

Radiofrequency denervation of the sacroiliac joint-experiences in a series of 30 patients

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Abstract

The sacroiliac joint can be source of low back pain and radiofrequency denervation was reported to provide pain relief in patients with sacroiliac joint syndrome. We report about our experience with 30 difficult to treat patients with low back pain because of sacroiliac joint syndrome. Six months after the radiofrequency denervation 47% of the patients showed a lasting pain relief. Radiofrequency denervation shows promising results as part of the treatment of sacroiliac joint pain, but randomized controlled trials with larger sample size are thoroughly needed to further determinate its efficacy.

INTRODUCTION

Low back pain (LBP) is a major health problem. No specific pathology (for example inflammation, fracture or metastasis) could be found in the majority of cases and therefore LBP is often labelled unspecific. Acute episodes of LBP often disappear within a few weeks. But in a substantial portion of patients LBP is becoming chronic and difficult to treat¹. The sacroiliac joint (SIJ) can be source of low back pain (LBP). SIJ- Syndrome is believed to be caused by degenerative changes of the iliosacral joint with consecutive hypermobility and possible subluxations. The correct diagnosis of SIJ- syndrome is difficult because specific symptoms are lacking and positive image- guided blocks are the mainstay in diagnosing SIJ- syndrome². The human SIJ shows a predominantly dorsal innervation, with highly variable sensory fibers arising from the Dorsal Rami L5- S4 and entering the deep interosseus posterior ligaments³⁴. In the deep interosseus ligaments these nerves are easily accessible and Radiofrequency- denervation (RFD) of these nerves was reported to provide pain relief in some patients with SIJ- syndrome⁴⁵⁶⁷⁸.

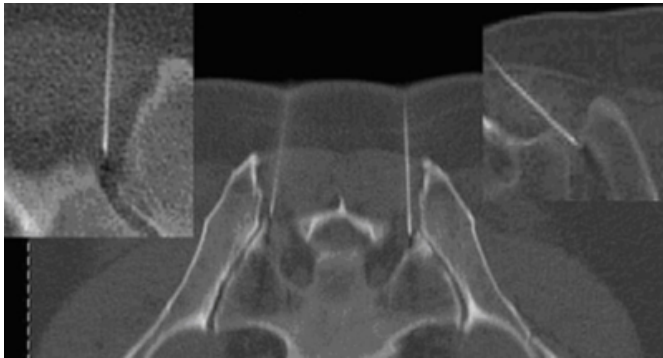
PATIENTS AND METHODS

We retrospectively assessed the outcome of 30 patients with a questionnaire, who received RFD of the SIJ at Braunschweig teaching hospital in 2005. The sample consisted of 11 men and 20 women with a mean age of 59.4 years (range 37-92,5 years). The success immediately after the procedure (i.e. the first days after the RFD), 3 months und 6 months after the procedure was assessed. Possible

answers were no pain/ substantial pain reduction, slight pain reduction and no pain reduction. The charts of the patients were also reviewed for post- interventional complications. All patients complained of long- standig LBP without pseudoradicular pain distribution and showed no subjective pain reduction to conservative treatment (NSAID and physiotherapy). Facet joint syndrome was ruled out using diagnostic facet joint blocks. After an initial computerized tomography (CT) of the pelvis to rule out sacroiliitis or traumatic changes the patient received CT- guided diagnostic blocks of the deep interosseus ligaments with prilocaine. A relief of the pain, corresponding to the known duration of drug effect (i.e. about 2 hours) was stated as a positive test. If the test was positive patients were considered for the RFD. The patient was again positioned prone and local anaesthesia with lidocaine was applied. Under CT- guidance three needles were placed at each side in the deep posterior ligaments in the long axis of the joint similar to the method described by Ferrantes et al.⁶ (Figure 1).

Figure 1

Figure 1: CT- Scans in a bone window setting showing the placement of the needle tips for the radiofrequency denervation.



Between the needles there was a distance of about 2 cm for overlapping thermodenervation. Each point was denervated using 85 C for one minute. All interventions were performed by one radiologist (B.K.). After the procedure patients were able to leave the hospital, no antibiotics were used. All interventions were carried out without complications like bleeding, infection or nerve injury. A few patients reported local pain, which was controlled by orally administered NSAID.

Immediately after the procedure 73% of patients reported a pain reduction (22/30). 40% reported no pain or substantial pain relief. After 3 months 56.6% of the patients reported a lasting pain reduction (17/30) with 36.6% reporting no pain or substantial pain relief. After 6 months still 46,6% reported a lasting pain reduction (14/30) with 30% experiencing a substantial pain relief or no pain at all. In 26.6% of the patients no pain relief was mentioned.

DISCUSSION

In our case series about 47% of the patients with chronic and difficult to treat LBP showed a lasting pain reduction six months after the RFD. The procedure is easy to perform, minimal invasive and safe, with no observed complications. Another advantage is that RFD can be performed at an outpatient basis. The rationale for RFD is the predominantly dorsal innervation of the human SIJ with nerves running inside the posterior interosseus ligaments, where there are easily accessible using a dorsal approach³⁴.

It is not easy to compare the results of the published studies and our results because of different outcome- criteria and the small number of patients in all studies. Ferrantes et al. defined a good outcome a lasting pain reduction of $\geq 50\%$ on a visual analogue scale (VAS) after 6 months. Using this

criteria 36,4% (12/33) were treated successfully⁵. We did not quantify pain, but we believe subjective patient satisfaction with the achieved pain reduction is most important. Patient satisfaction is an important measure in pain management and equates to a $\geq 50\%$ reduction in pain⁹. Two other studies used RFD directly at the lateral margins of the Foramina sacralia (lateral branch block). Sensory guided stimulation was used to select the symptomatic lateral sensible branches, who were treated with RFD. Defining a positive outcome a pain relief $\geq 50\%$ Yin et al. found a good outcome in 64% (11/16) after 6 months and Buijs et al. in 60,5% (23/43) after 3 months⁴⁶. Having the small sample sizes in mind our patient achieved a comparable outcome. Cohen und Abdi used lateral branch blocks like described above and additionally denervated the Rami Dorsales L4-L5. 9 months after the RFD 89% (8/9) patients reported a substantial pain relief⁷. Gevargez et al. only denervated the Rami Dorsales L5 and the cranial parts of the posterior interosseus ligaments at one height. After 3 months 34,2% (13/38) of the patients were free of pain, 31,6% (12/ 38) reported a substantial pain relief and another 18,4% (7/38) reported a slight decrease in pain intensity⁸. So in this study about 92% of the patients reported a benefit from the intervention after 3 months compared to 57% in our sample. So probably the different technique matters and the extensive denervation of the nerves running inside the cranial aspects of the posterior interosseus ligaments is able to produce better results.

Limitations of this study include the retrospective assessment of the outcome with a questionnaire and, like in the other studies, the small number of patients and the lack of a control group.

In conclusion it seems that some patients with SIJ-Syndrome benefit from RFD. So it could be a therapeutic option in patients with difficult to treat chronic low back pain. Investigations with greater sample size and especially control groups are needed to compare the different techniques and to identify patients benefiting from RFD.

References

1. Van Tulder MW. Treatment of low back pain: myths and facts. *Schmerz* 2001; 15: 499-503
2. Cohen SP. Sacroiliac joint pain: a comprehensive review of anatomy, diagnosis, and treatment. *Anesth Analg* 2005; 101: 1440-1453
3. Grob K, Neuhuber W, Kissling R. Innervation of the sacroiliac joint of the human. *Z Rheumatol* 1995; 54: 117-122
4. Yin W, Willard F, Carreiro J, Dreyfuss P. Sensory stimulation- guided sacroiliac joint radiofrequency

neurotomy: technique based on neuroanatomy of the dorsal sacral plexus. Spine 2003; 28: 2419-2425

5. Ferrante FM, King LF, Roche EA, Kim PS, Aranda M, De Laney LR, Mardini IA, Mannes AJ. Radiofrequency sacroiliac joint denervation for sacroiliac syndrome. Reg Anesth Pain Med 2001; 26: 137-142

6. Buijs EJ, Kamphuis ET, Groen GJ. Radiofrequency treatment of sacroiliac joint-related pain aimed at the first three sacral dorsal rami: a minimal approach. The Pain Clinic 2004; 16: 139-146

7. Cohen SP, Abdi S. Lateral branch blocks as a treatment for sacroiliac joint pain: a pilot study. Reg Anesth Pain Med 2003; 28: 113-119.

8. Gevargiz A, Groenemeyer D, Schirp S, Braun M. CT-guided percutaneous radiofrequency denervation of the sacroiliac joint. Eur Radiol 2002; 12: 1360- 1365

9. Farrat JT, Young JP, LaMoreaux L, Werth JL, Poole RM. Clinical importance of changes in chronic pain intensity measured on an 11-point numerical pain rating scale. Pain 2001; 94: 149-158.

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