

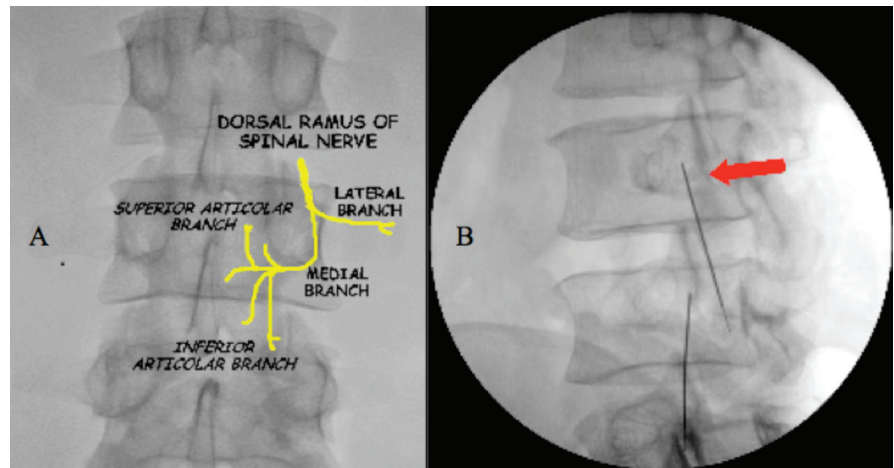
## Osteoarthritis of the zygapophysial joints: efficacy of percutaneous radiofrequency neurotomy in the treatment of lumbar facet joint syndrome

Sirs,

Facet joint syndrome is a mechanical chronic low back pain characterised by stiffness and pain that increase with rotation and extension. Its main cause is osteoarthritis of the zygapophysial joints (facet joints) and it is responsible for 15 to 40% of all chronic low back pain (1). Pain is considered to occur secondary to irritation of joint innervations, and the nerve responsible for the sensitivity of zygapophysial joints is the medial branch of the dorsal ramus of the spinal nerve that splits into two branches, an inferior (for the superior articular process) and a superior (for the inferior articular process) (2) (Fig. 1A). Apart from analgesic, non-steroidal anti-inflammatory drugs treatment and/or physiotherapy, steroid intrarticular injection has not been proven superior to placebo or at best having only a short-term efficacy (3). A different approach is percutaneous radiofrequency denervation (RFD) consisting in heat ablation of the medial branch responsible for the sensitivity of facet joints (4-7); RFD interrupt nerve conduction using an electrode needle positioned under CT or fluoroscopic guide (Fig. 1B). The aim of this study was to provide new evidence on the long term clinical outcome of this procedure.

Sixty-three patients with facet joint syndrome underwent RFD. Clinical evaluation, assessment of pain by means of visual analogue scale (VAS, 0-10) (8) and of function by means of the Oswestry disability scale (ODI) (9) was performed at baseline, at week one, week four, and week fifty-two after the RFD procedure. Patients were also assessed by a rheumatologist and diagnosis was also confirmed by repeated positive nerve block tests by means of injection of 1 ml of lidocaine in correspondence of the tender joints, and by gadolinium enhanced MRI. Sensory and motor nerve stimulation tests were also performed in order to minimise risk of needle misplacement. Response was defined as patient satisfaction, improvement of at least two pain VAS units and 20% improvement in ODI. Data were expressed as means  $\pm$  standard deviation and analysed by the Mann-Whitney test.

Baseline pain was  $9.3 \pm 1.0$ , baseline ODI was  $62.6 \pm 22.3$ . At week fifty-two, 48 patients were considered responders (pain:  $4.6 \pm 2.5$ ,  $p < 0.0001$  and ODI:  $23.7 \pm 12.9$   $p < 0.0001$ ), and 15 non-responders (pain:  $8.6 \pm 1.4$ ,  $p < 0.09$  ns and ODI:  $32.8 \pm 6.3$   $p < 0.0001$ ). All 63 patients reported improvement in physical function, including



**Fig. 1A.** The medial branch of the dorsal ramus of the spinal nerve runs downward between transverse and articular processes, then it splits into two articular branches, the superior for the inferior articular process, the inferior for the superior articular process of the same vertebra. **B.** Correct positioning of the needle using oblique view under fluoroscopic guide, in the groove as parallel as possible to the nerve.

the “non-responder” as suggested by ODI scores. Only 18 patients were on analgesic drugs at one year follow-up. Forty-six out of the 63 patients treated responded at week one, as well as at week 4. Only 4 patients showed a relapse of the symptoms; two of them were successfully retreated experiencing long lasting relief and showing persistent benefit at one year. No relevant side effects were reported. It is noteworthy that the beneficial effect was observed within the first week, generally in the same day of the procedure. Chronic low back pain may originate from several different causes, arising from vertebrae, disks, muscles and nerve roots, therefore, given the mean age of patients, it is likely that also in our cohort of patients osteoarthritis of the zygapophysial joints was not the only cause of back pain. This may explain why in some patients we obtained a significant improvement but not full remission of symptoms (10).

In conclusion, this study support the short and long term efficacy and safety of lumbar medial branch neurotomy by means of RFD in reducing chronic low back pain and ameliorating function in patients with facet joint syndrome.

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