



- **FACT SHEET No. 7**

## **Evidence-Based Invasive Treatment of Chronic Musculoskeletal Pain**

### **Introduction**

Patients who do not respond to conservative treatments and have an unacceptable quality of life are possible candidates for invasive treatments. This fact sheet summarizes the current evidence on the most commonly performed invasive procedures in chronic musculoskeletal pain.

### **Diagnostic Procedures**

Nerve blocks are the most common types of invasive diagnostic procedure. Their rationale is simple: if a certain anatomical structure is the source of pain, then anesthetizing its nerve supply should temporarily relieve the pain. Face and construct validity have been demonstrated for blocks of the nerves that supply the zygapophysial (facet) joints of the cervical and lumbar spine [11]. Unfortunately, other types of nerve blocks have not been subjected to rigorous validation studies.

Disk stimulation (diskography) is used for the diagnosis of diskogenic pain, i.e. pain arising from painful structures of the intervertebral disks. The test relies on the assumption that, if the disk is the source of pain, applying a non-painful stimulus to the disk (an injection of contrast medium at low pressure) would evoke the typical pain of the patient. In the absence of a reference standard for the diagnosis of diskogenic pain, the validity of disk stimulation remains uncertain. False-positive responses, possibly resulting from generalized hyperalgesia, is a concern.

### **Therapeutic Procedures**

Radiofrequency denervation of the nerves that supply the zygapophysial joints is superior to a placebo procedure in both cervical and lumbar pain [12,18]. This finding applies only to those studies in which patients have been selected by local anesthetic blocks [11]. Studies that have employed other selection criteria have led to conflicting results. Radiofrequency denervation is highly effective, having the potential to provide complete pain relief. The main disadvantage is the limited duration of action due to nerve regeneration (on average 9-10 months). The procedure can be repeated with the same probability



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of success. Pulsed radiofrequency is less effective than radiofrequency denervation in lumbar zygapophysial joint pain [18] and is better than placebo in the short-term treatment of chronic cervical radicular pain [19].

Injection of steroid into cervical zygapophysial joints was not better than placebo in a randomized controlled trial [2]. No other controlled study has demonstrated the opposite. Two randomized controlled trials and multiple observational studies support the effectiveness of sacroiliac joint injections, but the overall quality of evidence is moderate [8]. There is very limited high quality data on the efficacy of shoulder steroid injections, with one recent randomized controlled trial showing middle-term benefit [16]. In a recent randomized-controlled trial, intra-articular steroid injection was not superior to placebo in knee osteoarthritis [6], whereas another randomized placebo-controlled trial showed efficacy of intra-articular steroid injection in hip osteoarthritis [10]. A recent meta-analysis found that intra-articular corticosteroids may be associated with moderate improvement in pain and a small improvement in physical function in the short term, but the quality of evidence was low and there was no association of intra-articular steroids with benefit at 6-month follow-up [4]. Overall, the wide practice of intra-articular steroid injections for different joint pain conditions is in contrast with the very limited high-quality published research.

Epidural steroid injection has no rationale for axial low back or neck pain. Epidural steroids are superior to placebo for the treatment of lumbar radicular pain [1,15]. For cervical radicular pain, combination of epidural steroids with medication / physical therapy may be superior to either treatment alone [3]. In general, the effect size of epidural steroid injections is modest and the duration of effect mostly limited to 3 months. However, this effect may be valuable for selected patients who do not respond to conservative care.

In a randomized trial, spinal cord stimulation was better than the conventional management of patients with failed back surgery [9]. Importantly, only patients with predominant leg pain of neuropathic origin were included. The results are therefore not necessarily applicable to patients with predominant low back pain. Indeed, the effect was relevant for leg pain, but modest for back pain [9]. The author is not aware of any randomized controlled trial on intrathecal opioid therapy; the available data are inconclusive for efficacy and safety of this treatment [17].

There is some evidence that intradiscal electrothermal annuloplasty (IDET) [14] and intradiscal biacuplasty [5,7] are superior to placebo for lumbar discogenic pain. However, the studies have been conducted on small samples of highly selected patients, and it is therefore unclear whether these findings can be generalized [13].

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