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ORIGINAL ARTICLE

The evaluation of radiofrequency facet nerve denervation in the patients with lumbar facet syndrome: experience with 493 patients

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ABSTRACT

Objective: Radio frequency thermocoagulation (RFT) is a relatively new modality and has been recommended for treatment of back pain diagnosed as to be originating from spinal facet joints. We aimed to evaluate the efficacy of this novel procedure in our patients with lumbar facet syndrome in our department of algology.

Methodology: In this retrospective, observational study, the medical records of 493 lumbar facet syndrome patients treated using RFT in 2008-2013, were reviewed. All data were obtained from the pain evaluation cards in the patient files and recorded. Data of age, sex, visual analog scale (VAS) scores before and after the therapy and satisfaction scores after the therapy were recorded from medical records of the patients. Visual analogue scale (VAS) pain scores, daily activities (1= poor to 4 = very good) and satisfaction scores (1= poor to 4 = excellent) before the procedure and at the day 1, day 2, and then at one week, 2 weeks, one month, 6 months and 12 months following the procedure, were reviewed and recorded.

Results: Mean VAS score before the therapy was 8.03 ± 1.06, one month after the therapy it was significantly reduced and 6 months after the therapy it was found as 2.18 ± 0.76. The satisfaction scores were found significantly higher after therapy. Data of movement scores were found higher after the therapy than the scores before therapy. No complication was noted in any of the patient.

Conclusion: We conclude that radio frequency thermocoagulation (RFT) can lead to significant long-term improvement in low back pain, and it can improve the physical function ability to a greater extent in patients with facet pain syndrome.

Key words: Facet syndrome; Low back pain; Pain measurement; Radiofrequency thermocoagulation; Visual analogue scale

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INTRODUCTION

There are many disorders that affect human life but low back pain (LBP) appears to be one of the most common among them. The most probable cause of LBP is lumber disc disease but facet joints may also cause this type of pain. In contrast to classic sciatica caused by disc herniation, resting does not help in facet joint syndrome. Treatment options for chronic LBP are conservative treatment, pain management therapy, or surgical treatment. Surgical treatment is often dreaded by the patients. One of the recent

interventional pain management procedure is radiofrequency thermocoagulation (RFT), (also called radiofrequency ablation) of the medial branch that innervates the particular facet joint/s, believed to be the source of pain.[1-3]

Many studies have stated the inadequacy in diagnosing facet joint pain with the help of history, physical examination and radiologic findings and concluded that an analgesic response to intraarticular medial branch or facet nerve block is the only sure method to identify facet joint pain, besides being a treatment method to control pain [2-4] RFT has been shown to be effective in the treatment of lumber facet syndrome (LFS).[5-10] The principle of RF ablation is production of heat that damages some or all of the nerve fibers in the target nervous structure. It has been suggested that a lesion created by this method had a selective effect on C and A-delta fibers. However, later on it was shown that the said application affected both thin and thick fibers equally and provided analgesia. Its target is to block pain stimuli transmission from peripheral receptors to the central pain structures.[1,10]

In our study we aimed to evaluate the efficacy of RFT in the patients with LFS in our department of algology.

METHODOLOGY

In this retrospective, observational study, the medical records of 493 LFS patients, treated using RFT during a period of 2008-2013, were reviewed. The patients, that had no diagnosis of LFS and had been operated with RFT, were excluded from the study. All data were obtained from the pain evaluation cards in the patient files and recorded. Data of age, sex, visual analog scale (VAS) scores before and after the therapy and satisfaction scores after the therapy were recorded.

The RFT procedure was the same for all patients. All the patients were taken to the operating room, baseline monitoring was done and injection area was cleaned by antiseptic solution. After fluoroscopic guided detection of injection point, 2% prilocaine (Priloc 2%, Astra Zeneca, Turkey) was injected for skin and subcutaneous anesthesia. Localization of electrode in the facet joint causing pain was determined by sensorial stimulus and scope device. Pulsed RFT was applied for 6 min at 40°C and 1.5 ml of a mixture of 20 mg methylprednisolone acetate and 5 mg bupivacaine was injected to the facet joint. In our clinic, all procedures were undertaken by the same physician.

Data on age, height, weight, gender and duration of pain, were recorded from medical records of the patients. Visual analogue scale (VAS) pain scores, daily activities (1= poor, 2 = normal. 3 = good, and 4 = very good) and satisfaction scores (1= poor, 2 = satisfied, 3 = much satisfied and 4 = very satisfied) before the procedure and at the day 1 and day 2. Follow-up visits were scheduled at one week, at 2 weeks, one month, 6 and 12 month following the procedure, and the patients were reviewed and VAS recorded in the patient cards. Data were analyzed statistically and the results are presented as number (percentage) or mean ± standard deviation. Any complication was also noted.

RESULTS

Data of a total of 493 patients were analyzed, out of which 187 (37.9%) patients were male and 306 (62.1%) were females. Mean age of the patients was found to be 51.86 ± 13.76 years (Table 1).

Table 1: Demographic data (mean ± SD)

Parameter	Result (n=40)
Age (year)	51.86 ± 13.76
Height (cm)	160.52 ± 8.63
Weight (kg)	75.05 ± 11.02
Gender [Male/Female]	187/306

Mean VAS score before the therapy was 8.03 ± 1.06, 1 month after the therapy it was significantly reduced to 3.18 ± 0.64 and after 6 months it was 2.18 ± 0.76 ($p < 0.05$). When the satisfaction data were analyzed it was found higher after the RFT procedure ($p < 0.05$). Data of movement and function ability scores were found higher after the therapy than the scores of pre therapy ($p < 0.05$) (Table 2). Patients had no complications.

DISCUSSION

The patients that had been treated in our department were evaluated in this study. It was shown that RFT procedure is an effective and safe method for LFS patients. RFT of the medial branch has been shown to improve function, reduce pain, and decrease the analgesic use for 6–12 months in patients with LFS. These data demonstrated clinically significant improvements in self-reported function, pain, and analgesic use at a median follow-up over 5 years in several studies.[1,11-16]

A significant decrease was observed in pain scores compared to baseline in a study of Dreyfuss et al. (4), and results obtained up to 12 months in LFS treatment with RFT were similar to our study. Yilmaz et al.[17] studied radiofrequency facet joint neurotomy

Table 2: VAS, activity score, satisfaction scores of the patients

Observation time	VAS Mean ± SD	Activity Mean ± SD	Satisfaction Mean ± SD
Baseline	8.03 ± 1.06	2.36 ± 0.72	-
Day 1	4.13 ± 1.35*	3.71 ± 0.58*	2.73 ± 0.46
Day 2	4.06 ± 1.22*	3.76 ± 0.50*	2.70 ± 0.64
Week 1	3.90 ± 1.09*	3.43 ± 0.56*	3.46 ± 0.43#
Week 2	3.20 ± 0.84*	3.56 ± 0.50*	3.23 ± 0.85#
Month 1	3.18 ± 0.64*	3.63 ± 0.49*	3.23 ± 0.85#
Month 6	2.18 ± 0.76*	3.70 ± 0.46*	4.13 ± 0.85#
Month 12	3.94 ± 1.25*	3.20 ± 0.52*	3.73 ± 0.58#

*$p < 0.05$ when compared with baseline values
# $p < 0.05$ when compared with day 1 values

in treatment of LFS and found lower VAS values than baseline values after treatment. In a placebo-controlled study, Leclaire et al.[9] reported that VAS values obtained by RFT after 4 weeks had been below those obtained at baseline and values obtained at week 12 had been below baseline values even if they were not as low as those obtained at week 4. Cho et al. [8] applied RFT in 324 patients some of whom had undergone spinal surgery and stated that a decrease had been observed in LBP in all of the patients after treatment. Similarly, in a study on 60 patients having LBP, Gallagher et al.[7] reported that RFT had reduced pain scores in long term.

Daily activities of patients were scored between 1 (poor) and 4 (very good) in our study. The improvement in activity scores up to 12 months was similar when compared to injection only group.[4] Cho et al. also observed the improvement in activity in their studies.[8] Unlike most of the other studies, no difference was observed in terms of activity scores between radiofrequency group and placebo group in the study of Leclaire et al.[9] In our study, satisfaction scores were found to be higher after the RFT procedure ($p < 0.05$). In contrast to our study, no change was observed in the study of Dreyfuss.[4]

No complications were observed in our patients, which is consistent with other similar studies.[4,8,17]

CONCLUSION

In conclusion, we believe that radiofrequency thermocoagulation is a widely accepted treatment for patients with lumber facet syndrome refractory to conservative care. Our data suggest that it may lead to significant long-term improvement in pain and to a greater extent, improvement in function.

Conflict of interest: The authors declare no conflict of interest.

Author contribution: All authors contributed in the design and conduct of the study as well as data work and manuscript preparation

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