Role of Epidural Steroids in the Management of Chronic Spinal Pain: A Systematic Review of Effectiveness and Complications

Abdi S, Datta S, Lucas LF

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Background: Epidural steroid injections are commonly used for chronic spinal pain. However, there is no conclusive evidence regarding their effectiveness, and debate continues as to their value in managing chronic spinal pain. Objective: To evaluate various types of epidural injections (interlaminar, transforaminal, and caudal) for managing chronic spinal pain (axial and radicular). Study Design: A systematic review utilizing the criteria established by the Agency for Healthcare Research and Quality (AHRQ) for evaluation of randomized and non-randomized trials, and criteria of the Cochrane Musculoskeletal Review Group for randomized trials. Methods: Data sources included relevant English literature identified through searches of MEDLINE and EMBASE (January 1966 to November 2004), manual searches of bibliographies of known primary and review articles and abstracts from scientific meetings within the last 2 years. Three reviewers independently assessed the trials for the quality of their methods. Subgroup analyses were performed for trials with different control groups, with different modes of epidurals (interlaminar, transforaminal, and caudal), with different injection sites (cervical/thoracic, lumbar/sacral), and with timing of outcome measurement (short- and long-term). Outcome Measures: The primary outcome measure was pain relief. Other outcome measures were functional improvement, improvement of psychological status, and return to work. Short-term improvement was defined as less than 6 weeks, and long-term improvement was defined as 6 weeks or longer. Results: For lumbar radicular pain with interlaminar lumbar epidural steroid injections, the level of evidence was strong for short-term relief and limited for long-term relief. For cervical radicular pain with cervical interlaminar epidural steroid injections, the evidence was moderate. The evidence for lumbar transforaminal epidural steroid injections for lumbar nerve root pain was strong for short-term and moderate for long term improvement. The evidence for cervical transforaminal epidural steroid injections for cervical nerve root pain was moderate. The evidence was limited for lumbar radicular pain in post lumbar laminectomy syndrome. The evidence for caudal epidural steroid injections was strong for short-term relief and moderate for long-term relief. For managing chronic postlumbar laminectomy syndrome and spinal stenosis the evidence was limited for low back and radicular pain. The evidence was moderate for chronic low back pain. Conclusion: The evidence for effectiveness of epidural injections in managing chronic spinal pain ranged from limited to strong.

Quality assurance for interventional pain management procedures

Zhou Y, Furgang FA, Zhang Y

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BACKGROUND: Over the last decade various guidelines for quality assurance in pain medicine have been published for cancer pain, acute postoperative pain and other pain conditions. However, quality assurance for interventional pain management procedures has yet to be addressed. An interventional pain program should at least evaluate 1) efficacy of pain relief; 2) complication rate; and 3) patient satisfaction. OBJECTIVE: This study was designed to monitor the quality of interventional pain management procedures in a university teaching hospital. STUDY DESIGN: A prospective survey. METHODS: From January 1, 2004, to June 30, 2004, the quality of interventional pain management procedures in a university teaching hospital in Miami, Florida was monitored. Questionnaires assessing immediate pain relief, patient satisfaction, and complications were provided to each patient and physician immediately after completion of each procedure.

Data was collected before patients were discharged. RESULTS: A total of 566 patients with a mean age of 52.9 years participated in the survey. Interventional pain management procedures included epidural steroid injections, facet joint blocks, transforaminal epidural injections, sympathetic nerve blocks, lumbar discography, nucleoplasty, percutaneous disc decompression, spinal cord stimulator trial, and intravenous regional blocks, etc. Among 528 patients who reported their pain scores before and after procedures, 487 (92%) patients reported various degrees of pain relief immediately following their procedures. The average pain score decreased 4.7 on a 0 to 10 scale after treatment ($p<0.001$). No major complications were reported for this group of patients. Among 442 patients who answered the question regarding satisfaction, 406 (91.8%) were satisfied, or highly satisfied, with the immediate outcome of their procedures. CONCLUSION: The results of the current study indicate that quality assurance of interventional pain management procedures in terms of immediate pain relief following the procedure, low complication rate, and high patient satisfaction can be achieved through application of a quality assurance program.

Different patterns of spinal cyclooxygenase-1 and cyclooxygenase-2 mRNA expression in inflammatory and postoperative pain

Prochazkova M, Dolezal T, Sliva J, Krsiak M

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Levels of cyclooxygenase-2 (COX-2) mRNA, but not those of COX-1, were reported to be raised significantly after peripheral inflammation in the rat spinal cord. The aim of the present study was to ascertain whether this pattern of COX-2 and COX-1 expression applies also to other pain conditions induced by surgical procedure. Experiments were performed on two types of pain models. In a model of postoperative pain, 1 cm longitudinal incision was made through skin, fascia and muscle of the plantar aspect of the right hind paw in anaesthetized rats. In the second model, peripheral inflammation was induced by unilateral, intraplantar injection of carrageenan in the right hind paw. Carrageenan injection or skin incision produced marked and significant reduction of paw withdrawal latencies to noxious radiant heat stimuli after 2 and 6 hr. Under the acute inflammation 2 and 6 hr after carrageenan injection levels of COX-2 mRNA were markedly raised (7.8 and 15.5 times; P<0,001, respectively) while spinal levels of COX-1 mRNA were not significantly altered (n.s.). In contrast, spinal levels of COX-2 mRNA were raised less markedly in a model of postoperative pain (4.9 times at 2 hr; P<0,001 and 2.9 times (n.s.) at 6 hr after surgery) whilst levels of COX-1 mRNA in the lumbar spine were increased significantly (2.3 times; $p<0,001$) 6 hr after surgery. The present findings indicate that expression of COX-2 mRNA in the spine is less dominant in postoperative pain than in inflammatory pain and that spinal COX-1 mRNA is upregulated in postoperative pain.

Non-antiepileptic drugs for trigeminal neuralgia

He L, Wu B, Zhou M

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BACKGROUND: Non-antiepileptic drugs have been used in trigeminal neuralgia management since the 1970s. OBJECTIVES: The objective was to review systematically the efficacy of non-antiepileptic drugs for trigeminal neuralgia. SEARCH STRATEGY: We searched the Cochrane Neuromuscular Disease Group Register, MEDLINE, EMBASE, and LILACS (all to August 2005) and the Chinese Biomedical Retrieval System, the database of the Chinese Cochrane Center (The Cochrane Library, Issue 1 2005), conference paper databases and checked bibliographies. We handsearched ten Chinese journals. SELECTION CRITERIA: We searched for randomized or quasi-randomized controlled trials. DATA COLLECTION AND ANALYSIS: Two authors decided which trials fitted the inclusion criteria and graded methodological quality independently. MAIN RESULTS: Nine trials of different non-antiepileptic drugs involving 223 participants were included. Each trial investigated one non-antiepileptic drug. Two trials tested baclofen. In one, more people

gained 50 % reduction from baseline than with placebo (relative risk 15.00, 95 % CI 0.97 to 231.84, P value=0.05). In the other, slightly more participants on baclofen had a 75 % reduction in attacks on the 10th day compared with carbamazepine (relative risk 2.38, 95 % CI 0.83 to 6.85, P value=0.11). One trial showed no significant difference in reduction in average daily frequency of attacks with L-Baclofen compared with racemic baclofen. Tizanidine was investigated in two trials. In one, the proportion of people with reduction in the average number of paroxysms per day increased with tizanidine compared with placebo (relative risk 8.00, 95 % CI 1.21 to 52.69, P value =0.03). In the other, one of five participants improved in visual analog scale score with tizanidine and four of six with carbamazepine (relative risk 0.30, 95 % CI 0.05 to 1.89, P value=0.20). One study showed that the improvement in mean values of pain scores with tocainide was similar to that of carbamazepine. In one study more participants improved during the pimozide than the carbamazepine period (relative risk 1.78, 95 % CI 1.39 to 2.28). In one study, proparacaine hydrochloride 0.5 % instillation into the eyes was not significantly different from placebo (relative risk 1.06, 95 % CI 0.37 to 2.99, P value=0.92). In another, there was moderate or marked improvement in seven of nine participants treated with clomipramine and three of nine with amitriptyline after a 12-week treatment (RR 2.33, 95 % CI 0.87 to 6.27). AUTHORS' CONCLUSIONS: There is insufficient evidence from randomized controlled trials to show significant benefit from non-antiepileptic drugs in trigeminal neuralgia. More research is needed.

Nonsurgical management of acute and chronic low back pain

Shen FH, Samartzis D, Andersson GB

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A variety of nonsurgical treatment alternatives exists for acute and chronic low back pain. Patients should receive appropriate education about the favorable natural history of low back pain, basic body mechanics, and methods (eg, exercises, activity modification, behavioral modification) that can reduce symptoms. Nonprescription medication is efficacious for mild to moderate pain. Nonsteroidal anti-inflammatory drugs, alone or in combination with muscle relaxants, relieve pain and improve overall symptoms of acute low back pain. Exercise therapy has limited value for acute low back pain, but strong evidence supports exercise therapy in the management of chronic low back pain. Moderately strong evidence supports the use of manipulation in acute back pain. Evidence is weak for the use of epidural corticosteroid injections in patients with acute low back pain, strong for short-term relief of chronic low back pain, and limited for long-term relief of chronic low back pain. The use of facet injections in the management of acute low back pain is not supported by evidence, nor is the effectiveness of orthoses, traction, magnets, or acupuncture. Trigger point injections are not indicated for nonspecific acute or chronic low back pain, and sacroiliac joint injections are not indicated in the routine management of low back pain. Conflicting evidence exists regarding the use of transcutaneous electrical nerve stimulation.

Optimizing migraine therapy: evidence-based and patient-centered care

Diamond ML, Wenzel RG, Nissan GR

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Migraine is a chronic, intermittently debilitating neurovascular condition that affects the physical, mental and social aspects of health-related quality of life. Primary care provider interactions with migraine sufferers are common, highlighting the need for clinicians to provide optimal therapy. A comprehensive therapy plan should encompass the whole patient, via a patient-physician partnership where goals and strategies are mutually established. Key treatments include nondrug approaches, such as education and lifestyle modifications, to reduce the occurrence of attacks, as well as acute medications to address the immediate need for relief during an attack. Routine assessment and adjustment of therapy based on data recorded by patient diaries is paramount. Clinical trials support the use of triptans and dihydroergotamine for moderate-to-severe

migraine and nonsteroidal anti-inflammatory drugs (alone or in combination with antiemetics or caffeine) for mild-to-moderate migraine, as the treatments of choice to reduce pain and disability time in a cost-effective manner. Published evidence also endorses stratified care, where medication selection is geared towards disease severity, instead of step care, where nonspecific mediations are given to all patients. Thus, patients with significant migraine-induced debilitation, as assessed by tools, such as the Migraine Disability Assessment Scale or the Headache Impact Test, are prescribed migraine-specific agents from the onset of therapy, thereby avoiding the inherent failures of step care. For individuals experiencing a high frequency of attacks or routine debilitation, preventive medications are warranted.

Pain Assessment in Noncommunicative Elderly persons-PAINE

Cohen-Mansfield J

Clin J Pain 2006; 22(6): 569-575.

OBJECTIVES: We describe the validation of an informant-based pain assessment for persons suffering from dementia called Pain Assessment in Noncommunicative Elderly persons (PAINE) using 2 different samples. METHODS: In the first study, the participants included 80 residents from one nursing home. We assessed internal consistency using Cronbach alpha, interrater and test-retest reliability using Pearson correlations, and validity using receiver operating characteristic curve analyses, comparing PAINE to these criteria on the basis of reports from physicians, nurses, relatives, and the residents themselves. In the second study, the participants included 91 residents from 2 different nursing homes. We assessed validity by correlating scores on PAINE with those from other assessments designed to detect pain. RESULTS: PAINE shows adequate internal consistency and both interrater and test-retest reliability. It also shows adequate receiver operating characteristic curve results and reasonable correlations with the existing measures of pain in persons with dementia. DISCUSSION: PAINE has the advantage of using a comprehensive list of pain symptoms on the basis of systematic questioning of direct caregivers from several institutions. The validity results suggest that this assessment could be a useful tool in detecting pain in persons with dementia.

Cardiovascular risks of cyclooxygenase inhibition

Stacy ZA, Dobesh PP, Trujillo TC

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Millions of patients use nonsteroidal antiinflammatory drugs (NSAIDs) for relief of arthritic pain. Although NSAIDs reduce pain, their use has been linked to gastroduodenal complications. Selective inhibition of the cyclooxygenase (COX)-2 enzyme appeared to offer patients similar pain relief with an improved adverse-effect profile. However, accumulating experiences have raised concerns regarding the cardiovascular toxicities of the selective COX-2 inhibitors. Although selective COX inhibitors provide more gastrointestinal protection than NSAIDs, the unbalanced inhibition of prostaglandins may promote cardiovascular complications. Variability in study designs and inconsistency in results have made the evaluation of NSAID and COX-2 inhibitor safety very difficult, creating confusion among health care practitioners. We examine the pharmacologic and clinical evidence that defines the cardiovascular risk associated with COX inhibition.

Superior hypogastric block: transdiscal versus classic posterior approach in pelvic cancer pain

Gamal G, Helaly M, Labib YM

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OBJECTIVE: The classic posterior approach of superior hypogastric block has several technical difficulties. The transdiscal approach is a novel and easier approach for superior hypogastric which overcome these technical difficulties. METHODS: Thirty patients were randomly allocated to two groups: The transdiscal group and the classic group; visual analog scale pain scores, daily morphine consumption, duration of the procedure and side effects were recorded. RESULTS:

The duration of the procedure was significantly decreased in the transdiscal group (24.4+/-5.6 min) compared to the classic group (57.9+/-9.8 min). There were no significant differences between the 2 groups in daily morphine consumption and VAS pain scores. There was no discitis, disc rupture, or herniation in the transdiscal group. CONCLUSION: The transdiscal approach for superior hypogastric plexus block in pelvic cancer pain is easier, safer, and more effective with less side effects than the classic approach.

Early access to physical therapy treatment for subacute low back pain in primary health care: a prospective randomized clinical trial

Nordeman L, Nilsson B, Moller M, Gunnarsson R

Clin J Pain 2006; 22(6): 505-511

OBJECTIVES: To evaluate the effects of early access (EA) to physical therapy treatment for patients with subacute low back pain compared to access with a 4-week waiting list. DESIGN: A prospective, randomized clinical trial. SETTING: Primary health care. PATIENTS: Sixty consecutive patients with subacute low back pain. INTERVENTIONS: Patients were randomized either to EA within 2 days for physical examination and individualized physical therapy treatment (n=32) or a control group with a 4-week waiting list (n=28). OUTCOME MEASURES: Self-administrated questionnaires were used for assessment at inclusion, at discharge, and at 6 months. Primary outcome measure was pain intensity assessed by Borg category scale for ratings of perceived pain. Secondary outcomes included the Orebro musculoskeletal pain screening questionnaire, the Roland and Morris disability questionnaire, sick-leave, visits to health care, and physical therapy. RESULTS: The results showed no significant differences in pain between the groups at discharge. At 6 months, the reduction of pain was significantly greater in the EA group compared to the control group (P=0.025). Changes in secondary outcome measures were not significantly different between groups. CONCLUSIONS: This study indicated that EA to physical therapy resulted in greater improvement in perceived pain at 6 months compared to later access. In this study, EA to physical therapy could be introduced by reorganization without additional resources.

Intrathecal catheters with subcutaneous port systems in patients with severe cancer-related pain managed out of hospital: the risk of infection

Holmfred A, Vikerfors T, Berggren L, Gupta A

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Intrathecal catheters have been used for many years to treat severe pain resistant to conventional treatment modalities. Previous studies have found a rate of serious infection of 2%-3% using these catheters in home situations. However, many authors used prophylactic antibiotics routinely in this group of patients, which are both costly and associated with a risk of developing antibiotic resistance. We were interested in studying whether improved hygiene during insertion and care of these catheters in the hospice or home environment would reduce the incidence of catheter-related infections. The results show that prophylactic antibiotic is not necessary, but a careful handling of the system with aseptic technique is important. The infections we registered appeared more than 2 weeks after insertion of the catheters. We now use this method routinely when inserting an intrathecal catheter with a subcutaneous port.

Skin temperature during sympathetic block: a clinical comparison of bupivacaine 0.5% and ropivacaine 0.5 % or 0.75 %

Di Filippo A, Natale V, Del Po F, Ciapetti M, Bressan F, Falchi S

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Measurement of skin temperature can be used as an indicator of sympathetic blockade induced by

neuraxial anaesthesia. The aim of the study was to test the skin temperature response to epidural administration of bupivacaine and different concentrations of ropivacaine. Forty-eight ASA class I-II patients undergoing herniorraphy were enrolled into a prospective, randomized, double-blind clinical trial. Patients were randomly allocated to receive epidural anaesthesia with a single dose of 18 ml of bupivacaine 0.5 % (n=16); ropivacaine 0.5 % (n=16), or ropivacaine 0.75 % (n=16). A temperature probe was positioned on the skin of the thigh and skin temperature registered before epidural anaesthesia, every 10 minutes for the first hour after the epidural injection and every hour for the following four hours. Sensory blockade was assessed by pinprick and motor blockade using the Bromage scale. No significant difference was observed in sensory or motor blockade. A skin temperature rise of 1 to 1.8 degrees C compared with basal values was observed in all patients within the first hour. Temperature returned to basal values within four hours in the ropivacaine 0.5% group, within five hours in the ropivacaine 0.75% group, and remained 1 degrees C higher after five hours in the bupivacaine 0.5% group ($P<0.01$). The duration of sympathetic block is significantly shorter with ropivacaine than with bupivacaine.