Talking to Patients About Medial Branch Neurotomy (Part 2)

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As briefly discussed in part 1 [April 15 issue], even when lumbar facet denervation (medial branch neurotomy) is successful, relief is rarely complete or permanent.

Smuck, et al., reviewed 16 articles and found the average duration of >50 percent pain relief for an initial procedure was nine months. Repeat medial branch neurotomy carried a success rate between 33-85 percent, with an average duration lasting 11.6 months. These statistics were similar to an earlier study also showing a 10-month average duration of benefit for both initial and repeat procedures.

Denervation Complication Rates

Kormick, et al., performed two studies involving a total of 741 denervations. These revealed five cases of neuritic pain lasting longer than two weeks, five cases of muscle soreness lasting less than two weeks, one case of prolonged muscle spasm, and no instances of motor deficits, sensory deficits or infections.

Some concern has been raised about the possibility of creating a "Charcot joint" due to the loss of afferent input secondary to medial branch ablation. This would appear plausible, as the facet joint (and entire medial branch nerve) is not only capable of nociceptive signaling, but also serves a role in proprioception. The loss of proprioception subsequent to denervation could conceivably lead to impaired motor control and loss of stability, as these receptors are similar to mechanoreceptors involved in the proprioception of other peripheral joints.

Recognizing that isolated case reports do not constitute a clear cause-effect relationship, there have been reported cases of progressive kyphosis (camptocormia) developing pursuant to multi-level facet denervation.

Comparing Other Non-Conservative Interventions

Lakemeier’s study, mentioned earlier, found that six months after intra-articular steroids, VAS scale reduced from 7 to 5.4 and Oswestry went from 38.7 to 33. This was no different than radiofrequency denervation. Manchikanti, et al., studying 120 patients, found that intra-articular injections of an anesthetic agent, either with or without steroids, provided similar pain relief. More than 85 percent of the
patients experienced >50 percent pain relief, and >40 percent improvement in disability measures, with an average effect duration of 19 weeks. Over two years, these patients required, on average, 5-6 treatments to maintain their benefit.  

At present, no clear consensus exists on the comparative effectiveness of direct facet injections versus medial branch neurotomy, although a study is currently underway to assess this.  

Conventional radiofrequency treatment has been compared with pulsed radiofrequency in two randomized trials, both of which found superiority with conventional radiofrequency.  

Kryorhizotomy uses a cold probe, as compared to a heating element, to accomplish medial branch denervation. Three low-quality trials suggest properly selected patients experience an average of 40-60 percent pain relief over a one-year period.  

To date, there have been no large case series reports or comparative studies to properly assess the effectiveness of laser facet denervation. Iwatsuki, et al., reported that 17/21 patients experienced >70 percent pain relief one year after laser intervention. Another study of 15 patients with a positive response to double-controlled diagnostic blocks reported eight with complete relief, and six with >50 percent relief at one year. These isolated reports should not imply that laser denervation is superior to other procedures, but rather that larger case-controlled or comparative studies are needed.  

**Summing Up**  

Medial branch neurotomy could be considered an option for patients suffering persistent axial and referred non-radicular leg pain *unresponsive to less invasive conservative measures*. Proper patient selection via diagnostic blocks correlates with successful outcomes. The criteria for what constitutes a successful block
continues to be debated, largely due to tradeoffs in cost, sensitivity, and specificity. The primary concern is the potential of withholding a beneficial option from patients who may fail to meet highly specific and more rigid diagnostic standards.

In general, a reasonable number of patients with >50 percent pain relief on controlled diagnostic blocks (and possibly even a single diagnostic block) could expect to experience similar relief with medial branch neurotomy for an average duration of 6-12 months. Repeat medial branch neurotomy tends to yield similar results. Patients meeting the more stringent diagnostic criteria appear to have predictably better responses, but failing to meet such criteria does not consistently exclude those who may otherwise show clinical benefit.

Immediate complications of medial branch neurotomy are mild and transient. However, studies on long-term complications, in particular those experienced in patients having multi-level or multiple sequential blocks, have not been done. This is a cause for concern and warrants further study.

At present, the research favors conventional thermal radiofrequency neurotomy over pulsed radiofrequency procedures. Some articles have suggested intra-articular facet injections of anesthetic with or without steroids may offer similar benefit. To date, laser denervation lacks the research necessary to make firm conclusions.

There does not appear to be any studies comparing manipulative procedures to medial branch neurotomy in the management of presumed facet-mediated pain diagnosed by confirmatory blocks. This would be an intriguing area to explore, especially since manipulative procedures are felt to improve afferentation and/or mechanically address the source of nociceptive input, rather than just ablating the pain-transmitting signals.

References


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