

Sciatica and epidural corticosteroid injections

● According to trials conducted in hundreds of patients with sciatica, epidural corticosteroid injections have no demonstrated efficacy beyond the placebo effect, either in the short term or the long term. However, they expose patients to a risk of sometimes serious neurological adverse effects.

Low back pain with sciatic pain radiating down one leg (sciatica) can persist for several months (1). Epidural corticosteroid injections are sometimes proposed when oral analgesics fail to provide sufficient relief (a). Local injection of a corticosteroid has no demonstrated efficacy against low back pain without sciatic pain (2,3).

What is the analgesic efficacy of epidural corticosteroid injections in patients with sciatic pain, and what are their adverse effects?

A systematic review with meta-analysis searched for randomised trials that compared epidural corticosteroid injection versus placebo injection in patients with sciatica (4).

Minimal relief at 3 months. The authors of the review identified 23 eligible randomised trials (b)(4). The corticosteroid drugs used were *methylprednisolone*, *prednisone*, *prednisolone*, *triamcinolone* and *betamethasone* (4). In some trials, a short-acting local anaesthetic was given with both the corticosteroid and placebo (4). Sciatic pain intensity and the degree of disability were evaluated on a scale ranging from 0 to 100; a difference of 10 points or more was considered clinically significant (4). Short-term efficacy in reducing sciatic pain was evaluated in 14 trials of acceptable methodological quality, including a total of 1316 patients (4).

Two weeks to three months after an epidural corticosteroid injection, sciatic pain had improved by 6 points on average compared with placebo (95% confidence interval (95CI): -9.4 to -3.0) (4). In the 10 trials that evaluated disability in a total of 1154 patients, a mean improvement of 3 points was reported with corticosteroid injections compared with placebo (95CI: -5.0 to -1.2) (4). These differences are too small to be clinically significant (4).

Six trials in 723 patients evaluated low back pain, but found no improvement with corticosteroid injections (4).

No demonstrated long-term efficacy. Seven trials including 714 patients reported the results observed one year or more after the injection (4). No difference in sciatic pain, low back pain or disability was demonstrated between the corticosteroid and placebo groups.

Sometimes serious neurological events with paralysis. Epidural injection can provoke sometimes serious adverse effects. It is a delicate procedure that requires rigorous aseptic technique (5).

The authors of the systematic review did not report the adverse events observed during the trials (4).

Headache, nausea and dizziness attributed to accidental puncture of the dura mater occur after 2% to 5% of epidural injections (6). Inadvertent intrathecal injection of the drug can provoke neurotoxicity, sometimes due to its excipients or preservatives (5,6).

Infections are rare but serious: epidural abscess leading to partial paralysis of the lower limbs; infectious meningitis (6,7). Fungal infections have been reported following injection of contaminated batches of corticosteroids (8,9).

Spinal haematoma is another risk, provoking neurological disorders and sometimes permanent paralysis (c)(5, 10,11). Clotting disorders and anticoagulant therapy increase this risk (5). According to the French Health Products Agency, epidural injections should be avoided in patients with clotting disorders or those taking anticoagulants or antiplatelet drugs (10).

Beware the systemic effects of corticosteroids. Repeated epidural corticosteroid injections can provoke the same adverse effects as repeated systemic administration. Hyperglycaemia, worsening of diabetes, sodium and fluid retention, osteoporosis and adrenal insufficiency have been observed in this situation (6).

In practice: an unfavourable harm-benefit balance. In patients with sciatica, epidural corticosteroid injections have no demonstrated efficacy beyond the placebo effect in either the short term or the long term. These results should be weighed against the severity of some of the complications

associated with this procedure. This evaluation does not rule out possible improvement in some patients, but the harm-benefit balance is usually unfavourable and patients should be informed of the potential harms.

©Prescrire

.....
a- In epidural administration, the drug is injected into the epidural space between the bone and the dura mater. In intrathecal administration, the drug is injected beyond the dura mater and the arachnoid membrane into the sub-arachnoid space, which contains cerebrospinal fluid (ref 5).

b- The authors excluded trials involving patients with low back pain without sciatica or pain caused by spinal canal stenosis, or those who had previously undergone surgery. In 15 trials, the therapists knew which product they were injecting (ref 4).

c- Several cases of neurological adverse events with paraplegia have been attributed to spinal cord ischaemia through accidental occlusion of an artery supplying the spinal cord, running near or along the nerve root in the intervertebral foramen. These events were reported in particular following transforaminal injection or in patients who had previously undergone lumbar spine surgery (ref 6,10-12).

.....
Selected references from Prescrire's literature search.

1- Prescrire Rédaction "Examens complémentaires pour lombalgie récente. Il est rare qu'imagerie et biologie soient indiquées d'emblée" *Rev Prescrire* 2001; **21** (223): 847-851.

2- Prescrire Rédaction "Pas d'infiltration pour lombalgie chronique" *Rev Prescrire* 2001; **21** (223): 854.

3- Chou R et al. "Subacute and chronic low back pain: nonsurgical interventional treatment" UpToDate. www.uptodate.com accessed 15 July 2014; 19 pages.

4- Pinto RZ et al. "Epidural corticosteroid injections in the management of sciatica. A systematic review and meta-analysis" *Ann Intern Med* 2012; **157** (12): 865-877.

5- Prescrire Rédaction "Intrarachidiennes et épidurales: des voies d'administration à haut risque" *Rev Prescrire* 2003; **23** (242): 591-602.

6- Benoist M et al. "Epidural steroid injections in the management of low-back pain with radiculopathy: an update of their efficacy and safety" *Eur Spine J* 2011; **21** (2): 204-213.

7- Prescrire Editorial Staff "Corticosteroid injections: serious infections and necrosis" *Prescrire Int* 2013; **22** (134): 17.

8- Chiller TM et al. "Clinical findings for fungal infections caused by methylprednisolone injections" *N Engl J Med* 2013; **369** (17): 1610-1619.

9- Prescrire Rédaction "Voriconazole: alopecies et modifications des ongles" *Rev Prescrire* 2014; **34** (372): 749.

10- Afsaps "Information importante de pharmacovigilance relative aux cas rapportés de paralysie/tétraplégie au cours d'injection radioguidée de glucocorticoïdes aux rachis lombaire et cervical" July 2010; 2 pages.

11- US Food and Drug Administration "FDA drug safety communication: FDA requires label changes to warn of rare but serious neurologic problems after epidural corticosteroid injections for pain" April 2014. www.fda.gov accessed 8 July 2014; 3 pages.

12- Prescrire Rédaction "Infiltrations rachidiennes: tétraplégies" *Rev Prescrire* 2009; **29** (312): 746.