Radiofrequency Denervation for Neck and Back Pain: A Systematic Review Within the Framework of the Cochrane Collaboration Back Review Group


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FROM ABSTRACT:

Objective.
To assess the effectiveness of radiofrequency denervation for the treatment of musculoskeletal pain disorders.

Summary of Background Data.
There is a lack of effective treatment for chronic zygapophysial joint pain and discogenic pain.

Radiofrequency denervation appears to be an emerging technology, with substantial variation in its use.

Results.
Of seven relevant randomized controlled trials, six were considered to be high quality.

The selected trials included 275 randomized patients, 141 of whom received active treatment.

One study examined cervical zygapophysial joint pain; two, cervicobrachial pain; three, lumbar zygapophysial joint pain; and one, discogenic low back pain.

The sample sizes were small, follow-up times short, and there were deficiencies noted in patient selection, outcome assessments, and statistical analyses.

Conclusions.
There is limited evidence that radiofrequency denervation offers short-term relief for chronic neck pain of zygapophysial joint origin and for chronic cervicobrachial pain, and conflicting evidence for its effectiveness for lumbar zygapophysial joint pain.

There is limited evidence suggesting that intradiscal radiofrequency may not be effective in relieving discogenic low back pain.

Further high-quality randomized controlled trials are needed, with larger patient samples and data on long-term effects, for which current evidence is inconclusive.
THESE AUTHORS ALSO NOTE:

“A major proportion of the adult population experiences acute low back pain or neck pain at some stage in life.”

“Although in most patients symptoms tend to resolve with either no treatment or only conservative treatment, there is a substantial group of patients who develop chronic pain.”

“In a large percentage of patients, a degenerated intervertebral disc seems to be the source of chronic low back pain.”

“Studies on nerve blocks indicate that the prevalence of lumbar zygapophysial joint pain among patients with chronic low back pain ranges from 15% to 40%.”

“In about half of the patients with chronic neck pain following whiplash injury, the pain has been estimated to originate in the cervical zygapophysial joints.”

“It cannot be diagnosed either clinically or radiologically, but it can be identified by using placebo-controlled local anesthesia to block the nerves supplying the painful joint.”

A controlled trial showed that intra-articular injections of corticosteroids did not affect chronic pain in the cervical zygapophysial joints.

Another treatment that has been advocated is percutaneous radiofrequency denervation (RD).

The first article on radiofrequency denervation of the lumbar zygapophysial joints was in 1975.

RD is also used in the management of sacroiliac joint pain, thoracic zygapophysial pain, trigeminal neuralgia, sympathetically maintained pain, cervicogenic headaches, and intercostal neuralgia.

CERVICAL ZYGAPOPHYSIAL JOINT PAIN

These authors identified only 9 articles that included 7 randomized clinical trials (RCTs) that filled their inclusion criteria on cervical zygapophysial joint pain.

“The reviewers concluded that there was limited evidence that radiofrequency denervation had a positive short-term effect on chronic cervical zygapophysial joint pain.”
LUMBAR ZYGAPOPHYSIAL JOINT PAIN

Three RCTs on chronic lumbar zygapophysial joint pain were included.

The reviewers' conclusion was that radiofrequency denervation had a positive short-term effect in one study, a neutral effect in one study, and an unclear response in the third study.

The evidence of short-term effect from lumbar facet RD was therefore conflicting.

INTERVERTEBRAL DISC, DISCOGENIC LOW BACK PAIN.

“The reviewers concluded that there was limited evidence that intradiscal radiofrequency thermocoagulation was not effective for chronic discogenic low back pain.” [A Double Negative Sentence]

SUMMARY

“There is limited research-based scientific evidence that RD is effective in the short-term reduction of cervical zygapophysial joint pain and cervicobrachial pain.”

“The evidence is conflicting on the short-term effectiveness for lumbar zygapophysial joint pain.”

“There is limited evidence that intradiscal radiofrequency thermocoagulation has no statistically significant effect on discogenic low back pain.” [A Double Negative Sentence, again]

DISCUSSION

The objective of this systematic review was to assess the level of evidence for various pain indications, based on the information provided by RCTs.

Despite an extensive literature search, we found only nine articles reporting on seven RCTs, six of which were considered to be high-quality studies.

DIAGNOSTIC BLOCKS

“Because the rate of false-positive effects would otherwise be high, diagnostic blocks should be performed using placebo controls.”

Importantly, in this extensive review, only one study used double-blinded placebo-controlled local anesthetic blocks to confirm the origin of pain.

The other six studies used simple local anesthetic blocks and accepted less pain relief for a positive outcome, which these authors considered to be poor procedure and weak evidence.
CONCLUSIONS

“The studies reviewed provided limited evidence that radiofrequency denervation can offer short-term relief of pain in chronic neck pain of zygapophysial joint origin and in chronic cervicobrachial pain among preselected individuals.”

“There is conflicting evidence on the short-term effect of radiofrequency lesioning on pain and disability in chronic low back pain of zygapophysial joint origin.”

“There is limited evidence that intradiscal radiofrequency thermocoagulation is not effective in relieving chronic discogenic low back pain.” [A Double Negative Sentence, again]

“In conclusion, short-term favorable outcomes can be expected from RD among preselected individuals with chronic neck pain.”

“However, RD is a demanding, invasive method, liable to complications in unskilled hands, and requires special equipment and skilled staff.”

KEY POINTS FROM DAN MURPHY

1) There is limited evidence that radiofrequency denervation offers short-term relief for chronic neck pain of zygapophysial joint origin and for chronic cervicobrachial pain.

2) There is conflicting evidence that radiofrequency denervation is effective for lumbar zygapophysial joint pain.

3) The evidence suggests that intradiscal radiofrequency is not effective in relieving discogenic low back pain.

4) A major proportion of the adult population experiences acute low back pain or neck pain at some stage in life.

5) A substantial group of these patients develop chronic pain.

6) A degenerated intervertebral disc is usually the source of chronic low back pain.

7) Chronic lumbar zygapophysial joint pain among patients ranges from 15% to 40%.

8) 50% of patients with chronic neck pain following whiplash injury, has pain originating in the cervical zygapophysial joints.
9) Cervical facet pain cannot be diagnosed either clinically or radiologically, but it can be diagnosed with placebo-controlled local anesthesia to block the nerves supplying the painful joint.

10) Short-term favorable outcomes can be expected from RD among preselected individuals with chronic neck pain.

11) RD is a demanding, invasive method, liable to complications in unskilled hands, and requires special equipment and skilled staff.

COMMENT

Chiropractors are often lobbied by those who perform RD to have the procedure performed on their chronic spine pain patients, especially post whiplash injury.

This study would suggest that only a few patients are actually appropriate candidates for the procedure.

Appropriate candidacy for this procedure can only be assessed with double-blinded diagnostic blocks.

Expected results are improvement for three months, with no evidence for long-term improvement.