those as severe. Pain is crucial factor affecting the quality of life after SCI, mostly in the field of day&night rest, ambulating, social re-integration and basic daily activities. IASP taxonomy describes pain after SCI as nociceptive OR neuropathic OR combined AND located at the level of injury OR below level OR combined.
Four cases of patients after SCI treated with intrathecal (IT) morphine programmable pump ared described.
Methods: Four SCI subjects (3 M, 1 F) with intractable pain (VAS10 daily average 6.0, VAS10 highest average 8.5) and previously treated with maximal doses of oral/transdermal opioids and pregabalin combined with antidepressants were selected for bolus test with IT morhine.
All four responded on 0.5–2 mg morphine administered increasingly a 0.5 mg IT every 24 hrs with VAS10 average 2.5 four hrs after last bolus.
All four were schedulled for programmable pump implantation, with primary dose programmed on 1 mg Morphine daily.
Results: In all four patients demands for rapid dose increase appeared in first two months after implantation. One year after implantation all four have average dose of IT Morphine 8.6 mg daily and average highest VAS10 7.25. Goal attainment scale (GAS) result was -2 (much worse result from expected) in two patients and -1 (worse result from expected) in two patients.
Conclusion: Intrathecal delivery of morphine doesn't seem to be effective treatment for pain after SCI.

WIP-0368 SPECIFIC SEGMENTAL EFFECTS OF HIGH FREQUENCY ELECTRICAL STIMULATION FOLLOWING SENSITIZATION

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Objectives: Although non-noxious high frequency electrical stimulation (HFES) has been proposed to modulate pain, mechanisms underlying biological activity remain poorly understood. To further elucidate how HFES modulates pain, we examined evoked responses to noxious stimuli after the application of capsaicin in healthy volunteers. Specifically, we intended to address differences in pain modulation based on the location of HFES.
Methods: Seventy-five healthy subjects took part in a series of experiments. Experiments comprised the application of topical capsaicin and varying the location of HFES (100 Hz, 3 mA, 10 minutes). Relative to the evoked pain test area (left hand), HFES was applied segmentally (homo-/heterotopic) or extra-segmentally. In addition to rating perception to noxious (i.e., contact heat pulses) and non-noxious stimuli (i.e., electrical), as well as spontaneous pain to capsaicin, evoked potentials were recorded.
Results: Independent of the HFES location (i.e. segmental versus extra-segmental) spontaneous pain induced by capsaicin was significantly reduced (ratings pre- and post HFES were 4.81 and 1.82, respectively). While HFES was effective in relieving evoked pain after the induction of hyperalgesia, these modulating effects were restricted to HFES applied within the affected spinal segment (i.e., homo-and/heterotopic). In contrast to earlier studies, HFES was not effective in reducing evoked pain in subjects that were not conditioned with capsaicin.
Conclusion: In response to electrical stimulation, HFES demonstrated a robust capacity to modulate spontaneous and evoked pain in an area of skin sensitized with capsaicin. Based on varying the location of electrical stimulation, supra-spinal and spinal mechanisms appear to underlie the effect of pain relief.

WIP-0348 ACCURACY OF TEMPLATE-GUIDED REFILL TECHNIQUE OF INTRATHECAL PUMPS CONTROLLED BY FLUOROSCOPY

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Objectives: Intrathecal drug therapy with implantable intrathecal pumps is being utilized increasingly for the treatment of chronic refractory pain. However, performing the regular pump refill procedures with the template-guided technique caries the risk of medication injection into the subcutaneous tissue. (1) The aim of this study was to assess the accuracy of this template-guided refill technique by means of fluoroscopic evaluation.
Methods: In 23 patients (67.4 (SD 14.5) years;10 female), the difference between the identification of the reservoir fill port centre using the manufacturer's template and fluoroscopic guidance was assessed on 4 consecutive refill procedures by a single experienced physician. A distance surpassing that between the center and the margin of the port (3.5 millimeters) was considered a clinically relevant deviation. Analyses were performed with a one sample t-test, with $p < 0.05$ indicating statistical significance.
Results: The mean difference distance between identification markings of the target with fluoroscopic guidance and with the template was 8.79 mm, with limited variance (SD 2.4 mm). For all individual refill procedures, the port center identification accuracy differed significantly from zero (all $p < 0.001$), and from the clinically relevant cut-off point of 3.5 mm (all $p < 0.001$). None of the attempts were within the margins of the fill port (range 4–12 mm).
Conclusion: Our results suggest poor accuracy of insertion point identification using the template. This highlights the potential risk of errors related to identification of the puncture site using the template-guided technique.
1. Neuromodulation 2012;15:467–82.

WIP-0341 HIGH FREQUENCY AND BURST SPINAL CORD STIMULATIONS IN PATIENTS WITH COMPLEX REGIONAL PAIN SYNDROME: A RANDOMIZED PLACEBO CONTROLLED TRIAL

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Objectives: Spinal cord stimulation (SCS) is an effective invasive therapy to treat neuropathic pain states including complex regional pain syndrome (CRPS). Some reports however suggest that SCS with higher frequencies or burst stimulation are equally as good or better in reducing pain. The aim of this study is to investigate the effects of high frequency and burst SCS while comparing it with standard stimulation and placebo.

Methods: All CRPS patients that have received a permanent internal pulse generator (IPG) will enroll into the next stage of our study. In this phase we'll program 5 different frequencies (standard 40 Hz, 500 Hz, 1200 Hz, burst and placebo) in random order every 2 weeks. A wash-out period of 2 days without stimulation is also incorporated within these 14 days. At the end of these 10 weeks the patient will choose which setting was best in alleviating the pain and will continue stimulation with the chosen frequency. Both patient and investigator are blinded.

Results: This will be one of the first major RCTs that systematically examines the effects of these novel stimulation modalities and compares it with standard and placebo stimulation.

Conclusion: With the results of this trial we hope to increase our knowledge of the SCS mechanisms involved in CRPS, improve SCS towards a more mechanism based therapy and customize it to tend to the needs of the individual patients.
(ISRCTN36655259)

WIP-0336 LOW AMPLITUDE PULSED RADIOFREQUENCY OF DORSAL PENILE NERVE ON TRANSCUTANEOUS FOR SIMULATION OF ELECTRIC FIELD

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Objectives: The application of pulsed-radiofrequency (PRF) electrical stimulation have progressed tremendously. Recently, the application has been conducted directly from skin, as known as transcutaneous electric nerve stimulation (TENS). In some reports, PRF has been used to decrease shoulder pain and applied on dorsal penile nerve (DPN) to decrease glans sensory for premature ejaculation. In this topic, we designed a TENS device, which uses PRF, to analyze its effect on premature ejaculation treatment. The evaluation is conducted by electric field distribution on DPN under skin to analyze of premature ejaculation treatment.

Methods: We use Finite Element Analysis (FEA), to simulate electric field distribution when applying low-amplitude PRF signals (500 kHz, ± 3 V). Parameters of stimulation signals, electrode, nerve, blood vessels, and skin are set to build the back of penis model for the simulation.

Results: The FEA results show the current density distribution. The results show that higher electric field magnitude focus between the two electrode pads near the skin. The electric field magnitude on DPN is between 600 and 700 V/m. The magnitude of electric field is positive related to the current density. The results show that the skin resistance can be ignorable when applying high-frequency.

Conclusion: PRF stimulation signals can ignore the skin resistance and effectively reach the superficial nerve. It is promising to use PRF stimulation to inhibit pain and tactile transmission. From the analyzed electric field distribution results, we can confirm the applicable stimulation distance when applying low-amplitude PRF stimulation. We look forward to effectively treat premature ejaculation by TENS using PRF signals.

WIP-0407 SPINAL CORD STIMULATION SIGNIFICANTLY REDUCES PAIN INTENSITY FROM BASELINE TO 18-MONTH FOLLOW UP, BUT PAIN INTENSITY SIGNIFICANTLY INCREASES FROM SIX TO 18-MONTH FOLLOW UP

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Objectives: To investigate whether SCS significantly reduces pain intensity up to 18-month follow up in patients with chronic neuropathic pain.

Methods: Forty two patients were recruited from the Pain Management Clinic at Russells Hall Hospital, Dudley, England. Patients completed the Visual Analogue Scale (VAS) to assess pain intensity at baseline (one week prior to SCS surgery), six, 12 and 18-months follow-up.

Results: Repeated-measures ANOVA were performed to investigate changes pain intensity between baseline, six-months, 12-months and 18-months follow-ups. Statistically significant improvements were observed for pain as measured with the VAS, $F(3, 123) = 11.298$ $p < 0.05$ (Figure 1). Pain intensity significantly decreased from baseline to all three time points. However there was a significant increase in pain intensity from six-months to 12-months follow up $F(1, 56) = 6.108$ $p < 0.05$ and six-months to 18-months follow up $F(1, 41) = 4.974$ $p > 0.05$. There was no significant increase in pain intensity from 12-months to 18-months follow up.

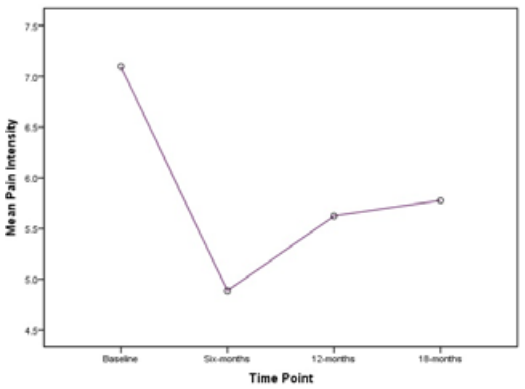

Figure 1: Pain Intensity at Four Time Points

Conclusion: SCS significantly improves pain intensity up to 18-months follow up, however the beneficial effect of SCS on pain intensity diminishes over time with significantly increases in pain intensity from six-months to 18-months follow up. Six-month follow up scores may reflect the influence of placebo. Further research is warranted.

WIP-0497 PRECISION SPECTRA ILLUMINA 3D ALGORITHM IN SPINAL CORD STIMULATION: IMPACT OF MULTIPLE INDIPENDENT CURRENT CONTROL (MICC) TECNOLOGY THROUGH THE FOCUS FEATURE – UK STUDY DATA

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Objectives: Precision™ Spectra SCS world's first rechargeable spinal cord stimulator with 32 contact points and 32 dedicated power sources. incorporates illumina 3D software. FOCUS assists the clinician in modifying the distance between anodes and main cathode, for a given central point of stimulation (CPOS). This prospective case series aims to investigate the utility of the FOCUS programming feature in stimulation fine-tuning after the optimal CPOS is identified.

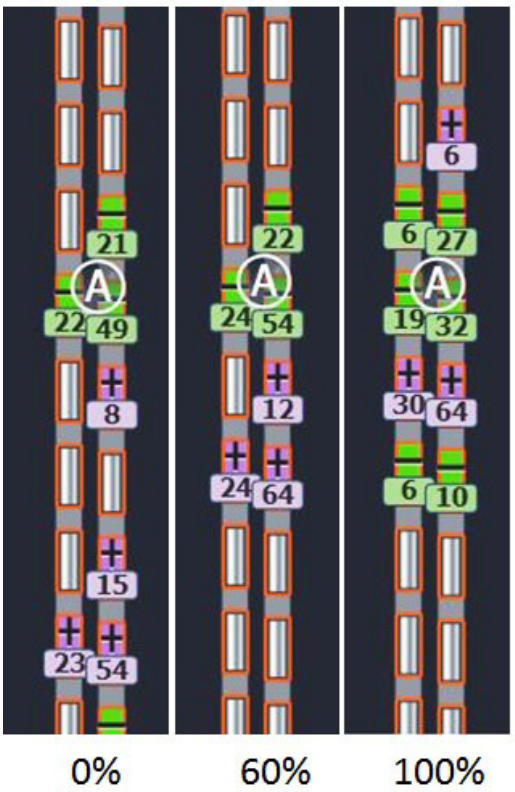
Methods: 6 patients who underwent percutaneous SCS with Precision™ Spectra at Pain & Anaesthesia Research Centre, Barts Health NHS Trust, London, UK were followed up and programmed to find optimal stimulation parameters and CPOS. All patients were asked to draw the pain map and the paraesthesia map at patient-specific FOCUS%. The paraesthesia and pain maps were analyzed in MATLAB.

Results: As FOCUS is incremented from 0% to 100%, stimulation amplitude (mA) needs to be incremented on average by 41% for all the patients to allow perception. On average across the 6 patients, while varying FOCUS from 0% to 100%:

0 the maximum paraesthesia surface variation was 65%.

0 The maximum pain/paraesthesia overlap variation was 30%.

4 out of 6 patients had optimal therapy under FOCUS% different from default 50%.



Conclusion: The ability of FOCUS programming feature to impact the type of fibers recruited at the same spinal cord level, influencing the depth of the stimulation field, is suggested by 65% max paraesthesia surface variation. FOCUS by in stimulation fine-tuning and modifying the distance between the cathode and anode improved the outcomes in 4 out of 6 patients followed.

Conflict of interest

WIP-0565 HIGHLY SIGNIFICANT REDUCTION IN CHRONIC LOW BACK PAIN WITH A 32-CONTACT MULTIPLE INDEPENDENT CURRENT CONTROL SCS SYSTEM

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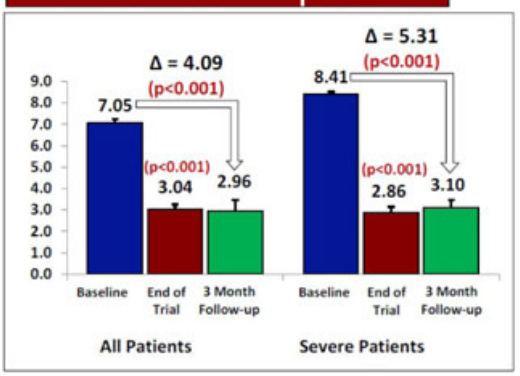
Objectives: Low back pain is highly pervasive and has significant effects on patients' quality of life. Spinal cord stimulation has been used as a treatment option, but treatment of low back pain has been historically challenging. Here we present clinical outcomes in approximatelty 40 chronic low back pain patients implanted with the recently released Precision Spectra SCS system to 6 months post-IPG implantation.

Methods: We conducted a multicenter retrospective consecutive case-series of approximately 40 patients implanted with the Precision Spectra System for chronic low back pain at 8 clinical sites. Data collection included: baseline characteristics, procedural information, pain intensity, sleep improvement, and medication usage. To minimize bias, all consecutive patients implanted at our clinic with Precision Spectra were included.

Results: At the end of trial, 28% of patients reported improvement in sleep, and 22% reported reduction in medication usage. Mean pain intensity (NRS) showed a highly statistically significant improvement ($p < 0.001$) of 4.09 points at the 3-month follow-up. In severe patients (baseline NRS of

Study Endpoint	Proportion of Responders
Percent Pain Relief >50%	95%
Sleep Improvement	28%
Medications Reduced	22%
Trial Successes	**90%**



8–10), mean NRS reduction was reduced by5.31 points at 3-months follow-up ($p < 0.001$). Full analysis out to 6 months follow-up will be presented.Conclusion
Patients implanted with the Precision Spectra SCS system for chronic low back pain showed improvement in activities of daily living, sleep and medication at the end of trial. At 3 months post-implantation significant reduction in pain intensity was found. Maintenance of these outcomes out to 6 months follow-up will be presented. Further studies are recommended to fully characterize the Spectra SCS System for chronic low back pain.

WIP-0564 HIGHLY SIGNIFICANT CLINICAL OUTCOMES WITH A 32-CONTACT MULTIPLE INDEPENDENT CURRENT CONTROL SCS SYSTEM

S. Hayek[1], E. Veizi[1], J. North[2], B. Chafin[3], T. Yearwood[4], L. Raso[5], R. Frey[6], K. Cairns[7], A. Berg[8], J. Brendel[9], N. Haider[10], M. Mccarty[11], H. Vucetic[12], K. Amirdelfan[13], L. Chen[14], B. Hershey[15], N. Mekel-Bobrov[14]
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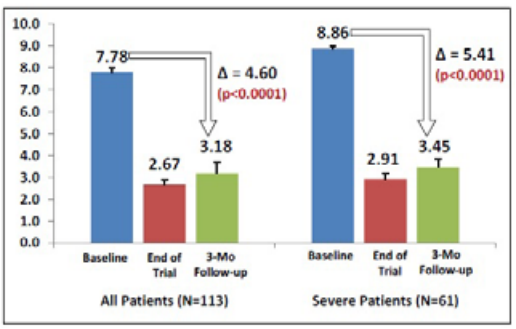
Objectives: Over the past few years, SCS technology has advanced greatly, with the newer sophisticated systems designed to provide greater pain relief. The recently approved Precision Spectra SCS System features 32 contacts with independently controlled current control, and a new algorithm for modeling patients' optimal contact configuration. To characterize outcomes associated with the new system, we undertook a retrospective consecutive case-series of approximately 200 patients across 13 clinical sites. Here we will present their outcomes out to 6 months post-implantation.
Methods: Data collection included: baseline characteristics, procedural information, and percent pain relief, and pain intensity (0–10 NRS). To minimize bias, all consecutive patients implanted with the system were included. Statistical analyses were prospectively defined.
Results: The Spectra system was used to treat patients with a wide range of diagnoses; 36% of patients had back pain only. 70% of patients were implanted with 24–32 contacts. At 3 months post-implantation, 98% of the patients achieved clinically significant pain relief (≥50% PPR). Additionally, mean pain intensity (NRS) was reduced by 4.60 points. In severe patients, mean pain intensity was lowered by 5.41 points. Full analysis out to 6 months follow-up will be presented.
Conclusion: Our real-world experience with the Precision Spectra system has found that the system is being used to treat a wide variety of pain patterns with a broad range of lead configurations. Results at 3 months show highly significant pain relief. Maintenance of these findings out to 6 months will be presented. Further studies are recommended to fully characterize the Spectra SCS System.



Study Endpoint	Proportion of Responders
Percent Pain Relief >50%	95%
Sleep Improvement	28%
Medications Reduced	22%
Trial Successes	**90%**

WIP-0568 32-CONTACT MULTIPLE INDEPENDENT CURRENT CONTROL (MICC) AND PATIENT-SPECIFIC OPTIMIZATION OF STIMULATION

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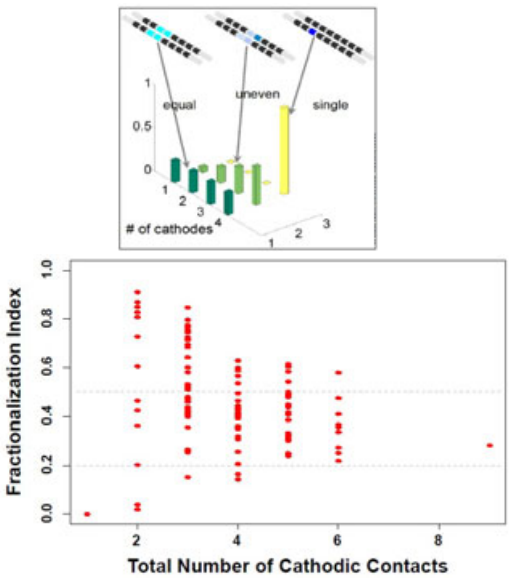
Objectives: The recently released Precision Spectra SCS system provides 32 contacts, each with its own dedicated power source. This 32-contact multiple independent current control (MICC) system was designed to maximize the flexibility and customization of the stimulation field during the optimization



of programming parameters to an individual patient's needs. In a retrospective case-series of approximately 200 Precision Spectra patients, we sought to characterize the real-world utilization of the various programming parameters afforded by 32-contact MICC.

Methods: We undertook a retrospective consecutive case-series of approximately 200 patients across 13 clinical sites. This diverse cohort consisted of patients with a variety of pain patterns across the back and legs, across a range of diagnoses. Data included baseline pain patterns, programming parameters, and clinical outcomes.

Results: Spectra was used to treat a diverse group of chronic pain patients, with 36% of patients reporting chief complaint of low back pain, 40% reporting both chronic low back and leg pain, and 24% with a primary complaint of leg pain only. Programming parameters took wide-ranging advantage of the 32-contact MICC capabilities. The full range of programming parameters will be presented, including anode placement, cathode placement, and fractionalization.

Conclusion: In our early real-world, multi-center experience with the Precision Spectra system we analyzed a diverse cohort of approximately 200 patients across 13 different clinical sites, and found a very broad range of MICC programming parameters being utilized. We hypothesize that the broad range of programming parameters, taking advantage of 32-contact MICC, is being utilized to customize treatment to individual patient needs.

WIP-0569 THE BROAD FLEXIBILITY OF LEAD CONFIGURATIONS WITH A NEW 32-CONTACT CURRENT CONTROL SYSTEM

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[1]*Pain Management, Carolinas Pain Institute, Winston-Salem,* [2]*Clinical Research, Boston Scientific Corporation, Valencia, USA*

Objectives: Over time SCS platforms have evolved from four to eight to sixteen, and most recently, to 32 contacts with the Precision Spectra system which includes 32 contacts with 32 dedicated power sources, as well as 4 lead ports. Together these allow for a very broad range of lead configurations to maximize the number of options available to tailor treatment to each patient. We sought to characterize the real-world utilization of the various possible lead configurations.

Methods: We undertook a retrospective consecutive case-series of approximately 200 patients across 13 clinical sites. Data included baseline pain patterns and diagnoses, lead configuration including the number, type, and location of leads used, and clinical outcomes.

Results: Precision Spectra was used to treat a diverse group of chronic pain patients, with 36% of patients reporting chief complaint of low back pain, 40% reporting both chronic low back and leg pain, and 24% with a primary complaint of leg pain only. Lead placement spanned T1 all the way to T12, and over 10 different combinations of leads types were utilized. The full range of lead configurations will be presented, as well as the distribution of its utilization patterns.

Conclusion: In our early real-world, multi-center experience with the Precision Spectra system we analyzed a diverse cohort of approximately 200 patients across 13 different clinical sites, and found a very broad range of lead configurations being utilized. We hypothesize that the full range of lead configurations available with the Precision Spectra system is being utilized to customize treatment to individual patient needs.

WIP-0566 TREATING DIFFICULT PAIN PATTERNS WITH A 32-CONTACT MULTIPLE INDEPENDENT CURRENT CONTROL SCS SYSTEM

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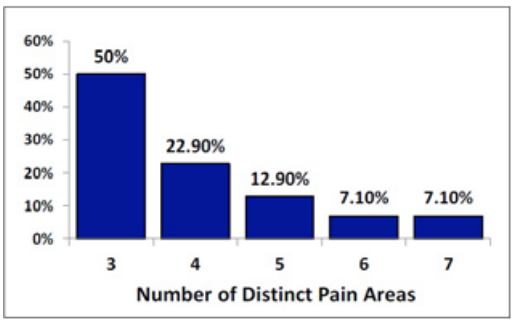
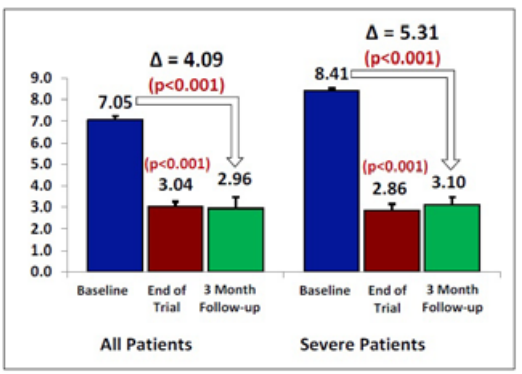
[1]*Pain Management, Pacific Pain Management, Ventura,* [2]*Pain Management, Spine Team Texas, Rockwall,* [3]*Pain Management, Balcones Pain Consultants, Austin,* [4]*Pain Management, Carolinas Pain Institute, Winston-Salem,* [5]*Pain Management, The Spine and Pain Institute, Kent,* [6]*R&D, Boston Scientific Corporation, Valencia,* [7]*Clinical Research, Boston Scientific Corporation, Valencia, USA*

Objectives: Multi-site pain is highly prevalent in chronic pain patients and providing pain relief in these patients can be challenging. The Precision Spectra system allows for use of up to 32 independently controlled electrodes designed to provide paresthesia coverage to the multiple pain areas. Here we present clinical outcomes in approximately 60 multi-site pain patients implanted with this system.

Methods: We conducted a retrospective consecutive case-series of approximately 60 patients from 5 centers. Data collection included: baseline characteristics, procedural information, programming parameters, and pain reduction. To minimize bias, all consecutive patients implanted at the five clinics with the Precision Spectra SCS System were included. Statistical analyses were prospectively defined.

Results: A mean of 4.0 (±3.7) distinct areas of pain per patient was found, with a range of 3 to 7. At the end of trial, 18% of patients reported improvement in sleep, and 37% reported reduction in medication usage. 88% of patients were implanted with 24–32 contacts. Mean pain intensity (NRS) showed a highly statistically significant improvement ($p < 0.001$) of 4.45 points at the 3-month follow-up. In severe patients (baseline NRS of 8–10), the mean NRS reduction was reduced by 5.69 points ($p < 0.001$). Full results out to 6 months follow-up will be presented.





Conclusion: Multisite pain is a highly prevalent problem in patients with chronic intractable pain. The 32-contact Precision Spectra System was used to treat patients with multisite pain, primarily with 24–32 contacts. Maintenance of these outcomes out to 6 months follow-up will be presented.

WIP-0567 COMPUTATIONAL MODELING OF THE SPECTRA LEADSYNC FEATURE USING REAL-WORLD PROGRAMMING DATA

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[1]*Pain Management, Comprehensive Pain and Rehabilitation, Pascagoula,* [2]*R&D, Boston Scientific Corporation, Valencia,* [3]*Clinical Research, Boston Scientific Corporation, Valencia, USA*

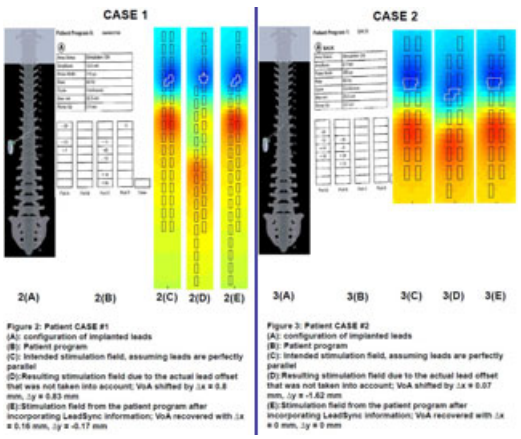
Objectives: The use of multi-column percutaneous leads in Spinal Cord Stimulation (SCS) enables more programming options for optimizing the therapy. With these lead configurations, current can be manipulated between leads medio-laterally to create the desired stimulation field. The resulting stimulation field is highly dependent on the relative position of the contacts selected for stimulation.

As a feature of the Precision Spectra SCS System, LeadSync Technology adjusts for lead offset by synchronizing contacts on parallel leads. This is designed to account for relative lead migration and refocus the stimulation field to achieve optimal pain relief.

A computational model of the spinal cord was generated with lead configuration and programming parameters based on observed patient data from a consecutive case-series of approximately 30 patients. This model will be used to illustrate the real-world utilization of the LeadSync feature.

Methods: Programming reports from chronic pain patients implanted with a Precision Spectra stimulator and more than one linear leads were retrospectively reviewed with post-implant lead configurations based on fluoroscopy images. Using the computational model, the stimulation field will be estimated from the patient programs for the corresponding lead positions.

Results: Computational modeling will be presented on how LeadSync was used in this cohort of patients. In addition, clinical outcomes from this patient cohort will be presented.



Conclusion: Modeling suggests that LeadSync technology achieves a more focused electric field by synchronizing contacts on parallel leads. It may have the potential to help clinicians achieve optimal pain coverage in the event of lead migration.

WIP-0508 PERIPHERAL NERVE FIELD STIMULATION THERAPY FOR PATIENTS WITH THORACIC PAIN: A PROSPECTIVE STUDY

B. Mitchell, P. Verrills, D. Vivian, A. Barnard
Metro Spinal Clinic, Metro Pain Clinic, Melbourne, Australia

Objectives: Thoracic pain and thoracic referred pain to the chest and upper abdomen is historically difficult to treat, with facet joint blocks, pharmacological therapies and surgical options often failing to relieve pain. This study evaluates thoracic PNFS as a potential treatment for patients with chronic thoracic and thoracic referred pain.

Methods: Over 4 years, we assessed 18 consecutive patients who had a successful trial and were subsequently implanted with octrode percutaneous leads within the major area of pain in their thorax. Outcomes measures included pain (NPRS), analgesic use, disability (ODI) and satisfaction. A follow up rate of 100% was achieved with an average follow up of 14.8 ± 9.7 months (range 3–48 months). Study was IRB approved.

Results: Pain reductions of 5.3 ± 0.56 VAS ($p \leq 0.001$) was observed, with 67% of patients reported >75% relief and all but one patient reporting at least 50% pain relief. Of the15 patients using analgesics, 10 reported reducing their use post implant and 89% of patients were satisfied with their outcome. There was no significant decrease in disability. Only one patient had a poor result after the implant, with negligible pain relief and eventually had their PNFS system explanted.

Conclusion: Here, we have demonstrated that PNS is an effective treatment option resulting in significant pain relief in chronic pain sufferers.

WIP-0507 SACRAL NERVE STIMULATION FOR THE TREATMENT OF CHRONIC INTRACTABLE PELVIC PAIN – A PROSPECTIVE STUDY

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Metro Spinal Clinic, Metro Pain Clinic, Melbourne, Australia

Objectives: Sacral nerve stimulation (SNS) has been effective in managing urinary and bowel symptoms associated with some chronic pelvic pain disorders over the last 15 years. We have also found it useful for treating pain from the belt line down. We present series of patients with intractable pelvic nerve pain treated with SNS.

Methods: We assessed 23 consecutive patients implanted with octrode percutaneous leads within the major area of pain in their pelvis, using a sacral hiatus approach. Outcome measures at an average follow up of 10.0 ± 8.2 months included pain (NPRS), analgesics, disability (ODI) and satisfaction. IRB approval study.

Results: An average pain reduction of 3.5 ± 0.91 NPRS (7.1 ± 1.0 vs. 3.6 ± 1.6, $p \leq 0.01$) was observed at follow up ($p \leq 0.001$), equating to a 52% improvement. Two thirds of patients using analgesics reduced their intake and a downward trend in ODI was reported. Of the 18 patients studied, three required lead repositioning following migration. Upon ceasing use of vicryl sutures, no further migrations occurred. A fourth patient had a replacement of their implantable programmable generator (IPG) following hardware failure. Overall, 83% of patients were satisfied with their treatment outcome. Patient satisfaction highly correlates with increased pain relief ($r = 0.756$, $p = 0.003$).

Conclusion: SNS should be considered as an alternative to SCS, particularly where there is compromise of the thoracic epidural space, high risk of lead migration, the need for low power use or co-existing incontinence.

Conflict of interest

WIP-0509 SINGLE CENTER EXPERIENCE IN AUSTRALIA USING SPINAL CORD STMULATION (SCS) OF THE DORSAL ROOT GANGLION (DRG) FOR PERIPHERAL CAUSALGIA AND OTHER NEUROPATHIC PAIN CONDITIONS

B. Mitchell, P. Verrills
Metro Spinal Clinic, Metro Pain Clinic, Melbourne, Australia

Objectives: Data from multiple prospective studies and retrospective reviews indicate long-term stability of pain relief and quality of life improvements using spinal cord stimulation

(SCS) of the dorsal root ganglion (DRG) in the treatment of neuropathic pain conditions. In this abstract, we report the outcomes of the first commercial patients implanted in Australia.
Methods: Eligible patients were enrolled and trialed using SCS of the DRG system for up to 4 weeks. Baseline and follow-up pain scores were captured in visual analog scale (VAS). Location of pain and stimulation-induced paresthesia were captured in an anatomical map.
Results: Three of the 13 enrolled patients failed the trial stimulation while leads could not be placed in one patient due to prior laminectomy (73% success rate). Three subjects had failed high-frequency (HF, Nevro) stimulation while two had failed traditional SCS. Leads were implanted at C7-L4 DRGs. Two subjects received bilateral implants. Baseline pain of 80.7 ± 4.5 mm (N = 9, mean ± standard error) was reduced to 30.9 ± 9.1 mm (N = 9), a 62.9% (± 8.3%) reduction at last follow-up (14.0 ± 2.2 Weeks). Eight of the nine patients had >50% pain relief. Three patients reported pain relief without paresthesia.
Conclusion: Preliminary results from our center indicate that SCS of the DRG may be a promising neuromodulation technique to treat multiple neuropathic pain conditions.
Conflict of interest

WIP-0533 CLINICAL EFFICIENCY OF SPINAL CORD STIMULATION FOR CHRONIC PAIN SYNDROME

V. Murtazin[1], A. Ashurkov[2], A. Duishobaev[3], V. Shabalov[2], A. Krivoshapkin[2]
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Objectives: Angina pectoris (AP) and peripheral vascular disease (PVD) is a chronic pain conditions caused by coronary and peripheral artery diseases, which can't be relieved by the vascular surgery treatment. FBSS is a surgical end-stage after operative interventions on the lumbar neuroaxis without positive effect. Spinal cord stimulation (SCS) is a neuromodulation therapy that appears to be an effective and safe treatment for this patients.
Methods: We had applied SCS in 5 patients with AP, 14 patients with PVD and 9 patients with FBSS. The leads were inserted in the epidural space at the C_7-Th_1 (for AP), Th_{12}-L_1 (for PVD) and Th_{10}-Th_{12} (for FBSS) levels. Myocardium perfusion scintigraphy (MPS) in AP patients and transcutaneous oximetry (TCO) in PVD patients were performed on admission and the 7th day after procedure. The visual analogue scale (VAS) was used to assess the degree of pain both in rest and physical activity in all patients.
Results: The patients showed 8.14 ± 0.2 marks according VAS before the procedure and pain relief to 1.29 ± 0.22 marks ($p < 0.01$) after surgery. All the patients demonstrated the rise of tolerance to the physical activity. MPS detected the increase in coronary reserve from 9 to 3 prearranged units, TCO showed oxygen saturation's increase from 7 to 70 mm Hg on the shin. There were no any procedural complications.
Conclusion: Our experience demonstrates that SCS is a minimally invasive technique to reduce the pain and improve quality of life in the patients with FBSS and vascular reserve enhancement in AP and PVD patients.

WIP-0563 BOLUS MORPHINE AND INFLAMMATORY MASS

L. Page[1], K. Hildebrand[1], T. Billstrom[2], L. Phillips[2], J. Paulin[2]
[1]*Global Research, Medtronic Inc., Minneapolis,* [2]*PRL, Medtronic Inc., Minneapolis, USA*
Objectives: 1) to determine if the frequency of intermittent bolus administration of morphine affects the incidence of IM vs. continuous infusion (CI) 2) to determine the effects of concentration on IM incidence and histopathology when administered as 4 boluses/day.
Methods: Canines implanted with IT catheters with tips in the lumbar region; SynchroMed® II pumps implanted. Recovery after implant before increasing infusion rates to desired dose. Euthanize 28 days after initiation of desired dose. N = 20 divided into 4 groups (N = 5) for each part of the study. Part 1 (1, 2, 4, 8 boluses/day) assessed the incidence of IM vs. historical CI controls (25 mg/mL morphine @12 mg/day). Part 2 assessed 4 boluses/day (25, 10, 5 mg/mL morphine @ 12 mg/day) and clinical comparison group (10 mg/mL @ 2 mg/day). Gross and histopathological assessments performed. IACUC approved protocol.
Results: IM formation from 1, 2, 4, or 8 boluses/day averaged 50% vs. 100% incidence with CI Part 1. IM incidence for 4 boluses or less/day averaged 40%. IMs with bolus delivery were smaller than those from CI. Part 2, 5 and 10 mg/mL concentrations reduced IM's by 60% relative to 25 mg/mL. The 2 mg/day @ 10 mg/mL had no pathology.
Conclusion: Intermittent bolus delivery (1, 2 or 4 boluses per day) produced reduction > 50% in the incidence of IM formation relative to CI when dose and concentration were held constant. Using bolus delivery in combination with low concentration (< 25 mg/mL) may further reduce the risk of catheter-tip inflammation.
Conflict of interest

WIP-0476 EFFECT OF CERVICAL EPIDURAL 10 KHZ SPINAL CORD STIMULATION ON PATIENTS SUFFERING FROM CHRONIC, MEDICALLY-REFRACTORY MIGRAINE

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Objectives: A significant minority of chronic migraine (CM) patients do not respond to conventional medical treatment. Occipital nerve stimulation is a therapeutic option for refractory CM (rCM). However, randomized studies have failed to demonstrate efficacy. Cervical 10 kHz spinal cord stimulation (10 kHz-SCS) may provide a superior alternative to occipital stimulation. We report the preliminary results of a prospective, open-label, feasibility study to assess safety and tolerability cervical 10 kHz-SCS in rCM patients.
Methods: The study had EC approval and the subjects gave informed consent. Included subjects were diagnosed with CM by an experienced headache specialist according to IHS guidelines, were refractory to medical treatments as defined by the Refractory Headache Special Interest Section of the AHS, and had failed Botox treatment. Medication Overuse headache was not excluded. Patients underwent a 10 kHz SCS-trial followed by a permanent implant if a significant reduction in headache intensity/episodes was reported during the trial.
Results: Eighteen patients underwent a trial and 15 had a permanent system implanted (2 trial failure and 1 infection). At 6 months, 1 subject was explanted due to infection. Eight out of 14 had >30% reduction in headache days (responder rate 57%, average headache days reduction from baseline 12.6 ± 3.1 days). Three patients developed IPG tenderness and one had a lead migration that required surgical revision.

Conclusion: Paresthesia-free cervical 10 kHz-SCS may be an effective therapeutic option for chronic migraineurs refractory to conventional medications and Botox treatment.
Conflict of interest

WIP-0226 INTERMITTENT BOLUS APPLICATION DURING INTRATHECAL OPIOID THERAPY FOR CHRONIC PAIN CORRELATES WITH DECREASED PAIN SCORES

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Objectives: The speed of intrathecal drug application (slow continuous versus rapid bolus infusion) has been suggested to influence the efficacy of therapy without changing the total daily dose. Hypothesised underlying mechanisms include an altered intrathecal drug spread.
Methods: In this prospective single-center pilot study, ten patients recieving intrathecal opioids for chronic pain were asked to assess their pain four times daily on a numeric rating scale (NRS), over the time course of six weeks divided into three blocks of two weeks each: baseline evaluation (intrathecal pumps with previously established continuous infusion settings), followed by two blinded trial blocks of continuous (pump parameters unchanged relative to baseline) and bolus (40% of daily dose split into four equal bolus infusions applied every six hours, with the remaining 60% as background continuous infusion) regimes. Patients were randomized to receive either the continuous or the bolus trial block first before switching to the.
Results: 6/10 patients reported significantly lower NRS-scores during bolus as compared to continuous trial blocks while only one patient showed the opposite effect. Overall, bolus trial blocks were associated with a small but significant reduction of NRS-scores (mean -0.56; $p < 0.001$). Side effects related to bolus infusions were not reported.
Conclusion: We conclude that intermittent bolus application may be helpful for increasing the efficacy of intrathecal opioid therapy in chronic pain and should be studied in a larger set of patients and parameters.

WIP-0218 EPIDURAL FIBROSIS: COMPLICATION BECAUSE OF INFECTION POSTERIOR TO PERCUTANEOUS IMPLANT

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Objectives: To present a case in which epidural fibrosis occurred by infection after implantation of percutaneous electrode, which impeded the relocation.
Methods: A male 57 years old patient who suffers Complex Regional Pain Syndrome type 1 of upper limb due to traumatic lesion of brachial plexus, with severe pain, dysesthesia, allodynia, hyperpathia and autonomic changes.
He underwent to percutaneous placement of tetrapolar electrode for spinal cord stimulation with adequate pain relief.
At five months, externalization of electrode connection with extender was found, because of decubitus lesion. The patient had infectious localized complication ('tunelitis') during the test period and, despite of antibiotic treatment and correction of laboratory values before implantation, this antecedent favored the externalization by decubitus lesion.
Whole system was removed and antibiotic treatment according to cultivation and antibiogram. Six months later, we tried to relocate a new electrode by punction, being unsuccessful the approach to epidural space and progression of the electrode because of fibrosis.
Results: The percutaneous procedure was suspended and a plate electrode was placed by hemilaminectomy.
Conclusion: An infectious process in a patient with percutaneous electrode could impede the relocation by the same way. The development of fibrosis secondary to localized infection of implant could generate the indication of relocation of the plate electrode by hemilaminectomy.

WIP-0343 COMPLEX REGIONAL PAIN SYNDROME: A DIFFERENT TREATMENT AFTER A DECADE

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Objectives: To present two different treatments of Complex Regional Pain Syndrome (CRPS) type I in the same female patient in ten years.
Methods: A 34-year-old female patient was attended for first time in 2004 because of CRPS of right superior limb with four months of evolution. Treatment with ipsilateral stellate ganglion block and posteriorly with right brachial plexus block based on continuous infusion by catheter of 2% lidocaine was performed. The symptoms were completely reversed. In January, 2014 the patient came back with the same symptoms triggered by a stab wound with four months of evolution. Stellate ganglion block and continuous infusion of lidocaine in brachial plexus were performed, without relief. According to treatment algorithm an octupole electrode for spinal cord stimulation test with positive response was placed, whereby the RESTORE generator of Medtronic was implanted.
Results: 2004 pre-treatment VAS: 10; post-treatment VAS: 0. 2014 pre-treatment VAS: 10; post-treatment VAS: 0. In each opportunity, the treatment provided analgesia 100% and it allowed to discontinue all the adjuvant medication.
Conclusion: The utility of the treatment algorithms in this pathology and the different response to them in the primary installation of a CRPS of short evolution versus recurrence even after ten years since the first presentation were established.

WIP-0321 EFFICACY OF PERCUTANEOUS PADDLE LEAD FOR LOW BACK AND LEG PAIN

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Objectives: Spinal cord stimulation (SCS) is an effective treatment of chronic pain. Cylindrical-type leads have been implanted percutanelusly, but we found it difficult to produce paresthesia over lower back pain compared to lower extremity pain. The goal of this study was to demonstrate the analgesic efficacy of a percutaneous paddle lead for lower back and lower extremities.
Methods: Percutaneous paddle leads were implanted with eight patients. The mean age was 65 years (range 31–81 years) and six (75%) were men and two (25%) were women. Four patients had failed back surgery syndrome, two had complex regional pain syndrome type I, and two had lumber stenosis. Two patients had lower back pain, five patients had lower back and lower extremities pain and one patient had lower extremities pain. A visual analog scale (VAS) was used to evaluate analgesic efficacy.
Results: Average pain score using VAS was 78 before SCS, 27 immediately after SCS and 35 at 3 months follow-up. The VAS score decreased significantly after SCS and continued to have shown more than 50% pain reduction at 3 months follow-up.
Conclusion: Percutaneous paddle lead is effective to treat lower back pain and lower extremity pain. Compared to conventional cylindrical leads, percutaneous paddle leads can produce stimulation induced paresthesia covering lower back. Placement was done safely under local anesthesia, with no complication.

WIP-0448 SPINAL CORD STIMULATION IN VIVO MRI SAFETY ASSESSMENT ACROSS THE THERAPY RANGE

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Objectives: Spinal cord stimulation (SCS) patients may benefit from MRI, yet the MRI environment poses unique risks for them. Specifically, radiofrequency (RF) heating near the electrode is the primary hazard due to the potential for spinal cord injury. This study aimed to assess RF heating risk using a comprehensive approach that addresses the complexity of exposure parameters of the SCS patient during MRI.

Methods: Bench testing, computer modeling and validation studies in animal models with electrode temperature measurement were conducted to assess MRI-induced RF heating at SCS electrodes. Electrode heating was predicted across the range of implant conditions for SCS patients. Monte Carlo simulations were conducted to model risk of thermal injury with a conventional and a new SCS system across all relevant patient, MRI, and device parameters.

Results: Computer simulations using transfer function lead models predicted temperatures that agreed with measured tissue temperatures in animal studies with normally distributed errors having a standard deviation of 0.35°C. Validated implant temperature predictions across the range of SCS lead paths show the new advanced SCS system maintains electrode temperature below 43°C during 1.5T MRI in Normal Mode.

Conclusion: Computer simulation with animal study validation allows risk assessment of thermal injury in SCS patients during MRI. A new SCS design demonstrates a low risk of injury while conducting whole body 1.5T MRI scans in Normal Mode, enabling chronic pain patients the therapeutic benefits of both SCS and MRI.

Conflict of interest

Treatment Approaches: Pharmacological: Non-Opioid

WIP-0493 A SURVEY OF EFFICACY OF LIDOCAINE INFUSIONS IN CHRONIC PAIN PATIENTS

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Objectives: To assess efficacy of Lidocaine infusions in patients with chronic pain.

Methods: Twenty five consecutive patients attending for Lidocaine infusions were surveyed. Lidocaine in a dose of 5 mg/kg was infused intravenously over an hour with physiological monitoring. An outcome measure questionnaire was given to each patient at the end of treatment with a request for return after 6 weeks. Efficacy of Lidocaine therapy was evaluated by reduction in pain intensity (scale of 0–10, where 0 = no reduction and 10 = complete reduction) or increase in physical activity (scale of 0 – 10, where 0 = no improvement and 10 = complete restoration of normal activity). Duration of effect and reduction in analgesic medication was also determined.

Results:

Demographics	
Age range	21–73 (mean 24)
Male: Female	13: 12
Type of pain	No. of patients
Neuropathic	9
Chronic widespread (inc. Fibromyalgia)	10
Mixed (inc. Back Pain)	6
Pain reduction	
0–3	10
4–6	4
>6	11
Activity increase	
0–3	13
4–6	6
>6	6

Analgesic medication was reduced in 11 patients. Duration of effect varied between 1 – 72 weeks however only 9 patients' reported benefit for more than 12 weeks. In this small sample, patients with neuropathic pain showed a better response than chronic wide-spread pain.

Conclusion: In a select group of chronic pain patients, intravenous Lidocaine infusions may help reduce intensity of pain and improve activity levels. Future studies involving larger sample sizes will be needed to assess precise role of intravenous Lidocaine in chronic pain management.

WIP-0541 NON SYSTEMIC TRANSDERMAL (NST) PAIN THERAPY REDUCED PAIN, IMPROVED QUALITY OF LIFE AND REDUCED OPIATE USE IN CHRONIC PAIN PATIENTS

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Objectives: 'Relieving Pain in America', the Institute of Medicine's (IOM) report states more than 100 million Americans suffer chronic pain and cost the U.S. over $600 billion each year. This has caused a 600% increase in the use of opiates over the past decade. Although making up only 4.4% of the world's population, the U.S. accounts for 80% of the world's opiate consumption, a rate which has not resulted in proper management of the chronic pain epidemic, in part, because of lack of proper education and training. Using an IRB approved Outcomes Survey, the efficacy of Non-Systemic Transdermal (NST) pain therapy to manage pain, improve Quality of Life (QoL), and reduce opiate use was assessed in chronic pain sufferers using customized non-opioid based transdermal pain creams.

Methods: Individuals rated their pain using MD Anderson's Brief Pain Inventory (BPI) and non-BPI metrics, and the level of pain's interference with their Physical and Emotional QoL metrics before and after 4 weeks of NST pain therapy.

Results: In a population of 2284 chronic pain sufferers, pain decreased 21% after 4 weeks with improvement of both Physical and Emotional QoL of 17 and 27%, respectively. Using non-BPI metrics, 72% indicated their pain had improved and 33% of these patients indicated their Opiate use had decreased.

Conclusion: Thus, NST pain therapy can reduce pain, improve Quality of Life and reduce opiate use in a population of chronic pain sufferers.

WIP-0138 EVALUATION OF THE EFFECT OF VITAMIN E ON PELVIC PAIN REDUCTION IN WOMEN SUFFERING FROM PRIMARY DYSMENORRHEA

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Objectives: To evaluate the effect of vitamin E on the reduction of pelvic pain in women suffering primary dysmenorrhea and to compare its effect with placebo.

Methods: A double blind randomized clinical trial was performed on 120 women suffering primary dysmenorrhea, and finally 94 women finished the study.

Results: There was no significant difference between the two groups according to blood group, age, family history of dysmenorrhea, educational status, and BMI (body mass index). The mean pain severity before the study did not show any significant difference between the two groups. (7.15 ± 1.75 in the study group and 7.47 ± 1.82 in the control group, $P = 0.3$). Pain severity during the first month of the study was

5.41 ± 2.4 in the study group and 5.76 ± 2.08 in the control group (P = 0.1) and 4.73 ± 1.89 and 5.35 ± 2.05 in the study and control group respectively during the second month of the study (P = 0.6). Pain severity during the first (P = 0.001) and second (P = 0.001) months of treatment with vitamin E and placebo was lower than the pain severity before treatment. Therefore both treatments are effective. The mean reduction of pain in the case group (−2.7 ± 2.1) was more than the control group (−1.8 ± 2.4), during the second month of the study (P = 0.04). Therefore vitamin E can lower the pain severity of dysmenorrhea more than placebo.
Conclusion: Vitamin E and placebo both, may reduce the pelvic pain of dysmenorrhea, but vitamin E may cause a more significant reduction.

WIP-0140 ANTINOCICEPTIVE INTERACTION BETWEEN INTRATHECALLY ADMINISTERED NICOTININ ACETYLCHOLINE RECEPTOR AGONIST AND GLUTAMATE RECEPTOR ANTAGONISTS IN RATS

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Objectives: A nicotinic acetylcholine receptor agonist, epibatidine has strong antinociceptive effects, but toxic. To have effective antinociception, synergistic effects might be useful. This study investigated the interaction between intrathecally administered epibatidine and glutamate receptor antagonists in two different nociceptive models in rats.
Methods: Sprague-Dawley rats with lumbar intrathecal catheters were tested for their thermal tail withdrawal response using the tail flick test and for their paw flinches by formalin injection after intrathecal drug administration of the combination of each 1/2, 1/4, 1/8, or 1/16 50% effective dose (ED50) of epibatidine and AP-5 (N-methyl-D-aspartate (NMDA) receptor antagonists) or YM 872 (α-amino-3-hydroxy-5-methylisoxazole-4-propionic acid (AMPA) receptor antagonist). The interaction was tested by an isobolographic analysis.
Results: The ED50 of epibatidine + AP-5 was significantly smaller than the theoretical additive value in the tail flick test and phase 1 of the formalin test, but was larger than the theoretical additive value in phase 2 of the formalin test (not significant). The ED50 of epibatidine + YM 872 was not different from the theoretical additive value, but was significantly smaller than the theoretical additive value in both phase 1 and 2 of the formalin test.
Conclusion: Epibatidine and AP-5 had synergistic effects on acute thermal and inflammatory nociception, but might be antagonistic on inflammatory induced chronic nociception. Epibatidine and YM 872 had additive effect on acute thermal nociception and synergistic effects on acute and chronic inflammatory nociception.

WIP-0202 N-(2-HYDROXY PHENYL) ACETAMIDE: A NOVEL SUPPRESSOR OF TOLL LIKE RECEPTORS (TLR2 & TLR4) IN ADJUVANT-INDUCE ARTHRITIC RATS

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Objectives: The present study was carried out to investigate the effect of N-(2-hydroxy phenyl) acetamide on the modulation of over-expressed TLRs in the development of adjuvant-induced arthritis.
Methods: Arthritis was induced by injecting 0.1 ml of 1 mg/0.1 ml suspension of lyophilized *Mycobacterium tuberculosis* (MTH37Ra) at the tail base of animals. Body weights and paw volumes were monitored to evaluate the progression of the disease. The nociception associated with the disease process was measured using the plantar test. Experiments were terminated once an arthritic score of 4–5 was observed in the arthritic control group. Knee joints and spleen were collected and processed as per requirement. Proinflammatory cytokines i.e., IL-1β and TNF-a were measured in supernatants of 48 h cultured splenocytes. Expression of TLR2 & TLR4 mRNAs were analyzed after processing the 48 h cultured splenocytes.
Results: Our results show that the reduction in body weight and increase in paw oedema volume was significantly reverse in arthritic animal receiving (5 mg/kg) doses of N-(2-hydroxy phenyl) acetamide (NA-2) which also inhibited the transmission of nociception. In comparison to the arthritic control group, the levels of proinflammatory cytokines were also significantly reduced the supernatants of the 48 h cultured splenocytes ($p < 0.003$ for IL-1b, ($p < 0.00$ for TNF-a) in N-(2-hydroxy phenyl) acetamide treated group. Likewise, the NA-2 treatment was able to reduce the expression of TLRs in the splenocytes of the arthritic animals receiving this treatment.
Conclusion: Our results suggest that NA-2 suppresses TLRs mediated autoimmune joint inflammation and arthritis related other symptoms. These findings may facilitate TLRs targeted therapeutic strategies to control arthritis.

WIP-0539 THE PRIZM (PATIENT REGISTRY OF INTRATHECAL ZICONOTIDE MANAGEMENT) STUDY FOR PATIENTS WITH SEVERE CHRONIC PAIN

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Objectives: Ziconotide, an intrathecally delivered, synthetic N-type calcium channel antagonist, is approved in the United States and Europe for managing severe, refractory chronic pain. This study evaluates treatment patterns, safety, and outcomes in patients in current clinical practice.
Methods: PRIZM, an open-label, long-term, multicenter, observational study, will enroll up to 140 patients, with the goal of obtaining 100 evaluable patients. Evaluable patients are those who initiate IT ziconotide as the sole agent in the pump and who continue IT ziconotide therapy (as the sole agent or in combination with other IT agents) for ≥12 weeks. Participants meeting the approved indication will be followed for up to 18 months after ziconotide initiation. Investigational review board approval and informed consent were obtained.
Short- and long-term effectiveness, safety, tolerability, health-related quality of life, employment, concomitant pain medications, patient characteristics and impression of improvement, ziconotide administration modalities, and treatment satisfaction associated with ziconotide will be evaluated. Regularly assessed outcome measurements will include (1) average pain for the past 24 hours via numeric pain rating scale score; (2) Brief Pain Inventory Short Form; (3) Short Form-36 Health Survey; (4) Treatment Satisfaction Questionnaire for Medication; and (5) Patient Global Impression of Change.
Results: N/A.
Conclusion: Data will be analyzed at least annually, and a final report will be generated once data collection is complete. Twenty-three patients are currently enrolled in the study. Interim data will be presented.
Acknowledgment: This research is funded by Jazz Pharmaceuticals.
Conflict of interest

WIP-0203 PROTECTIVE-EFFICACY OF-N-(2-HYDROXYPHENYL) ACETAMIDE AGAINST ADJUVANT-INDUCED-ARTHRITIS IN RATS

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Objectives: In rheumatoid arthritis (RA), pro-inflammatory cytokines such as IL-1β and TNF-α and Toll-like receptors (TLRs) play a key role in the disease process. The current study was undertaken to explore in vivo potency of N-(2-hydroxy phenyl) acetamide (NA-2) in adjuvant-induced model of arthritis in rat and its effects on the levels of IL-1 β, TNF-α, and expression of TLRs.

Methods: Arthritis was induced by intradermal administration of 0.1 ml (10 mg/ml) suspension of *Mycobacterium tuberculosis* (MT37Ra). The NA-2 treatment was started on the same day when arthritis was induced. Arthritis was assessed clinically and histologically. Experiments were terminated once an arthritic score of 4–5 was observed in the arthritic control group. IL-1β and TNF? were measured in serum and the supernatants of 48 h cultured splenocytes. Immunocytochemistry and RT-PCR was used to determine the expression of TLR-2 & TLR-4 in 48 h cultured splenocytes.

Results: NA-2 significantly ameliorated disease severity. Reduction in the body weight and increase in paw oedema was significantly reversed in NA-2 treated group. In comparison to the arthritic control group, the levels of proinflammatory cytokines were also significantly reduced both in the serum ($p < 0.001$ for IL-1β and TNF?) and the supernatants of cultured splenocytes ($p < 0.003$ for IL-1b, ($p < 0.005$ for TNFa) in NA-2 treated group. Likewise, the NA-2 treatment was able to down-regulate the expression of TLRs in the cultured splenocytes.

Conclusion: NA-2 can suppress cytokines and TLRs mediated joint inflammation and arthritis related other symptoms. Remission was associated with improved joint histology.

Conflict of interest

WIP-0221 A CASE REPORT: LOW DOSE INTRAVENOUS LIDOCAINE FOR CHRONIC CHEMOTHERAPY INDUCED PERIPHERAL NEUROPATHY

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Objectives: We treated a 66 year old male patient with chemotherapy induced peripheral neuropathy in stocking and glove distribution after treatment for colorectal cancer with low dose intravenously administered lidocaine to determine the effect on chronic neuropathic pain and the area of (cold) allodynia.

Methods: We measured neuropathic pain by numeric rating scores (NRS 0–10), pain detect questionnaire (PDQ) and DN4 questionaire before and 6 weeks after treatment. The border of the glove and stocking distribution before and directly after treatment was determined. A bolus of 1.5 mg/kg lean body mass of lidocaine followed by a continues infusion of lidocaine 1.5 mg/kg/h during 5 hours was administered.

Results: No adverse effects of lidocaine infusion were observed. The NRS before treatment was 6 and after it was 2. The PDQ before treatment revealed a score of 26 and after it was 12. 6 Weeks after treatment the NRS was 5 and the PDQ was 22. DN4 was 6 out of 10 before and 4 out of 10 after treatment. The stocking and glove distribution was far more distal after treatment and this effect lasted at least 6 weeks. Pain attacks were virtually absent during a period of about 6 weeks.

Conclusion: CIPN is well described in patients receiving oxaliplatin in the treatment for colorectal cancer. It is characterized by sensory axonal nerve damage in the distal extremities. Low dose intravenous lidocaine, an amide local anesthetic, can be effective to reduce CIPN for a longer period.

WIP-0308 SURVEY OF OMEGA-3 EFFECTS ON MORNING STIFFNESS IN OSTEOARTHRITIS OF THE KNEE

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Objectives: Osteoarthritis of the knee is a common disease that presents with knee pain, morning stiffness and limited knee joint motions. The aim of this study was to evaluate the compare single and combined effects of acetaminophen, naproxen and omega-3 on knee osteoarthritis in 45–65 years old persons.

Methods: In this randomized clinical trial,114 patients affected by mild to moderate knee osteoarthritis treated in 6 groups of 19 by acetaminophen, naproxen, naproxen+omega-3, acetaminophen+omega-3, acetaminophen+naproxen and acetaminophen+naproxen+omega-3 for 6 weeks.

The response to the treatment was measured and compared between groups after 6 weeks.

Results: After treatment, the levels of WOMAC (physical functions, joint stiffness, pain severity) and visual analogue scale (pain severity) were reduced in all groups ($p < 0.5$). The combination of acetaminophen+naproxen+omega-3 has decreased the pain severity more than other groups. Omega-3 combinational groups were meaningfully decreased morning stiffness.

The addition of omega-3 in all treatment combinations obviously caused improvement of maximum total score of WOMAC, pain severity and drug complications in the patients, but there wasn't statistically meaningful.

Conclusion: Usage of acetaminophen or naproxen as single or combined drug(s) has been effective on the treatment of osteoarthritis, whereas the addition of omega-3 to this medication(s) has been effective on improvement of healing and reduction of morning stiffness.

Treatment Approaches: Pharmacological: Opioid

WIP-0319 OPIOID—INDUCED HYPERALGESIA IN A PATIENT WITH OSTEOGENESIS IMPERFECTA, TREATED WITH OXYCODONE/NALOXONE

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ObjectivesAnamnesis: Female, 36 years, 35 kg. According to clinical history, multiple fractures up to the age of 14, without ambulation ability, severe thoracolumbar kyphoscoliosis, bends to the left hip, restrictive respiratory failure, nocturnal BiPAP.

Diagnosis: Severe congenital osteogenesis imperfecta (Type III, Sillence).

MethodsEvolution: Initial treatment with buprenorphine, transdermal and transmucosal fentanyl as rescue medication, tryptizol, pregabalin, clonazepam and infiltration of trigger points in the muscles. Referred to Home Hospitalization: Fentanyl dosage escalation (transdermal + transmucosal) up to 21 mg/day, without pain control (VAS 9), increasing pain intensity, with no dominant location.

Referred to the Pain Unit. Hospitalization. Rotation to subcutaneous morphine infusion until partial relief (220 mg/24 h). Prescribed treatment: oral morphine up to 600 mg/day. Intolerable side effects: excessive somnolence, pain, abdominal bloating, severe constipation. Opioid-induced hyperalgesia (OIH).
Results: Informed consent requested and rotation from oral morphine to oxycodone/naloxone 160/80 mg/12 h. 24 hours after rotation, clinical picture suggestive of withdrawal symptoms and diarrhea: additional i.v. morphine infusion (4 mg/h, 24 h). Restarted dose escalation: pain relief >70% with dose of 160/80 mg/12 h. Fully oriented, no gastrointestinal side effects, good gasometric control. Discharged from hospital.
Positive progress after 3-months ambulatory follow-up. Gradually reduction of oxycodone/naloxone to 80/40 mg/12 h. basal VAS score = 3, occasional exacerbations, no gastrointestinal side effects and no requirement of laxatives.
Conclusion: This case illustrates the need to consider OIH if opioid dose escalations are not associated to an adequate response. It also offers evidence for the effectiveness of an opioid rotation to oxycodone/naloxone and its excellent tolerability, even at very high doses.

WIP-0547 CAN ORAL TRANSMUCOSAL FENTANYL CITRATE IMPROVE THE RESULTS IN THE IMPLANTATION OF PERMANENT VASCULAR DEVICES?

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Objectives: Vascular implantable devices (VID) are very useful for cancer patients who need intravenous chemotherapy. The placement is an ambulatory surgical procedure which can be developed with local anesthesia, but some surgical moments are painful for the patient. Intravenous fentanyl is usually employed, but we want to prove the efficacy and safety of oral transmucosal fentanyl citrate (OTFC) compared with conventional sedation.
Methods: A prospective cohort study was carried out with 20 cancer patients who have undergone placement of a VID. Two groups were made: intravenous fentanyl (IF, with 10 patients) and OTFC group with the other 10 patients. Data were analysed with SPSS 16.0.
Results: Analgesia quality (measure with intraoperative visual analog scale, VAS) was similar in both groups (maximum 2.5 vs 4, $p = 0.15$). Minimum pulse-oximetry oxygen saturation (SpO_2) was lower in the IF group (93% vs 96.2%, $p = 0.008$) and minimum intraoperative respiratory rate was also lower in the IF group (8.2 vs 12.8, $p = 0.011$). 3 patients in IF required a rescue with paracetamol at the end of surgery, none in OTFC. Postoperative dizziness were similar in both, but more severe in IF group. The time prior to hospital discharge was higher in IF group (80 vs 60 mins, $p = 0.16$).
Conclusion: There were no differences in analgesia quality and side effects incidence between both groups, except less respiratory impact in OTFC group. Discharge was delayed in IF group.

WIP-0355 TREATMENT OF SYMPTOMATIC DIABETIC POLYNEUROPATHY WITH TAPENTADOL: OUR 7 PATIENT EXPERIENCE

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Objectives: To evaluate the efficacy and safety of tapentadol 50 mg bid in type 2 diabetic patients with symptomatic polyneuropathy.
Methods: 7 outpatients were randomly assigned to sequential treatment with 50 mg tapentadol once daily, followed by 50 mg bid/day. Outcome measures included neuropathic symptoms (pain, burning, paresthesias, and numbness) in the legs and feet. Data analysis was based on the intention to treat.
Results: The onset of severe pain in the feet and lower limbs can be very distressing and disabling. Several clues that the patient has neuropathic pain are the location of pain (feet more than calves), the quality of the pain, and the timing of pain (present at rest, improves with walking). In our experience 5 of the 7 treated patients revealed a significant reduction in the neuropathy total symptom score (a summation of stabbing pain, burning pain, paresthesia, and asleep numbness). Adverse events (nausea, vomiting, and vertigo) occurred in 2 of the 7 patients without being strong enough to stop the treatment.
Conclusion: These findings indicate that tapentadol 50 mg bid/day had effect on neuropathic symptoms, decreasing the level of burning sensation, paresthesias and pain to a score of 5 (EN). This treatment was associated with a favorable effect on neuropathic deficits without causing significant adverse reactions ou interations with other medication. Long-term trials that focus on neuropathic deficits rather than symptoms as the primary criterion of efficacy are needed to see whether treatment with tapentadol may slow or reverse the progression of diabetic neuropathy.

WIP-0475 INTERIM ANALYSIS OF AN OBSERVATIONAL STUDY ON THE TREATMENT OF NON-MALIGNANT PAIN WITH LOW-DOSE 7-DAY BUPRENORPHINE TRANSDERMAL SYSTEM (BTDS) IN DUTCH DAILY CLINICAL PRACTICE

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Objectives: The aim of this interim analysis was to describe the efficacy of low-dose 7-day buprenorphine transdermal patch (BTDS) with regard to pain relief in patients with non-malignant, moderate pain.
Methods: Outcome data were collected in clinical practices in the Netherlands in a 12-weeks, prospective, multicentre, non-interventional observation. Efficacy of BTDS with regard to pain relief was evaluated by the physician on a 7-point scale (much worse, worse, slightly worse, similar, slightly better, better and much better). Patient convenience (7-point scale) was also evaluated.
Results: The interim analysis included 2000 subjects. Mean age of subjects was 67 years (range 20–99), 67% were female and predominant pain site was low back pain (41%). Median pain score (NRS) at start was 7 (range 4–10). Analgesic pretreatment was mostly paracetamol (49.4%) followed by diclofenac (20.9%) and tramadol (13.7%). At last visit 71% of physicians indicated improved efficacy of BTDS with regard to pain relief compared to previous treatment and 83% of patients indicated that treatment with BTDS was easier to use compared to previous analgesic treatment. 37% of patients reported an adverse drug reaction, which was mostly of mild severity (99%).
Conclusion: The interim analysis shows that, compared to previous analgesic treatment, the majority of physicians indicated improved efficacy of low-dose 7-day BTDS with regard to pain relief and the majority of patients indicated that BTDS-use was easier.
Conflict of interest

WIP-0363 RAPID ONSET OPIOIDS SWITCHING FOR TREATMENT OF BREAKTRHOUGH CANCER PAIN: A RETROSPECTIVE ANALYSIS ABOUT THE ADMINISTRATION OF NASAL PECTIN FENTANYL

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Objectives: Opioids up-titration if slowed and/or impeded by intolerable adverse events, may not guarantee an adequate analgesia, thus many patients benefit from switching to another opioid, a procedure known as "opioid rotation"(OR).

Methods: To evaluate the hypothesis that OR of rapid onset opioids (ROOs) is an useful strategy to manage the Breakt-rough cancer Pain (BTcP) and it may influence positively the daily amount of opiods administered, author retrospectively investigated the efficacy of OR from Fentanyl buccal tablets (FBT), sublingual Fentanyl (SF), and oral-transmucosal tablet of Fentanyl (OTMF) to pectin nasal Fentanyl (pNF). 46 continuous cancer patients affected by severe, uncontrolled episodes of BTcP were scheduled for OR of their initial treatment with ROO to pNF. Magnitude of pain, number of painful episodes, grade of satisfaction, daily amount of ROO, ATC opioids and others analgesics were recorded every week for 4 months or until death.

Results: Results are summarized in the table.

*Legend of table: § (mean value during the day), *(mean value in mg after conversion to equivalent dose of daily oral morphine in mg); + expressed in a graduate numeric scale (0–10, 0–3 = unsatisfied, 4–6 = moderately satisfied, 8–10 = well satisfied); #(mean daily dose mg).*

Time	Baseline	1st week	2nd week	3rd week	4th week	1st month	2nd month	3rd month	4th month	P Value
NRS §	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	< 0.05
ATC opioid *	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
NRS BTcP (mean value)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	< 0.05
N° episodes of BTCP (mean value)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	< 0.05
Initial ROO *	FBT ([illegible]) SF ([illegible]) OTMF ([illegible])									
Dose of pNF *		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	< 0.05

Conclusion: The administration of pNF to switch other ROO may be considered an efficacy, safe and well accepted strategy to manage BTcP that limits the increase of daily intake of ATC opiates or other rescue analgesic with stable dose during observation's period.

WIP-0301 BISPECTRAL INDEX IN MULTITRAUMA PATIENT

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Objectives: The first aim of this study was to evaluate the effectiveness of Bispectral index monitor in order to predict clinical sedation levels in the Trauma intensive care patients. The second aim was to obtain a proper assessment of sedation requirement to trauma patient, avoid complication of over sedation, decrease risk of delirium, and the length of stay.

Methods: A prospective observational study with waiver of consent conducted in the trauma intensive care unit in 105 mechanically ventilated trauma patients for one year Dec.2011-Dec.2012.*The depth of sedation was clinically evaluated with Ramsey Sedation Scale (RS), and observation of vital signs, Glasgow Coma Scale (GCS), type of sedation and analgesia with or without muscle relaxant, monitoring of Bispectral Index during patient stayed in ICU. Group frequencies are compared with the Chi-square and t-test while the level of statistical significance was set at $p < 0.05$ for all tests.*

Results: After data were analyzed, the BIS was associated with survival, good neurological income. Intracranial pressure (ICP) = 15.3 ± 5.2, Agitation 34 (30.9%). The agitation rate with $p < 0.001$. Comparing the two groups of patient using BIS and without, there was a significant difference with failed of extubation, agitation and length of stay with a P-vales of (0.008, 0.001, and 0.001) respectively.

Conclusion: Having an objective BIS as a guide for adjusting the dosage of sedating agents could also minimize complication, agitation, failure of extubation and length of stay in ICU.

WIP-0206 COMPARISON OF DURATION OF ANALGESIA WITH INTRATHECAL BUPIVACAINE AND SUFENTANIL IN CHRONIC OPIUM ABUSERS AND NON-ABUSERS UNDERGOING LOWER EXTREMITY ORTHOPEDIC SURGERY

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Background and aims: It has been demonstrated that chronic opium abusers have lower thresholds for pain. In this study we sought to determine whether chronic opium abuse has any effect on the duration of spinal block by a combined of local anesthetic and opioid.

Methods: In a double-blind, randomized, controlled study, twenty-five opium abusers and twenty-five non-abusers were selected for undergoing elective lower orthopedic surgery. The study parameters were assimilated as much as possible, including the method of anesthesia. All patients received intrathecally bupivacaine 12.5 mg and sufentanil 2.5 μg.

Results: The duration of anesthesia was shorter in the opium abusers (88.4 ± 2.33 min) than in the non-abusers (163.6 ± 2.63 min) ($P < 0.0001$).

Duration of sensory and motor block, first request time for analgesia and level of sensory block

	Chronic opium abusers (n = 25)	*non-opium abusers (n = 25)*	*P-value*
Sensory block time (Minute)	88.4 ± 2.33	163.6 ± 2.63	P?0.0001
Motor block time (Minute)	113.8 ± 0.95	189.2 ± 2.64	P?0.0001
first request for analgesia (Minute)	177 ± 0.95	88.56 ± 2.54	P?0.0001
Level of sensory block (dermatome)	9.12 ± 0.66	9.08 ± 0.64	p?0.05

Data are presented as mean ± standard deviation (SD). n: number of patients

Conclusion: The study suggests a shortened duration of spinal block with bupivacaine and sufentanil in opium abusers.

WIP-0495 COMBINING EXERCISE WITH EDUCATION BASED ON TRANSFORMATIVE LEARNING PRINCIPLES IN FIBROMYALGIA PATIENTS: A CASE SERIES

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Objectives: Research has suggested that exercise is effective in addressing pain, fatigue and function in fibromyalgia. Education has also been recommended, however there is little information concerning the type of educational approach that should be adopted to address mal-adaptive cognitions that seem to impact pain and function. This study aims to describe the pragmatic use and effects of combining exercise with an educational approach based on the transformative learning theory in fibromyalgia patients.

Methods: A case series design was carried out on 11 fibromyalgia patients, referred to physiotherapy. The patients (screened for inclusion/exclusion criteria) underwent an 8-week (3 times weekly) standardised programme of exercise and education. The educational component (45–60 minutes) preceded 9 of the 24 exercise sessions of equal duration. Patients were assessed at baseline, 4 and 8 weeks later. Outcome measures included the Numeric Pain Scale, the Revised Fibromyalgia Impact Questionnaire, the Fatigue Severity Scale and the Patient Global Impression Scale.

Results: The 11 patients (females; 49.5 ± 9.9 years; ≥24 months of fibromyalgia) attended an average of 18.4 ± 3.4 (mode = 22) sessions. Of the 11 patients, 9 improved function, 7 decreased pain intensity, 7 decreased fatigue severity and 9 reported being "better" or "much better" in at least one of the outcomes (pain/fatigue/function).

Conclusion: These results support a combination of exercise with an educational approach based on the principles of transformative learning theory for fibromyalgia patients. This methodological approach limits cause-effect relations, reinforcing the need for further research.

WIP-0452 LOOKING FOR CHRONIC NECK PAIN RESPONDERS TO PHYSICAL THERAPY MULTIMODAL TREATMENT

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Objectives: This study aimed to identify predictors of short-term functional recovery in chronic neck pain (CNP) patients undergoing a multimodal physical therapy (PT) treatment.

Methods: A prospective cohort study with 112 CNP patients referred to PT treatment. Patients were assessed at baseline and 7-weeks after starting a multimodal PT treatment. Sociodemographic and clinical characteristics at baseline were included as potential outcome predictors. Based on a previous study, functional recovery was defined as a change in the Neck Disability Index of ≥6 (minimal clinically important difference). Logistic regression (backward conditional) was used to find associations between predictors and functional recovery ($p < 0.05$). The multivariate model was submitted to a clusters analysis, highlighting the post-test probability of functional recovery after treatment.

Results: Of the 112 participants enrolled, 108 completed the follow-up (mean age: 51.76 ± 10.19). 58 patients reported functional recovery, and 50, treatment failure (pre-test probability: 54%). In the multivariate model, functional recovery was associated with high levels of disability at baseline (OR = 1.123; 95% CI 1.056–1.194) and pain duration for less than 12 months (OR = 2.704; 95% CI 1.138–6.424). For a positive likelihood ratio of 3.57, the probability of obtaining functional recovery increases from 54 to 81% in the presence of these two predictors at baseline.

Conclusion: CNP patients with a score higher than 19 on NDI-PT and with pain complaints for less than 12 months at baseline are more likely to benefit from a multimodal PT treatment to achieve functional recovery.

WIP-0273 SELF-RATING OF PHYSICAL CONDITION (QUESTIONNAIRE) COMPARED TO MOTOR ASSESSMENT IN PERSONS WITH CHRONIC PAIN TO PROVIDE OBJEKTIVE EVIDENCE FOR DECONDITIONING

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Objectives: Chronic musculoskeletal pain is presented in a large percentage of persons with chronic pain. In daily routine there are no standardised diagnostic tools in use to address the state of physical condition or fitness of these pain patients. As we know, fear avoidance behaviour and deconditioning are connected in a vicious circle. Deconditioning is a clinical reality and plays a major role as an obstacle to successful pain reduction. It is in fact astonishing, that this factor is seldom evaluated in a standardised way. The purpose is to provide evidence for deconditioning in persons with chronic pain.

Methods: We introduced a questionnaire for self-rating of physical fitness (FFB-Mot) into our daily routine. Patients with signs of deconditioning in clinical assessment or in the questionnaire were referred to physiotherapist or sports therapist, who performed a standardised motor assessment (Rickli 2002).

Results: The results of self-rating and clinical assessment of physical condition are presented in comparison. The correlation between those data and pain parameters as chronicity of pain or impairment due to pain are analysed. Data collection will be completed in march 2014.

Conclusion: The value of a self-rating questionnaire to screen persons with chronic pain for deconditioning as a risk factor for pain persistence is evaluated. Furthermore the importance of standardised tools, either questionnaires or clinical exams, is emphasised.

WIP-0454 EFFECTIVENESS OF PAIN NEUROPHYSIOLOGY EDUCATION AND AQUATIC EXERCISE PROGRAM COMPARED TO AQUATIC EXERCISE PROGRAM ALONE FOR INDIVIDUALS WITH CHRONIC LOW BACK PAIN

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Objectives: The aim of this single-blinded randomized controlled trial was to investigate the effects of a 6-week program of aquatic exercise and two sessions of pain neurophysiology education (experimental group) compared to aquatic exercise program alone (control group) in individuals with Chronic Low Back Pain (CLBP).

Methods: Sixty two individuals with CLBP were randomly distributed in the experimental group (n = 30) and in the control group (n = 32). Outcome measures included pain intensity (Visual Analogue Scale), functional disability (Quebec Back Pain Disability Scale) and fear of movement (Tampa Scale of Kinesiophobia). Participants were assessed before the intervention, three weeks after the start of the aquatic exercise program, at the end of the intervention and 3 months follow-up.

Results: Significant improvements were found at the end of the intervention in both groups in what intensity of pain and

functional disability were concerned. Comparing both groups, the results favored the experimental group for intensity of pain scores after the intervention (p = 0.032) and after 3 months (p = 0.007).
Conclusion: The results show that the aquatic exercise program and pain neurophysiology education were more effective in improving pain intensity at a short and medium term than aquatic exercise alone. This study demonstrates that pain neurophysiology education can optimize results when combined with other active interventions such as aquatic exercise.

WIP-0211 SEXUAL TRAUMA IN CHRONIC PELVIC PAIN

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Objectives: This review aims to alert health practitioners dealing with female adolescents with pelvic pain, remind them of its complexity, especially in relation to underlying trauma.
Research showed that there is high prevalence of sexual trauma in early adolescent female. Most of that happened before the age of 17 and had significant impact in their health outcomes.
MethodsHistory of Adolescent or Child sexual abuse and related health conditions: Research clearly demonstrates that abuse adversely impact survivors' psychological functioning (Hedtke et al., 2008), including elevated anxiety, depression, and fear (Elliott, Mok, & Briere, 2004) and deflated self-esteem and sexual satisfaction (van Berlo & Ensink, 2000).
Sexual abuse before age 15 and later chronic pelvic pain are significantly associated (Lampe et al.2000). There is an increased risk of presenting pelvic inflammatory disease in adolescents whom have been sexually abused. In women presenting with premenstrual syndrome, prevalence of sexual abuse history was 95%. Of those 65% presented with symptoms consistent with a diagnosis of Post Traumatic Stress Disorder (Golding et al.2000).
Results: This presentation will explore association between sexual trauma and Pelvic Pain. Modalities of treatment need to be specific when approaching a "wounded area" which might be site of memories tightened with early traumas. Women's health physiotherapist trained to treat conditions such as bladder, bowel, vulval or vaginal pain will also benefit of a good understanding of patient's history before attempting internal trigger point eradication or performing vaginal examination.
Conclusion: Clinicians must base practice on an understanding of the relationships among the forms and severity of abuse and chronic pain.

Treatment Approaches: Psychosocial and Cognitive

WIP-0463 MAKING A COMPARISON BETWEEN CREATIVITY IN RIGHT- LEFT BRAIN DOMINANCES

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Objectives: The exclusive performance of brain hemispheres is the main factor of being right-left brain dominances. One aspect of thinking is oriented action for problem solving which describes creativity. The pupose of this study is to make comparison between creativity in right- left brain dominances.
Methods: Two questionaire were used: Abedi creativity test and wagner and velz right-left lateraliy test. For sample size Cochran formula and for population, multiple random sampling were applied.
Results: Reg. to creativity statistics provide with 99% of certainty that there is a difference between two groups of right-left brain dominances.
Conclusion: Result indicate that there is significant differences between two groups. On the other word the mean of scores in right brain dominances are higher than the mean scores of left ones.

WIP-0235 PAIN GRADUATES CULTIVATED FROM PATIENT SUPPORT GROUPS ENHANCING HEALTH CARE PRACTITIONERS WORK

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Objectives: Study aimed to develop a lifestyle adaptation programme enhancing the quality of life of patients diagnosed with chronic pain, what the people think or know.
Specific objectives formulated:

- Explore the needs and experiences of patients and family during management phase after origanal diagnosis
- Compare concepts gathered from above info with national and international literature
- Develop a programme assisting patients and their families with lifestyle adaptation once diagnosed with chronic pain.

Methods: The research design chosen was a qualitative design, with an exploratory, descriptive strategy within a phenomenological framework
Naive sketchs gathering data: qualitative nature of the study
Self -report technique
Open ended question "Describe which anxieties, uncertainties and new demands did you personally experience after the diagnosis"
Results:
Number sketches distributed: 60
Sketches returned: 43
Number analysed until saturation:30
Results derived from data analysed summarised as follows

Main theme	Categories	Subcategories
Anxieties	Psychological	
Psychosocial	Surgery	
	Dying	
	Scared	
	Uncertainty	
	Depression and frustration	
	Change and adapt	
	Act normal	
	Return to work	
	The bills (Finances)	
New demands	Physical	
Psychosocial	Pain	
		Diet
		To keep fit
		Poor strength
		Insomnai
		Medication
		Caregiver responsibility (Role change between spouses)

Conclusion:
The study resulted in the development of a twofold lifestyle programme within support groups developing graduates
Education, counselling and training aasisting to understand the diagnosis management
Multimodal team approach enhancing patients quality of life

Net promotor scores training 2013:Pain management 94%
"Pain clock" as teaching tool

WIP-0577 AUDITORY ENTRAINMENT REDUCES THE PERCEPTION OF ACUTE PAIN IN HEALTHY VOLUNTEERS

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Objectives: It has previously been established that our brain oscillatory alpha power (8–12 Hz) is reduced when we experience pain (Huber et al. 2006). There appears to be a negative correlation between alpha power and the acute pain response (Nir et al. 2010). Increasing alpha power could hence reverse this relationship to reduce pain. Oscillatory frequencies can be modulated by auditory entrainment, where frequencies adapt to the rhythm at which they are being stimulated.
The aim was to determine whether 10 minutes of auditory entrainment at 8 Hz, 10 Hz and 12 Hz using binary beats (auditory), will affect the volunteers' pain perception of the acute heat laser stimulus, compared to white noise auditory control.
Methods: 32 healthy (17 male), right handed volunteers were subjected to the four different auditory stimulations, each lasting 10 minutes After each session volunteers were asked to rate 20 painful pulses.
Results: Auditory entrainment increased alpha power, with the largest effect at 8 Hz. Electrophysiological and behavioural pain responses where reduced, with the biggest effect at 10 Hz.
Conclusion: Increased oscillatory alpha power has been associated with a meditative state. Previous results suggest pain is perceived as less by meditators (Brown et al. 2010). The reduction in pain may not be due to increased alpha power, but rather due to the associated relaxation.
Whether these effects are due to the neural encoding of pain being disrupted, or other side effects of alpha entrainment, is still unknown.

WIP-0339 EFFECTIVENESS OF A COGNITIVE-BEHAVIOURAL GROUP INTERVENTION FOR KNEE OSTEOARTHRITIS PAIN: A RANDOMIZED CONTROLLED TRIAL

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Objectives: To assess the effectiveness of a 6-week cognitive-behavioural group intervention in knee osteoarthritis pain patients.
Methods: 111 participants aged from 35 to 75 with clinical symptoms and radiographic grading (KL 2–4) of knee osteoarthritis were included in this single-blinded randomized controlled trial. The had had pain within the last year in or around the knee occurring on most days for at least one month, and knee pain of ≥40 mm on a 100-mm visual analogue scale in the WOMAC pain subscale for one week prior to study entry. In the intervention group, 55 participants attended a cognitive-behavioural training program for pain management with 6 weekly group sessions. Concurrently they and the 56 participants of the control group continued in ordinary GP care.
Results: Mixed model results showed no significant difference between intervention and control group for any outcome measures of pain or function. In psychological variables, however, a significant difference between groups was found in Pain Self-Efficacy Questionnaire (Pr = 0.022) in favour of the control group, and in RAND-36 emotional well-being subscale in favour of the intervention group (Pr = 0.038). Traditional group comparisons of mean follow-up values showed no significant differences between the groups in any of the outcome variables.
Conclusion: This single-blinded randomized controlled trial could not confirm the hypothesized advantage of a cognitive-behavioural training program over ordinary GP care in knee osteoarthritis pain patients.

WIP-0558 WHERE THE STRESS IS HIDDEN?

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Objectives: Constant negative stress can lead to chronic pain and ill-health. Stress has been found to play a role in so many diseases of modern life: from asthma, depression, headaches and spine disorders flares to heart attacks, cancer, and diabetes. The objective of the study was to present effective ways to prevent the emergence of of civilization diseases caused by chronic stress.
Methods: The study was conducted 120 people, men and women aged 23–35 ($x = 29 \pm 2.4$), suffering from chronic stress which causes lingering pain in very different areas of the body, usually connected with the spine. Patients were interviewed about their general health, pain symptoms and were asked to evaluate their stress level. Subjects were randomly assigned in two groups. Group I (control) – respondents who were interviewed and filled out the questionnaire. Gr. II- was also participated in training on relaxation techniques, self-therapy, proper breathing learning and possible ways of active coping with stress.
Results: Study have shown that most often indicated sites of pain were: cervical and shoulders area (n = 78), thoracic spine (n = 51) and sacro- lumbar region (n = 38). 43 patients suffering from tension type headache, 31 respondents had problems with abdominal pain and 21 complained on bruxism. Research have shown that most patients (near 70%) from gr. II after study completion do not suffer from pain appears in a situation of increased stress or after that.
Conclusion: To learn the way of active relaxation may be preventing many lifestyle diseases and improving quality of life

WIP-0331 SPACE FOR INTERACTION. QUALIFYING GROUP TREATMENT FOR PATIENTS WITH CHRONIC PAIN THROUGH OPTIMIZATION OF SPACE. A RANDOMIZED PILOT STUDY

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Objectives: The physical environment can have both positive and negative impact on the interaction between patients and therapist. Three hypotheses were tested concerning a) room décor, b) effect of treatment and c) perceiving comfort and secureness.
Methods: 66 test persons participated. Group A (treatment groups, n = 18) received treatment in a general hospital room (room A), group B (treatment groups, n = 19) received treatment in a specially adapted space (space B) and group V (n = 29) were on the waiting list for treatment. Treatment effect was measured before and after in relation to quality of life (SF36 -v2, WHOQOL – Bref, BDI -II) and in relation to pain (RMQ, PCS, MPQ). Interaction level in the group was measured (GCQ). Space was assessed with Semantic Environmental Assessment (SMB). Therapists were interviewed.
Results: Room B was perceived as significantly more comfortable and secure than room A. However there was no significant difference between group climates and efficacy of treatment. The therapists preferred room B and described the room as a tool.
Conclusion: Even though room B is perceived more secure and comfortable than room A, this does not affect the outcome

measured as pain and life quality. Future project should be fullsize research project and use additional effect measures like rest-activity measurements.

WIP-0543 CLINICAL STAGING IN DEPRESSIVE DISORDERS

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Objectives: The concept of depression is too heterogeneous and it is also insufficiently differentiated. Clinical staging is a diagnosis tool which complements and modulates the usual nosological entities. This system contributes to a better classification of the clinical state in order to improve clinical outcome prediction and the administering of specific treatments for every stage.

To describe the most relevant characteristics of the sample and discover the degree of professionals satisfaction with the model.

Methods: A total of 160 patients have been recruited. All patients diagnosed with a principal or secondary depression disorder belonging to the IPMH care units of the HCSC. Sociodemographic and clinical variables were measured and statistically described. Furthermore, the clinical staging model was evaluated by all the professionals of the study to know their level of satisfaction. The study has been financed by Lilly S.A.

Results: In the ambulatory units, the major proportion of the patients were in the stages 3b, 2y 3c, that is a recurrence depression episode or a first depression episode with moderate-severe intensity. It is clearly observed that clinical stages correlate in a statistically significant way with the scores of the Clinical Global Impression (CGI), Hamilton Scale (HDRS) and especially with the Global Assessment of Function (GAF). In a very clear way his relation with the Resistance to Treatment score is significant.

Conclusion: The results reveal that the staging system modulates the conventional diagnosis and contributes a more complete vision of the disease. In addition, all the professionals of the study confirmed their high satisfaction with the staging model.

WIP-0323 SUSTAINABILITY OF HIGH INTENSIVE INTERDISCIPLINARY PAIN THERAPY FOR PATIENTS WITH CHRONIC PAIN

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Objectives: Algesiologikum – Centers for Pain Medicine (Munich) is engaged in the treatment of patients suffering from severe chronic pain. Patients with a sufficient physical and psychological constitution may participate in a specialized group – therapy with very high dose.

Therapy-Setting:

1st stage (3 weeks inpatient): modifying extreme avoidance/endurance strategies, handling pain during the daily routine, pacing relaxation techniques, active organization of daily grind

2nd stage (5–8 weeks at home): retrial at home

3rd stage (2 weeks inpatient): refreshment, intensification, booster sessions

The aim was to find out which beneficial effects of this program last up to one year.

Methods: Patients completed the German Pain Questionnaire 2007[1] before the therapy began and 3–12 months afterwards. Collected parameters:

- Pain characteristics (actual, mean, worst pain)
- Psychological data: Anxiety and Depression (HADS[1]), General Well-being (FW7[1]) and Quality of pain (SBL[1])
- Probable therapy success was calculated with pair-sample t-test. Due to the lack of randomizing, the small sample and multiple comparisons, the results are just descriptive.

Results: We found both, short-term (directly after the 1st and 3rd setting-stage) and long-term (up to 1 year after the therapy) improvements of pain characteristics, depression and general well-being. Surprisingly, we found worsening concerning anxiety and quality of pain.

Conclusion: Preliminary results indicate that this high intensive therapy may have a long-term positive impact on pain intensity and general well-being.

[1]Deutscher Schmerzfragebogen (2007): http://www.dgss.org/fileadmin/pdf/12_DSF_Anamnese_Muster_2012.2.pdf (11.12.13)

WIP-0246 NOCEBO EFFECT INDUCED BY SOCIAL LEARNING MECHANISM

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Objectives: The aim of the study is to verify the results of Swider and Babel (2013) study and determine if the type of analgesic placebo administered in the mechanism of social learning can influence experimental pain perception.

Methods: The experiment was conducted on 5 groups of 14 females each. Participants were treated with 16 electric stimuli of the same intensity. In group 2, 3 and 4 pain stimuli were preceded by green and red stimuli and in group 3 and 5 by circle and square. In group 1, 2 and 3 participants firstly observed pain behaviour of the female model (experimenter helper) but they were not aware that no stimuli were applied to her. In group 1 and 2 the model was showing analgesic effect when the stimuli were paired with red light or green light respectively. In group 3 the model was showing analgesic effect when the stimuli were paired with circle stimuli. Next, the participants were following the same procedure as the observed model. Participants from group 4 and 5 underwent only the second part of study. To determine the intensity of pain Numerical Rating Scale (NRS) was applied.

Results: In all experimental, in contrary to control groups, pain ratings after green/circle and red/square were statistically different. Only in group 2 nocebo effect was produced.

Conclusion: The findings show that the stimuli type used as the placebo influenced the formation and type of the produced effect. Under social learning mechanism the nocebo effect is induced.

WIP-0326 EXTERNALIZING FEELINGS OF PSYCHOLOGICAL PAIN IN BEHAVIOURAL PATHOLOGY

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Objectives: Psychological pain involves experiencing the subjective feelings of unhappiness on a wide range of intensities. Little is known about the clinical psychopathologic situations, in which the inner, spiritual pain is not lived, nor experienced. We aim to present a clinical case, at the boundary of an **Axis I** psychiatric diagnosis, such as antisocial personality disorder (ASPD). We tried to clarify the 'expulsion' of pain from the spiritual/psychic area and its projection in behavioral pathology, with multiple implications.

Methods: The fundamental aspect of ASPD is the denial of moral/spiritual pain and depression, experiencing a pathology that is the exact opposite of pain. Suffering and pain are not being *played through* and *experienced* within; they are

experienced in a social pathology. We used neuroimaging examination (CT, EEG) hormonal functions investigations, psychiatric/psychodynamic interview, life map, tracking of daily psychiatric developments.

Results: The psycho-dynamic explanation of the patient's intra-psychic functioning involves the difference between ASPD and delusional disorder, which projects the pain onto persecutors and develops envy – hate equations. We succeeded in explaining the concept of psychological pain by reference to the dimensions of envy and lack of guilt (pain versus power).

Conclusion: There are serious psychiatric illnesses in which pain, as a subjective, internal feeling, may be short-circuited and designed as a huge social, extrinsic issue and this particular case is a closely monitored and dynamically observed explanation of this phenomenon.

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