(356) Thoracic wall pain from spinal cord stimulator electrode malfunction

J Parekh, S Patel, M Eckmann, and S Ramamurthy; University of Texas San Antonio Health Science Center, San Antonio, TX

Spinal cord stimulators (SCSs) produce electrical signals to suppress perception of chronic neuropathic pain, but they can have complications. We present a case of thoracic wall dysesthesia associated with spinal cord stimulator use due to leakage current from electrode degeneration. Case: A 51 y/o female presented with new left sided chest pain with usage of her SCS. Patient had history of multiple back surgeries and failed back surgery syndrome. Ten year previously, she had a SCS implanted with 2 Medtronic Pisce percutaneous-style 4 contact electrodes at the T8-T9 spinal levels for low back and left leg pain. She had excellent pain relief until 14 months after initial implantation, when the SCS was revised due to increasing voltage demands. Electrodes were replaced with a Specify 4x2 paddle electrode at T8-T9. After 7 years she abruptly started to experience left sided chest wall pain consistently during SCS activation despite multiple attempts at reprogramming. Imaging displayed perfect midline and dorsal electrode alignment with no migration from previous studies. There were, however, signs of discontinuity in some contacts. After multidisciplinary discussions between pain medicine, neurosurgery, neuroradiology, we hypothesized that leakage current could be causing the thoracic dysesthesias, and the patient was offered another revision with a new paddle electrode. During surgery the left electrode appeared to have a defect in the insulation. A Specify 8x2 paddle electrode was then placed. Excellent relief of the patient's neuropathic pain was achieved, with complete resolution of the thoracic dysesthesias during stimulation. New SCS related dysesthesia in a previously well-functioning system is not commonly reported in the absence of lead migration. This case demonstrates the possibility of aberrant electrical current paths that can develop over time, particularly as electrodes age and fray. Electrode revision should be considered, particularly if impedance values in the existing electrode are abnormal.

(357) Candida parapsilosis vertebral Ooomyelitis: a rare complication of spinal cord stimulation

G Chang Chien, L Dance, and K Candido; Rehabilitation Institute of Chicago, Chicago, IL

Spinal cord stimulation (SCS) has grown increasingly popular as a treatment option for pain refractory to pharmacotherapy and to conventional interventional pain management. Complications from permanent SCS implantation are most commonly due to hardware malfunction and electrode displacement, but also include serious deep tissue and spinal infections and abscess formation. We report a case of a 56 year-old male with history of intravenous drug abuse and chronic low back pain with a history of decompressive laminectomy, who presented with fever, chills, and worsening back pain three months after permanent spinal cord stimulator lead implantation. MRI of the lumbar spine revealed marked osseous destruction of the L1 and L2 vertebrae, and the contiguous intervertebral disc. CT-guided needle aspiration grew Candida parapsilosis. Subsequently, the patient underwent explantation of the neuromodulation system and was treated with high-dose fluconazole for six months. Follow-up MRI demonstrated stable osseous destruction and decreased enhancement. Invasive Candida parapsilosis osteomyelitis is an extremely rare disease. Vertebral osteomyelitis is most commonly secondary to hematogenous spread of a contagion, with direct inoculation from surgery or trauma as the next most common cause. Unlike Candida albicans which is an obligate human pathogen, Candida parapsilosis has been isolated from non-human sources including domestic animals and soil. In our case, intravenous drug abuse was the most likely cause of infection, although it is possible that inoculation occurred during surgical implantation. Co-morbidities associated with this infection include prior surgery, injection drug users, immune-compromised status, long-term central venous catheters, and broad-spectrum antibiotic use. Published rates of infection confirmed by culture after spinal cord stimulation approximate 2.5%. To our knowledge this is the first reported case of vertebral Candida parapsilosis osteomyelitis after permanent spinal cord stimulator implantation. In our case, pre-surgical screening for risk factors including intravenous drug abuse may have prevented this catastrophic infection.

F12 Non-Opioid Analgesics - Other

(358) Muscle injections produce clinically significant analgesic effects in patients with fibromyalgia syndrome

R Staud, E Weyl, E Bartley, D Price, and M Robinson; University of Florida Gainesville, FL

Patients with musculoskeletal pain syndrome including fibromyalgia (FM) complain of chronic pain from deep tissues including muscles. Previous research supports the role of impulse input from deep tissues for FM clinical pain. We hypothesized that blocking abnormal impulse input with intramuscular lidocaine would reduce decrease primary and secondary hyperalgesia and FM patients' clinical pain. We enrolled 62 female FM patients into a double-blind controlled trial of 3 groups who received either 100 mg or 200 mg lidocaine or saline placebo injections into both shoulders and buttocks. Study variables included clinical pain as well as pressure and heat hyperalgesia. A natural history condition was included to estimate the effect size of saline placebo injections. Clinical FM pain significantly declined by 34% after either lidocaine or saline injections and secondary heat hyperalgesia at the arms and legs was also unspecifically reduced after muscle injections. In contrast to these unspecific effects, primary and secondary mechanical hyperalgesia decreased significantly more after lidocaine than placebo injections. Patient expectations of pain relief accounted for 15 % of the analgesic effect of muscle injections. Thus muscle injections can provide clinically relevant reductions of overall clinical FM pain. These effects appear to be mediated by a combination of specific and unspecific factors including impulse blockade from muscles and patient expectations. In addition, needling of deep tissues appears to be analgesic which may be related to activation of endogenous pain modulatory mechanisms. Specific effects of lidocaine on mechanical hyperalgesia emphasize the role of peripheral impulse input for FM pain processing abnormalities.

(359) Intravenous use of lidocaine, magnessium, ketorolac as a novel non-opioid combination drug for treating acute opioid tolerance and hyperalgesia in the postoperative care unit

K Karandikar; Los Angeles County Hospital/University of Southern California, Los Angeles, CA

Acute post-operative pain is common in the post-operative care unit (PACU). When conventional doses of opioid analgesics fail to bring acute postoperative pain under control the condition may represent acute opioid tolerance and hyperalgesia; patients undergo wind-up, central sensitization and experience opioid induced acute hyperalgesia resulting from activation of spinal NMDA receptors. The goal of our study was to determine if a combination of magnesium (1 gm), lidocaine (100mg), ketorolac (15mg) - MLK mixed together and administered in fixed dosage intravenously would reverse opioid tolerance and therefore provide pain relief. Each of the medications in the MLK combination has been independently shown to produce analgesia in the PACU. We believe the combination is synergistic and provides rapid reversal of the acute opioid tolerance. We performed an open label, non-randomized, IRB approved study at the LAC-USC Medical Center. We administered MLK to any patient in the PACU with postoperative pain levels >7/10 on the verbal analogue scale after having received 2 mg total dose of hydromorphone. Two sets of vital signs and VAS scores over 15mins each were obtained after administration of MLK. Patients who did not experience adequate analgesia (pain levels remaining >7/10 after MLK) were treated with additional opioids. Our aim was to determine if opioid resistant pain is more adequately treated by MLK. Our results showed that 80% (12/15) patients who received the MLK solution showed a significant and adequate pain relief to cross over from severe >7/10 pain to moderate <6/10 pain. The 3 patients that did not benefit from the MLK solution did not benefit from the additional opioid medication doses given to them either. This open label study merits further confirmation but our initial results are very promising. Our prospective, randomized double blinded study is in currently in progress.