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Pain

1214
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Pain
Frequency of neuropathic pain among diabetics in Parakou in Benin in 2014

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Background: Neuropathic pain is fairly common in diabetics. Their epidemiology is poorly understood in Benin.

Objectives: To study the frequency of neuropathic pain among diabetics in Parakou in 2014.
Methods: A Cross-sectional study was carried out and included 280 diabetics in Parakou diabetes unit. All subjects were examined by a physician and diagnostic DN4 tool was used to define the neuropathic component of pain (Score DN > 4). The DNS (Diabetic Neuropathy Score) was used to screen sensory neuropathy (DNS Score > 1).
Results: They had a mean age of 55.3 +/- 11,3 years with 60% women. The mean duration of diabetes was 75.3 months ± 70.6 months. Among them 204 had a DNS > 1, the overall frequency of sensory neuropathy was 72.9%. Among the 134 diabetics with pain 95 had DN4 score > 4 with the neuropathic pain frequency of 33.9% and 87 (91.6%) of them suffered more than 3 months. The main associated factors with neuropathic pain were duration of diabetes, history of head trauma, level of glycaemia, obesity, the presence of diabetic foot.

All subjects with neuropathic pain also have a sensory neuropathy. The most common characteristics of pain were burns (90.5%), tingling (88.4%), numbness (83.2%) and tingling (82.1%). The pain was moderate to very severe in 44.2%.
Conclusion: Neuropathic pain is more frequent among diabetics especially in those with sensory polyneuropathy and related to poor control of disease.

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1215
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Pain
Comparison of the analgesic effects of RTMS and TDCS in painful radiculopathy: a randomized double blind placebo controlled study

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Background: Although rTMS and tDCS of the motor cortex have been found to induce analgesic effects in neuropathic pain, whether these techniques have similar efficacy is currently unknown.
Objectives: In this randomized double blind sham controlled study, we compared the analgesic efficacy of repeated sessions of rTMS and tDCS in patients with painful radiculopathy, immediately after the end of the sessions and 5 days later. Secondary outcomes included neuropathic symptoms , thermal pain thresholds at the upper limbs, anxiety, catastrophizing, and prediction of the response.
Patients and methods: Patients (n = 35, 51% women) were randomly assigned to receive active or sham treatment (rTMS followed by tCDS or tDCS followed by rTMS) for 3 consecutive days within 3 weeks apart, thus a total of 6 stimulations.
Resuts: Active rTMS was superior to both tDCS and sham stimulation on average pain intensity over the course of the treatment ($p < 0.05$). There was a correlation between the analgesic effects of both techniques. rTMS or tDCS had no effect on anxiety, depression or catastrophizing, but only rTMS improved neuropathic symptoms. rTMS also modulated cold pain thresholds immediately after the end of stimulations, an effect that was correlated to its analgesic efficacy.
Conclusions: rTMS induces higher short term analgesic efficacy as compared to tDCS in patients with painful radiculopathy and has more impact on the sensory discriminative aspects of pain. The correlation between the analgesic efficacy of both techniques suggests shared mechanisms of action.

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1216
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Pain
Low Dose Naltrexone (LDN): New in the treatment of chronic pain syndromes. What really matters – reduced pain or increased energy?

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Background: The opioid antagonist Naltrexone has in a low dose shown potential as an analgesic for chronic pain syndromes. The mechanism of action is possible through an anti-inflammatory effect on microglia. In our clinic oral LDN 4.5 mg daily has been given to more than 300 patients during the last year, and an earlier study

showed that one third of the patients feels pain relief and wants to continue the treatment.
Objective: This study was purposed to assess the effect on other qualities of life besides pain relief. We used the Dolo-test, a VAS questionnaire of eight closely related parameters: Pain, problem with light and more strenuous physical activities, job problems, reduced energy and strength, low spirit, reduced social life, sleep problems.
Methods: Patients getting LDN made the Dolo-test before and after 2-6 months of treatment. The changes in VAS were registered. A total of 26 patients who stayed on LDN not starting any new medical treatment during the period were included.
Results: The mean percentage reduction in VAS was calculated: Pain: 17%; problems with light physical activities: 12%; strenuous physical activities: 10%; job problems: 8%; reduced energy and strength: 23%; low spirit: 13%; reduced social activity: 15%; sleep problems: 12%.
Conclusion: Why many patients feel better with LDN may have several reasons as this study indicates. In addition to pain relief especially in getting more energy and strength seems important. This parameter for quality of life actually had the very highest change in score, even higher than pain.

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1217
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Pain
Lercanidipine alleviates hyperalgesia and allodynia in Rodent Model of paclitaxel induced neuropathy

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Objective: Abnormal activation of calcium channels have been implicated in the development of paclitaxel induced neuropathy. The effect of Lercanidipine (L-type calcium channel blocker) on paclitaxel induced neuropathic pain was evaluated in rats.
Materials and methods: Twenty four Wistar rats were used (paclitaxel + saline and paclitaxel + lercanidipine in three doses). Paclitaxel (2 mg/kg) and graded doses of lercanidipine (0.5, 1 and 2.5 mcg/kg) were administered. Paclitaxel was administered intraperitoneally on days 1, 3, 5 and 7 and lercanidipine was administered from day 1 to day 10. Animals were assessed for mechanical allodynia and hyperalgesia at baseline, 14th, 21st and 28th day using 4 g and 15 g Von Frey monofilament respectively. Cold allodynia was assessed by tail withdrawal response to cold water at 4degreeC. Axonal structure was evaluated with light and electron microscopy.
Results: Paclitaxel produced significant mechanical hyperalgesia and cold allodynia. The mean % paw withdrawal response to 4 g Von Frey monofilament appeared from day 7(5.7 ± 6.8) increasing to 40.3 ± 9.7 on day 28 ($p \leq 0.002$) and to 15 g monofilament, it increased from $15.2 \pm 6\%$ at baseline to $76.4 \pm 14.3\%$ on day 28. Paclitaxel produced a reduction in tail withdrawal response time to cold water from 16.3 ± 1.6 s at baseline to 10.3 ± 0.8 s on day 28. Lercanidipine delayed the onset and reduced the severity of mechanical allodynia and hyperalgesia but failed to protect the animals from development of cold allodynia. The proportion of animals which showed axonal degeneration was less in lercanidipine group compared to paclitaxel group (5/9 vs 9/9). Ultrastructural examination did not reveal meaningful difference between the two groups.
Conclusion: Lercanidipine ameliorated paclitaxel induced neuropathic pain in rats.

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1218
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Pain
Pain assessment: comparison of the modified pain disability index and Box 21 pain measures in a pediatric neurofibromatosis-1 population

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Pain assessment: Comparison of the Modified Pain Disability Index and Box Scale 21 pain measures in a Pediatric Neurofibromatosis-1 population.
Background: The Pain Disability Index (PDI) and Box Scale 21 pain severity measure (BS-21) have established reliability and validity in adult populations, but lack pediatric data.
Objective: Examine psychometric properties of the PDI, revised for children (Ped-PDI), and the BS-21 in neurofibromatosis-1 (NF-1).
Materials and methods: Children (173 NF-1 patients age 6-17) in this IRB-approved study self-reported measures of the modified PDI, assessing pain-related disability in 7 areas of function. The BS-21 assessed current pain severity and worst, least, and usual pain over the previous week. To evaluate construct validity, PedsQL assessed overall QOL and 4 QOL domains (physical, emotional, social, school). Wong-Baker Faces of Pain scale (for children) was also completed. Pain Drawings indicating location/extent of pain provided percent body surface involved. Correlational analyses examined reliability (coefficient alpha) and validity associations (Spearman rho) between Ped-PDI and BS-21 and other measures.
Results: 78.6% of subjects reported pain; severity, disability, and extent were relatively low. Correlations ≥0.24 were significant at or below a p-value of .001. Internal consistency reliability of the Ped-PDI was 0.91. Ped-PDI correlated well with PedsQL (0.40 social-.61 physical and overall), with Faces scale and with pain extent. Internal consistency reliability of BS-21 was 0.86. BS-21 correlation with PedsQL was 0.47 and with Ped-PDI was 0.65. Though Ped-PDI and BS-21 yielded positively skewed distributions, Pearson correlations yielded $\pm$ .01-.10 compared to Spearman, mean = .06.
Discussion: Our results support the reliability and construct validity of the Ped-PDI and BS-21 when used in pediatric NF-1.

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1219
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Pain
Nerve Conduction Studies (NCS) in Patients with Central (CNS) and Peripheral (PNS) Nervous System Diseases with and without Neuropathic Pain (NP)

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Background: The diagnostic yield of NCS in CNS or PNS NP has not been systematically studied.
Objectives: To compare the diagnostic yield of NCS in CNS and PNS disease with and without NP.

Methods: Sensory NCS:sural, median,ulnar and radial. Motor:median, ulnar, peroneal and posterior tibial, Fwaves and H reflex. Contact heat evoked potentials(Cheps,Medoc)&SSEPes to painful stimulation are described elsewhere. Mean age 53.9 ± SD (range 22-83 years) Males = 48 Females = 43. PNS divided into polyneuropathies (PNP) and focal PNS involvement (OPN). Groups subdivided in with (+) and without (-) NP.
Results: NCS showed in PNP(+): 24 sensori motor, 8 normal. PNP(-): 12 sensorimotor, 4 normal. OPN(+):5 mononeuropathies, 3 radiculopathies, 1 plexopathy, 2 normal. OP(-): 2 mononeuropath, 1 normal. CNS(+): 1 sensorimotor PNP, 4 OPN, 11 normal.CNS(-) 2 sensorimotor, 2 OPN , 9 normal.

No significant differences (Fisher's exact test) between with, versus without, NP in the proportions of PNP, OPN, CNS and normal findings overall, nor within the PNS sub groups. 70% of PNPs were sensorimotor. In 10 (7 with NP) of 16 patients with PNS and normal conduction findings, SSEPs or Cheps, were abnormal. NCS identified 9/29 CNS patients with unsuspected PNS pathology, five of them with NP.
Conclusions: Patients with and without NP had similar proportions of PNS and CNS NCS findings. The majority of PNPs with NP were sensorimotor. The majority of small fibre PNP were identified by CHEPS or SSEPes to painful stimuli. Nerve conduction studies are indicated in patients with NP.

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1220
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Pain
Comparison of the effect of analgesic-dosages of ketamine and ketorolac in preventing tourniquet-induced pain in orthopedic patients under general anaesthesia

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Background: Torniquet induced pain is one of the challenging issue in orthopedic surgeries requiring bleeding control. Different analgesic regimens have been tried to control such pain, but none has been declared definitive. The aim of this study was to compare the efficacy of analgesic dose Ketamine and Ketorolac in preventing tourniquet-Induced pain in Orthopaedic patients under general anesthesia.
Material and methods: This study was conducted in Holy Family Hospital Rawalpindi. 110 patients fulfilling the inclusion criteria were selected in the study by non-probability consecutive sampling. Patients aged 14-60 years, ASA class I/II, requiring General anesthesia for various different lower limb orthopaedics surgery procedures and tourniquet inflation for at least 60 minutes were recruited. They were divided into two equal groups by random selection of patients via lottery method. Group A comprised of 55 patients in whom intravenous low dose ketamine(0.1 mg/kg) was given after induction of anesthesia and before(10mins) inflation of tourniquet. Group B received ketorolac (0.5 mg/kg). Systolic(SBP) and Mean blood pressures(MAP) were observed in both groups via non invasive blood pressure(NIBP) technique after inflation of tourniquet till sixty minutes of inflation. All the data was analyzed by SPSS version 16.
Results: It was observed that 29.1% patients of group A (ketamine) had tourniquet induced hypertension (TIH) as compared to 41.8% patients of group B (ketorolac). The difference was statistically insignificant ($p = 0.163$). Incidence of TIH was observed to be more in female gender than in male (44.73% vs 30.55%) and more in ASA-II patients than ASA-I patients (42.85% vs 32.92%) but statistically those were also found to be insignificant.
Conclusion: Ketamine and ketorolac carry the same analgesic efficacy in preventing tourniquet induced haemodynamic changes related to pain.

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1221
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Pain
Peripheral neuropathies associated with HIV a clinical study in patients infected with HIV cases HIV excellence centre / University of Lubumbashi

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Background: The human immunodeficiency virus (HIV) affects approximately 33 million people living in developed countries and countries with limited resources. The peripheral neuropathies are common in patients with HIV infection, and are associated with significant morbidity. Neuropathy is the most common neuromuscular manifestation observed in HIV / AIDS, and at the advent of antiretroviral therapy, the prevalence has increased.
Methods: Using two scales (DN4, EVA) for the evaluation of the severity of pain, and a clinical evaluation allowed us to diagnose the peripheral neuropathy. The clinical diagnosis will be completed by the EMG, NCV and the biopsy. We carried out a cross sectional study to determine the prevalence of peripheral neuropathy (HIV-PN) among HIV patients at the Excellency center of Lubumbashi university.
Results: Out of 400 patients studied, 25% had HIV-PN; 53,3% of these patients had abnormal reflexes, 77,89 % had symptomatic HIV-PN, 80 % consulted for pain, and only 3,6% have a real difficulty in walking, 76,5 % of our patients were taking stavudine, 11,7 %, didanosine and abacavir . 84% of our patients had a median CD4 cell count of 292 cells/ml, 13.86 % of patients with NP was on a treatment of tuberculosis.
Conclusions: HIV-PN is common among patients with advanced HIV infection in Lubumbashi, the diagnostic should be made routinely for to reduce the negative impact on their quality of life.
Keywords: neuropathy, HIV, AIDS, antiretroviral treatment, CD4, PN

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1222
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Pain
Surgical treatment of ulnar nerve entrapment syndrome

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Background: Ulnar nerve entrapment is a painful disorder as a result of anatomical and physiological abnormalities of the ulnar nerve. It is the second most common peripheral neuropathy in the upper extremities after carpal canal syndrome.
Aim: To present a surgical treatment of ulnar nerve entrapment and its postoperative outcome. Indications for surgery include a clinical evidence of well established lesion, progressive palsy or paralysis and conservative treatment disimprovement after 6 to 12 weeks.
Patients and methods: Surgical treatment has been obtained after proper preoperative diagnosis and conservative treatment failure. After

anatomical visualization of the ulnar nerve, either in the cubital region or in the Guyon canal, it is decompressed. Two weeks postoperative immobilization of the arm is recommended.
Results: Patients felt an immediate postoperative symptoms relief. Postoperative follow-up revealed return to normal function. Postoperative physical rehabilitation is mandatory.
Conclusion: Authors recommend the ulnar nerve surgical decompression in all cases diagnosed by physical examination or/and EMNG.

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1223
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Pain
Impact of pain on quality of life and the occurrence of anxiety and depressive symptoms in patients with multiple sclerosis

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Pain is one of the most frequently reported symptoms of multiple sclerosis (MS). It affects the daily functioning, limits the work ability, reduces the joy of life.
Aim: Prevalence of pain in MS and its impact on quality of life, symptoms of anxiety and depression.
Material and methods: The study included 144 MS patients (mean age 41 +/-12 years, mean disease duration 7.4 +/-7.2 years). It was conducted on the basis of the author's survey on current and previous pain, EuroQol 5D quality of life self-esteem questionnaire and The Hospital Anxiety and Depression Scale (HADS). An Institutional Review Board have waived the requirement for their formal approval of the study.
Results: Among all respondents, 117 people (81.3%) reported current pain, and 120 patients (83.3%) - the occurrence of pain in the past. Currently, patients have reported: pain in one or more extremities-79 people (54.9%), headache and facial pain-72 (50%), back pain-72 (50%), painful muscle spasms-54 (38.6%), pain in eyeball-37 (25.7%), Lhermitte's sign-32 (22.2%). Patients who reported pain significantly more frequently experienced symptoms of anxiety ($p < 0.01$) and depression ($p < 0.01$), and had significantly worse quality of life ($p < 0.01$). An association between presence of pain and gender ($p < 0.01$), age ($p < 0.05$), disease duration ($p < 0.001$), the degree of disability ($p < 0.05$), and the presence of a job ($p < 0.01$) was found.
Conclusion: Pain in MS patients is associated with anxiety and depression, and worse quality of life. Female sex, older age, longer disease duration, greater disability, and lack of occupational work predispose to the occurrence of pain in MS patients.

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1224
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Pain
Multicolumn spinal cord stimulation in failed back surgery syndrome: design of a national, multicentre, randomized, controlled health economics trial (Estimet Study)

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Background/objective: Many studies have demonstrated the efficacy of SCS for chronic neuropathic radicular pain over recent decades. But despite global favourable outcomes in FBSS with leg pain, the back pain component remains poorly controlled by neurostimulation. The efficacy of multicolumn SCS lead configurations for the treatment of the back pain component of FBSS has recently been suggested by pilot studies. However, a randomized controlled trial must be conducted to confirm the efficacy of new generation multicolumn SCS. ESTIMET is a multicentre, randomized study designed to compare the clinical efficacy and health economics aspects of mono vs multicolumn SCS lead programming in FBSS patients with radicular pain and significant back pain.
Materials/methods: FBSS patients with a radicular pain VAS score ≥ 50 mm, associated with a significant back pain component were recruited in 14 centres in France and implanted with multicolumn SCS. Before the lead implantation procedure, they were 1:1 randomized to monocolumn SCS (only one column, group 1) or multicolumn SCS (full use of the 3 columns, group 2). Outcome assessment was performed at pre-implantation, and 1, 3, 6 and 12 months post-implantation. The primary outcome measure was a reduction of the severity of low back pain (bVAS reduction ≥ 50%) at the 6-month visit. Additional outcome measures were changes in global pain, leg pain, paraesthesia coverage mapping, functional capacities, quality of life, neuropsychological aspects, and healthcare resource consumption.
Results: Preliminary results are expected to be published in 2015.
Conclusion: Trial recruitment is completed since October 2013.

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1225
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Pain
Subcutaneous peripheral nerve stimulation as "Hybrid Stimulation" after failure of SCS to control the back pain component in FBSS patients

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Background: Despite globally favourable outcomes of SCS, a significant proportion of FBSS patients do not obtain adequate coverage of low back pain. PNS has obtained the CE mark in Europe for the treatment of chronic refractory neuropathic pain and is now commonly used in some countries to target back pain. However, the potential value of combining SCS and PNS as "hybrid stimulation" remains poorly described with only isolated case reports or limited experience in various indications.

The 'CUMPNS" comparative randomized study is designed to demonstrate the potential analgesic efficacy of PNS in addition to previously implanted SCS, to treat the residual back pain component pain in refractory FBSS patients.
Materials/methods: All patients are randomized 1:1 in to 2 groups(SCS + PNS vs SCS). Group 1(SCS + PNS) receives 'hybrid stimulation" with PNS implantation one month after the inclusion

visit. In the second group, patients continue to be treated with SCS alone for 4 months post-inclusion before having access to PNS.

The main objective of this study is to demonstrate the added value of subcutaneous PNS by comparing the ability of hybrid stimulation(SCS + PNS) versus SCS alone to improve analgesic efficacy, functional outcome on quality of life and coverage of the residual low back pain component at three months. This variation in the pain surface area covered is evaluated by mapping, using the Neuro-Mapping Tools(N3MT) software.

Results: Recruitment in the CUMPNS trial began in February 2013. The inclusion period will end in February 2015.

Conclusion: Primary endpoint findings will be available at the end of 2016. ated by mapping, using the Neuro-Mapping Tools (N3MT) software.

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1226
WFN15-0501
Pain
A prospective study evaluating sleep quality in failed back surgery syndrome patients treated by multicolumn spinal cord stimulation: study design protocol

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Background: One of the main consequences of a chronic pain syndrome is major impairment of the quality of sleep. Chronic pain and insomnia are independently linked to significant reductions in quality of life and psychiatric morbidity. Recent studies have suggested the efficacy of SCS for the treatment of the back pain component in FBSS patients using a multicolumn lead. The main objective of this pilot study is to assess the influence and potential benefits of SCS on sleep quality in refractory FBSS patients implanted with multicolumn SCS and enrolled in the French multicentre ESTIMET study.

Methods: This is a single-centre, comparative, exploratory, pilot study. Sixteen FBSS patients enrolled implanted with multicolumn SCS will be followed for 6 months after implantation (PSG, PVT, Osler tests, actigraphy, sleepiness scales, and sleep quality testing). Sleep will be evaluated before (at the inclusion visit) and after SCS implantation (at the 6-month visit). Secondary objectives will also assess the impact of SCS lead programming and the influence of position-adaptive stimulation at night on sleep quality.

Results: The recruitment is now achieved. Primary endpoint findings are expected to be available in 2015.

Conclusion: By providing an analysis of the quality of sleep in chronic pain patients who are candidates for implanted neurostimulation, this new approach focuses on an important aspect of quality of life often overlooked in these poly-medication patients. It could show a real clinical benefit and underestimated of these analgesic innovative expensive techniques, in which medico-economic analysis, would promote access or not.

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1227
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Pain
Consumption of hydrogen water prevents the occurrence of neuropathic pain in mice

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Background: Neuropathic pain remains intractable and the development of new therapeutic strategies are urgently required. Accumulating evidence indicates that overproduction of oxidative stress is a key event in the pathogenesis of neuropathic pain. However, repeated intraperitoneal or intrathecal injections of antioxidants are unsuitable for continuous use in therapy.

Objective: Here we investigate a novel therapeutic method against neuropathic pain: drinking water containing molecular hydrogen (H_2) as antioxidant.

Material and methods: The effect of hydrogen on neuropathic pain was investigated using a partial sciatic nerve ligation model in mice. As indicators of neuropathic pain, temporal aspects of mechanical allodynia and thermal hyperalgesia were analysed for 3 weeks after ligation. Mechanical allodynia and thermal hyperalgesia were measured using the von Frey test and the plantar test, respectively.

Results: When mice were allowed to drink water containing hydrogen at a saturated level *ad libitum* after ligation, both allodynia and hyperalgesia were alleviated. These symptoms were also alleviated when hydrogen was administered only for the induction phase (from day 0 to 4 after ligation). When hydrogen was administered only for the maintenance phase (from day 4 to 21 after ligation), hyperalgesia but not allodynia was alleviated. Immunohistochemical staining for the oxidative stress marker, 4-hydroxy-2-nonenal and 8-hydroxydeoxyguanosine, showed that hydrogen administration suppressed oxidative stress induced by ligation in the spinal cord and the dorsal root ganglion.

Conclusion: Oral administration of hydrogen water may be useful for alleviating neuropathic pain in a clinical setting.

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1228
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Pain
Interaction of hydroalcoholic extract of ginger and intracerebroventricular injection of bromocriptine and chlorpromazine on pain sensitivity in male rat

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Background: Administration of Ginger (*Zingiber officinale*) root extract caused significant increase in dopamine content of various brain areas. The anti-nociceptive effect of hydroalcoholic extract of ginger was investigated. On the other hand, D2 agonist quinpirole increased the antinociceptive effect of morphine. Objective: the aim of present study was to investigate the interaction of hydroalcoholic extract of ginger and bromocriptine (D2 receptor agonist) and chlorpromazine (D2 receptor antagonist) on pain sensitivity in formalin test.

Material and methods: Forty eight adult male rat in standard conditions were used. Rats were divided to following groups: Control (intact rats); sham 1 (received oral administration of water 0.4 ml for 15 day); sham 2 (received 4 μl ACSF); experimental 1 (received oral administration of ginger 50 mg/kg/day for 15 day); experimental 2 and 3 (received bromocriptine 10 and 30 μg/rat after ginger similar to experiment1) and experimental 4 and 5 (received chlorpromazine 20 and 40 μg/rat similar to experiment1). Lateral ventricle was cannulated unilaterally by

stereotaxic procedure. Pain sensitivity tests were done by formalin test.
Results: present data showed that ginger significantly decreased pain sensitivity. Both bromocriptine (10 and 30 μg/rat) and chlorpromazine (20 and 40 μg/rat) significantly ($P < 0.05$) decrease pain sensitivity in first and second phase of formalin test, after 15 days oral administration of ginger (50 mg/kg/day).
Conclusion: It seems that in the present of ginger dopamine agonist and antagonist had the same effect, so the analgesic effect of ginger was more potent than hyperalgesic effect of chlorpromazine.

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