

**Nerve blocks for radicular pain: Srinivasa Raja**

Chronic low back pain with radicular symptoms is the most common scenario where local anesthetic nerve blocks with or without steroids are used as diagnostic or therapeutic modalities. However, the role and effectiveness of these blocks are still debatable (Staal et al 2009). Critical reviews of the literature indicate that there is insufficient evidence that nerve blocks provide long term benefits for radicular pain, but it cannot be ruled out that specific subgroups of patients may respond to a specific type of injection therapy or radiofrequency (RF) lesioning.

**Sympathetic nerve blocks for neuropathic pain: Jonathan Richardson**

The sympathetic nervous system has been shown, through various pre-clinical and clinical studies, to be relevant to neuropathic pain (Taylor 2001). In neuropathic pains with this association significant benefits can be achieved through sympathetic blockade (Day 2008). The presentation will discuss the choice of where and how to block the sympathetic nerves for head, neck, trunk, pelvic and peripheral sites. The beneficial effects of local anaesthetic sympathetic block can be surprisingly long lived, but if necessary long term benefit through radiofrequency or chemical sympathectomy can often be provided.

**Trigeminal Neuralgia: John Loeser**

Nerve blocks of the gasserian ganglion have been used for the treatment of tic douloureux. Lesioning the Gasserian ganglion with heat, cold, or mechanical means has utility for the treatment of tic douloureux, but the role of blocks with local anesthetics for treatment prognostication or diagnosis has never been demonstrated with RCTs. Spinal injections as predictors of surgical outcomes lack appropriate studies (Cohen and Hurley 2007). Selective nerve root blocks with image guidance and low volume of injectate may be helpful in confirming the level of the pathology and directing surgical attention to the correct location (Sasso et al. 2005). By preventing operation at the wrong level, they do influence outcome.

**109****NERVE BLOCKS FOR RADICULAR PAIN**

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Considerable advances have been made in the pharmacotherapy of neuropathic pain. However, many patients obtain only partial pain relief, or experience intolerable adverse effects with medications. Interventional treatments are often used in such patients. The long-term benefits of these treatment strategies, however, have been less well studied. Chronic low back pain with radiculopathy is a common indication for local anesthetic nerve blocks with or without steroids. This presentation will provide an evidence-based review of the literature on the role of epidural steroid injections in the management of radicular pain.

Epidural steroids have been administered using various approaches: interlaminar, transforaminal, and caudal routes, and at varying sites along the neuraxis. A recent systematic review reported that eight of 11 RCTs using lumbar interlaminar epidural injections of steroids (methylprednisolone or triamcinolone) with or without local anesthetic reported short-term (<6 week) benefits on pain. However, only two of these studies demonstrated any long-term benefit. These studies suggest grade B and C recommendation for short- and long-term reduction in pain with lumbar interlaminar epidural steroid injection, respectively. The interlaminar epidural steroid injection can miss the targeted ventral epidural space in up to 40% of cases.

A transforaminal approach has been advocated based on the observation that the injectate spreads to the ventral epidural space in almost all cases. Four of seven studies report a short- (6 weeks or less) and long-term benefit from these nerve blocks. Two of the RCTs compared the effects of transforaminal with interlaminar epidural steroid injections. The positive studies report that the

transforaminal epidural steroid injections were associated with improvements in pain and quality of life outcomes during mean follow-up periods of 6–8 months (grade B) whereas the negative studies suggest that a single injection may not consistently provide beneficial effects.

A few studies have examined the efficacy of radiofrequency (RF) lesioning in radicular pain at cervical and lumbar levels (van Zundert et al., 2007). Critical reviews of the usefulness of RF and pulsed radiofrequency (PRF) treatments for chronic pain have recently been published (Malik and Benzon 2008, van Boxem et al., 2008, Byrd and Mackey 2008). Based on the small number of randomized trials in small group of patients, there is limited evidence (Level C) to suggest a potential short term benefit of RF and pulsed RF in the treatment of cervical radicular pain, and no evidence of benefit in lumbar radiculopathy.

**110****NERVE BLOCKS FOR TRIGEMINAL NEURALGIA AND OTHER FACIAL PAIN SYNDROMES**

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Nerve blocks of the peripheral branches and Gasserian ganglion of the trigeminal nerve have a long history. They are probably not therapeutic in the long term but can produce effective short term pain relief. Blocks of the sympathetic nerves to the head also may have utility for some neuropathic pain states. No controlled studies of the ability of nerve blocks to predict surgical results or establish a diagnosis have been reported. In addition to tic douloureux, atypical facial pain, cluster headaches, post herpetic neuralgia, headaches in general, migraine and a variety of other pain syndromes that may reflect neuropathology have been described. Controlled trials are exceedingly rare, however. Methods of damaging the gasserian ganglion and other nerves by the application of heat (radiofrequency lesioning), cold, mechanical force (balloon gangliolysis) or chemical reaction (glycerol gangliolysis) are commonly used in the treatment of tic douloureux but few other conditions. The role of pulsed RF in the treatment of these conditions is unclear at this time.

**111****WHICH BLOCKS WORK FOR NEUROPATHIC PAIN?**

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Inhibition of hyperexcitability of nociceptors and afferent fibres, with reduction of central hyperexcitability through high local concentrations of sodium channel blockers (local anaesthetic), steroid and alpha-2 agonists (eg epinephrine) can have dramatically useful benefits for neuropathic pain which can far outlast pharmacological effects. These effects are demonstrated experimentally as well as clinically (Devor et al., 1985, Takeda et al., 2004). Prolonged duration may be due to effects on hypersensitive axons and receptors but also through central mechanisms through systemic absorption (Arnér).

Accurate, safe delivery to the target is essential. Training in precision nerve blocking techniques is mandatory. Selective nerve root block in radiculopathic pain can produce very long lasting, profound analgesia, sufficient in one study to make patients awaiting surgery change their minds about going ahead (Riew), but potential (although avoidable) complications are real.

In general, nerve blocks in neuropathic pain can be used diagnostically and therapeutically. Diagnostic uses may be identification of the nerve roots involved in radiculopathic pain (Wolff et al., 2006) and the evaluation of sympathetically maintained pain. Therapeutically, examples of acute pain which may be improved are acute ischaemia eg of cardiac or limb, or herpes zoster (in which condition it is possible that chronic pain may be reduced (Tenicala et al., 1985). Examples of chronic visceral pain helped by longer term sympathetic blockade, or even sympathetic