Diagnostic Medial Branch Blocks before Lumbar Radiofrequency Zygapophysial (Facet) Joint Denervation

Benefit or Burden?

Degenerative changes of the zygapophysial joints (facet joints) account for approximately 10–15% of the cases with chronic low back pain.1 Radiofrequency ablation of the medial branches of the dorsal rami is a frequently performed procedure to treat pain originating from the facet joints. The success of radiofrequency facet denervation is highly dependent on patient selection. Diagnostic blocks are recommended in guidelines and reviews for selecting patients with facet joint pain from a population with nonspecific low back pain, however, with a large variation in the techniques of performing and assessing the blocks.2 Cohen et al.3 published in this issue of Anesthesiology a randomized controlled trial (RCT) assessing three selection paradigms before radiofrequency lumbar facet denervation. The design and findings of this study provide an important contribution to the ongoing debate on patient selection and the so-called diagnostic blocks.

The importance of the correctly performed and assessed diagnostic blocks becomes clear when examining the seven RCTs on radiofrequency lumbar facet denervation.4–10 In five of seven RCTs, the radiofrequency treatment has a superior outcome to its comparator,4,5,7–10 whereas there is one negative6 and one equivocal study.7 In all of these studies, diagnostic blocks were performed. However, there is no definitive standard on how to perform the diagnostic blocks, resulting in a wide variation of technique, medication used, dose, and whether to block the facet joint or its nerve supply as well as the interpretation of the results of such blocks, which is illustrated in table 1. Consequently, the percentage of patients who are ultimately selected for treatment varies from 10 to 92%, which is not in line with prevalence data of facet arthropathy (10–15%). These large variations in patient selection may contribute to the differences in observed success rates among different RCTs. The goal of diagnostic blocks is to select patients with facet joint pain, who are supposed to benefit mostly from the use of radiofrequency facet denervation. This can be expressed by the number of patients needed to be treated (NNT) to result in one patient with a positive outcome. The lower the NNT, the more effective the treatment.

In the negative6 and equivocal7 RCT on radiofrequency facet denervation, patients were selected by means of specific intraarticular blocks instead of the medial branch blocks. Moreover, Leclaire et al.6 judged the intraarticular block with local anesthetic and corticosteroid to be positive when the patient reported “significant” pain relief during 24 h within the week after the injection. The 92% inclusion rate may reflect the high false-positive rate. The NNT in this study was 11.9 in the radiofrequency group. In a controlled study using single diagnostic medial branch blocks, where the outcome of the block was assessed by the patient with the help of a study nurse within 30 min after the injection, the prevalence of facet joint pain was 31%.5 The NNT in the frequency group was 1.6. In a nonrandomized but high-quality prospective study, Dreyfuss et al.11 included patients after two positive controlled blocks with lidocaine and bupivacaine. The prevalence of facet joint pain was 10.8% and of NNT 1.1. In conclusion, the use of diagnostic intraarticular facet joint blocks cannot be recommended anymore, and better patient selection with medial branch diagnostic blocks improves the outcome of radiofrequency facet denervation.

However, there are two concerns regarding a future standard recommendation for controlled diagnostic blocks. First, by increasing the number of diagnostic blocks, the false-positive rate will be reduced, but unfortunately the false-negative rate will increase, thus increasing the risk of withholding an active treatment from patients. Moreover, aberrant medial branch innervation was demonstrated in 11%, demonstrating an additional risk for false-negative blocks.12 The second concern is related to the balance of the burden of multiple interventions versus the potential benefit. The study by Cohen et al. published in this issue adds another piece of information to this complicated puzzle.

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In conclusion, standardization and scientific validation of (controlled) diagnostic medical branch blocks is highly needed to identify its real value in clinical practice.

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