SCIE DOI: 10.14744/scie.2022.99907
South. Clin. Ist. Euras. 2022;33(4):384-387

Original Article

Results of Fluoroscopy-Guided Medial Branch Block for the Treatment of Lower Lumbar Facet Joint Pain: A 2-year Follow-up

Mustafa Umut Etli,[1] Serdar Onur Aydın[2]

[1]Department of Neurosurgery, Siverek State Hospital, Şanlıurfa, Türkiye
[2]Department of Neurosurgery, Ümraniye Training and Research Hospital, İstanbul, Türkiye

Submitted: 15.08.2022
Revised: 15.08.2022
Accepted: 12.10.2022

Correspondence: Mustafa Umut Etli, Siverek Devlet Hastanesi, Beyin ve Sinir Cerrahisi Kliniği, Şanlıurfa, Türkiye
E-mail: umutetli@gmail.com

Keywords: Block injection; facet joint; medial branch; nerve block.

ABSTRACT

Objective: In this study, we aimed to measure the adequacy of facet joint block injections for pain relief during the 2-year follow-up and evaluate the follow-up results of patients who were candidates for facet joint block injection.

Methods: This study included 243 patients who administered facet joint block injections in our clinic between 2018 and 2020. Their medical records created over 2 years were examined. We evaluated the demographic features of patients, the need for an additional facet joint block injection, the need for additional surgery, the reason for the additional surgery or the blockage procedure, and the interval between the first interventional procedure and surgery, as well as additional interventional procedures and the need for additional treatment from the physical therapy, algology, or orthopedics departments.

Results: Of the patients included in the study, 93 were male and 150 were female (mean age: 54.55 years, range: 16–90 years). Of them, 62.5% experienced pain palliation after the first facet block injection intervention; 5.7% improved after the first procedure, but the procedure had to be repeated between mean 8.4 months; and 11.4% underwent decompression and instrumentation surgery between 1 and 24 months. Those who did not benefit from the procedure continued to receive treatment in the physical therapy department (14.7%), algology department (0.8%), and the orthopedics department (5.7%) after the procedure.

Conclusion: Facet joint block injection is a treatment method with high a success rates because it is less invasive compared to surgical methods for pain associated with the facet joint and eliminates the need for long-term treatment with other branches.

INTRODUCTION

Low back pain is a common cause of chronic pain and disability, associated with broad diagnoses and unfavourable results. However, due to chronic recurrent pain, multiple sources of pain, and non-specific radiological findings, determining the source of pain remains challenging. Facet joint arthrosis contributes to pain, so patients with facet joint disorders may complain of neck pain, back pain, and pain worsened by hyperextension, lateral bending, and rotation. Pain of the facet joints, which can be caused by severe loads, especially in the cervical and lumbar regions, does not have specific clinical markers.[1] Osteoarthritis, segmental instability, trauma, meniscoid impingement, and inflammatory synovitis can all cause discomfort in the facet joints.[2,3]

As facet joints are well innervated by the medial branches of the dorsal branches, the techniques applicable to these structures are lumbar facet joint nerve blocks, and lumbar facet joint radiofrequency neurolysis, and intra-articular injections.[4] Facet joint injections are one of the most common spinal interventions.[5] While studies have reported positive results of up to 90% for facet nerve blocks applied with multiple interventions, the evidence values of these studies vary from fair to good.[4]

This study aimed to measure the adequacy of facet joint block injections for pain relief during a 2-year follow-up and to evaluate the results of patients eligible for facet joint block injections during the follow-up.

MATERIALS AND METHODS

We included 243 patients who administered with facet joint block injections in the Neurosurgery Clinic of Umraniye Training and Research Hospital between 2018 and 2020. Data were recorded retrospectively from medical charts. The inclusion criteria were patients who did not benefit from medical treatment or physical therapy and those who were treated for the 1st time under local anes-

thesia. The exclusion criterion was the history of facet joint block injection. The medical records of the patients created over 2 years were examined. We evaluated the demographic features of patients, the need for an additional facet joint block injection, the need for additional surgery, the reason for the additional surgery or the blockage procedure, and the interval between the first interventional procedure and surgery, as well as the additional procedures and the need for additional treatment from the physical therapy, algology, or orthopedics departments.

Facet joint blockage was performed on all patients in the prone position, with the skin cleaned with iodine. Instead of sedation, local anesthetic was administered to numb the skin. All procedures were performed by one and the same experienced specialists with more than 5 years of experience. The adequate needle was inserted to the facet under X-ray guidance and contrast dye was used to confirm the location of the needle. Next, a mixture of numbing and steroid medication was injected slowly.

Ethical approval for the study was obtained from Ümraniye Training and Research Hospital Ethics Committee with the B10.1.TKH.4.34.H.GP.0.01/242 ID number.

RESULTS

Of the 243 patients examined, 93 were male and 150 were female (mean age: 54.55 years, range: 16–90 years). At the time of admission, all patients complained of low back pain. Of them, 17.2% had mild radiating pain and 7.4% had sensory disturbance. None presented with acute neurological deficits. Analgesics were administered for medical treatment, but without improvement.

Among all patients, 62.5% experienced pain palliation after the first facet block injection intervention, and 5.7% improved after the first procedure, but the procedure had to be repeated between 1 and 24 (mean 8.4) months. In contrast, 31.8% underwent facet joint block injection and did not benefit from the intervention; 11.5% of them underwent decompression and instrumentation surgery between 1 and 24 months.

Of the patients who did not benefit from the procedure, 14.7% continued to receive treatment in the physical therapy department, 0.8% in the algology department, and 5.7% in the orthopedics department 4.2, 10, and 7.6 months (mean) after the procedure, respectively (Table 1).

DISCUSSION

Arthrosis of the facet joints is one of the causes of low back pain, but its mechanism cannot be determined definitively.[6,7] Based on the results of the diagnostic blocks performed according to the criteria defined by the International Association for the Study of Pain, the fact that the pain is associated with the facet joint by 15–45% supports this knowledge.[8]

Chronic back pain is defined as low back pain lasting longer than 12 weeks, and patients with low back pain complaints for more than 3 months were included in our study[9] In the treatment of chronic back pain, a multidisciplinary approach may be required along with medical, psychological, physical, and interventional approaches.

The functional unit of the spine, defined as the motion segment, consists of two adjacent vertebral bodies, an intervertebral disc, and two adjacent facets.[10] Facet joints are located between the pedicle and lamina of the same vertebra, forming movable joint columns that provide structural stability to the vertebral column. While the lumbar facet joints are innervated by the medial branch of the spinal dorsal ramus, capsules of the facets are rich in nociceptive receptors that cause pain when irritated by mechanical stimulation or inflammation.[11,12] Low back pain can originate from the medial or lateral branches of the dorsal rami that are compressed or retracted due to repeated stress and damage to the spine.

Treatment interventions for facet joint pain include intra-articular injection, medial branch nerve block, and radiofrequency neurolysis.[8] However, the best approach remains controversial[13] Medial branch nerve block and radiofrequency neurolysis of the medial branches of the dor-

Table 1. Distribution of treatment methods according to the age of the patients and the time after the first block intervention

Treatment method	Number of patients	Mean age	Time since last block (months)
Single-time facet block injection	152 (62.5%)	53.5 (16–90)	–
Multiple-time facet block injection only	14 (5.7%)	59 (28–81)	8.4 (1–24)
Physical therapy only after a single-time block injection	28 (11.5%)	53.4 (28–70)	4.2 (1–24)
Physical therapy only after multiple facet block injection	7 (2.8%)	62.2 (46–81)	6.2 (1–17)
Orthopedic treatment after block injection	11 (4.5%)	51.3 (33–68)	7.6 (1–24)
Algology treatment only after block injection	1 (0.4%)	55	17
Physical therapy and orthopedic treatment after block injection	1 (0.4%)	36	4
Algology therapy and orthopedic treatment after block injection	1 (0.4%)	47	2
Surgery only after block injection	17 (6.9%)	57.9 (40–73)	6.6 (1–24)
Surgery and physical treatment after block injection	11 (4.5%)	58.4 (42–73)	3.3 (1–8)

sal rami are long-term and effective treatments for facet joint discomfort. In comparison to radiofrequency-assisted neurolysis, the long-term therapeutic outcomes of intra-articular injections for the facet joints have not been proven adequate[14,15] and as an alternative to radiofrequency neurolysis, medial branch blocks can be performed.[8,14,15]

Although anesthetic-related analgesia is observed immediately after facet joint injection, the steroid effect develops within 1–5 days. It is predicted that the developing effect will continue from 1 month to 2 years and that the rate of benefit from the injection is approximately 70%.[16] The low success rates of this approach may be due to the facet joint being the cause of low back pain alongside other pathologies.

In patients with other underlying causes such as discogenic disorders, spinal stenosis, fibromyalgia, facet joint injections are insufficient, and these patients opt for physical therapy in <3 months after the procedure. Patients with chronic diseases such as diabetes mellitus, hypertension, and obesity require reblocking or physical therapy polyclinic application because their pain does not improve in a short time after facet joint blockage.

In our study, we evaluated the medial bundle branch block, which is one of the facet joint interventions, and found that 68.2% of patients experienced pain palliation, which is consistent with the literature. During the 2-year follow-up, 62.5% of these patients did not require any surgical intervention, additional block, orthopedic treatment, algology treatment, nor physical therapy after the block procedure, and 82.7% were able to continue their daily lives with supportive physical therapy in addition to facet joint block injection and did not require additional treatment.

This study was limited due to its retrospective nature and the lack of a specific pain scoring system. In addition, the facet joint block injection method was not compared with other facet joint intervention methods since it is rarely used in our clinic.

CONCLUSION

Facet joint block is a treatment method that should be kept in mind with high success rates, as it is less invasive compared to surgical methods for pain associated with the facet joint and eliminates the need for long-term treatment with other branches. At the same time, facet joint block can be used as an alternative method to other facet joint interventions, as it is an easily applicable and accessible method.

Acknowledgment

We specially thank Dr. Murat Sait Seçkin, the surgeon who performed the procedure, for sharing details of the technique and patient data in this study. Preparation for publication of this article is partly supported by Turkish Neurosurgical Society.

Ethics Committee Approval

This study approved by the Ümraniye Training and Research Hospital Ethics Committee (Date: 11.08.2022, Decision No: B10.1.TKH.4.34.H.GP.0.01/242).

Informed Consent

Retrospective study.

Peer-review

Externally peer-reviewed.

Authorship Contributions

Concept: M.U.E.; Design: M.U.E., S.O.A.; Supervision: S.O.A.; Fundings: M.U.E.; Materials: M.U.E., S.O.A.; Data: S.O.A.; Analysis: M.U.E.; Literature search: M.U.E., S.O.A.; Writing: M.U.E., S.O.A.; Critical revision: S.O.A.

Conflict of Interest

None declared.

REFERENCES

1. Sehgal N, Dunbar EE, Shah RV, Colson J. Systematic review of diagnostic utility of facet (zygapophysial) joint injections in chronic spinal pain: an update. Pain Physician 2007;10:213–28. [CrossRef]
2. Peh W. Image-guided facet joint injection. Biomed Imaging Interv J 2011;7:e4.
3. Silbergleit R, Mehta BA, Sanders WP, Talati SJ. Imaging-guided injection techniques with fluoroscopy and CT for spinal pain management. Radiographics 2001;21:927–39. [CrossRef]
4. Falco FJ, Manchikanti L, Datta S, Sehgal N, Geffert S, Onyewu O, et al. An update of the effectiveness of therapeutic lumbar facet joint interventions. Pain Physician 2012;15:E909–53. [CrossRef]
5. Kim BR, Lee JW, Lee E, Kang Y, Ahn JM, Kang HS. Intra-articular facet joint steroid injection–related adverse events encountered during 11,980 procedures. Eur Radiol 2020;30:1507–16.
6. Eubanks JD, Lee MJ, Cassinelli E, Ahn NU. Prevalence of lumbar facet arthrosis and its relationship to age, sex, and race: an anatomic study of cadaveric specimens. Spine (Phila Pa 1976) 2007;32:2058–62.
7. Kalichman L, Li L, Kim D, Guermazi A, Berkin V, O'Donnell CJ, et al. Facet joint osteoarthritis and low back pain in the community-based population. Spine (Phila Pa 1976) 2008;33:2560–5.
8. Manchikanti L, Singh V, Falco FJ, Cash KA, Pampati V. Lumbar facet joint nerve blocks in managing chronic facet joint pain: one-year follow-up of a randomized, double-blind controlled trial: Clinical Trial NCT00355914. Pain Physician 2008;11:121–32 . [CrossRef]
9. Atlas SJ, Deyo RA. Evaluating and managing acute low back pain in the primary care setting. J Gen Intern Med 2001;16:120–31.
10. Jaumard NV, Welch WC, Winkelstein BA. Spinal facet joint biomechanics and mechanotransduction in normal, injury and degenerative conditions. J Biomech Eng 2011;133:071010. [CrossRef]
11. Takahashi Y, Ohtori S, Takahashi K. Dorsoventral organization of sensory nerves in the lumbar spine as indicated by double labeling of dorsal root ganglion neurons. J Orthop Sci 2010;15:578–83.
12. Ashton IK, Ashton BA, Gibson SJ, Polak JM, Jaffray DC, Eisenstein SM. Morphological basis for back pain: the demonstration of nerve fibers and neuropeptides in the lumbar facet joint capsule but not in ligamentum flavum. J Orthop Res 1992;10:72–8. [CrossRef]
13. Han SH, Park KD, Cho KR, Park Y. Ultrasound versus fluoroscopy-guided medial branch block for the treatment of lower lumbar facet joint pain: A retrospective comparative study. Medicine (Baltimore) 2017;96:e6655. [CrossRef]

14. Boswell M. Therapeutic facet joint interventions in chronic spinal pain: a systematic review of their role in chronic spinal pain management and complications. Pain Physician 2005;8:101–14.
15. Boswell MV, Trescot AM, Datta S, Schultz DM, Hansen HC, Abdi S, et al; American Society of Interventional Pain Physicians. Interventional techniques: evidence-based practice guidelines in the management of chronic spinal pain. Pain Physician 2007;10:7–111. [CrossRef]
16. Civelek E, Cansever T, Kabatas S, Kircelli A, Yilmaz C, Musluman M, et al. Comparison of effectiveness of facet joint injection and radiofrequency denervation in chronic low back pain. Turk Neurosurg 2012;22:200–6. [CrossRef]

Alt Lomber Faset Eklem Ağrısının Tedavisinde Floroskopi Rehberliğinde Medial Dal Bloğu Sonuçları: 2 Yıllık Takip

Amaç: Bu çalışmada, faset eklem bloğu enjeksiyonu adayı olan hastaların iki yıllık takibinde faset eklem bloğu enjeksiyonlarının ağrı kesmedeki yeterliliğini ölçmeyi ve takip sonuçlarını değerlendirmeyi amaçladık.

Gereç ve Yöntem: Bu çalışmaya 2018–2020 yılları arasında kliniğimizde faset eklem bloğu enjeksiyonu yapılan 243 hasta dahil edilerek iki yıl boyunca oluşturulan tıbbi kayıtları incelendi. Hastaların demografik özellikleri, ek faset eklem blok enjeksiyonu ihtiyacı, ek cerrahi ihtiyacı, ek cerrahi veya blokaj işleminin nedeni, ilk blokaj ile ek blokaj veya cerrahi arasında geçen süre ve fizik tedavi, algoloji veya ortopedi bölümlerinden ek tedavi ihtiyacı varlığı olup olmadığı değerlendirildi.

Bulgular: Çalışmaya dahil edilen hastaların 93'ü erkek, 150'si kadındı (ortalama yaş: 54.55, dağılım: 16–90). Bunların %62.5'i ilk faset blok enjeksiyon girişiminden sonra kalıcı ağrı palyasyonu yaşarken hastaların %5.7'sinde ilk işlemden sonra geçici ağrı palyasyonu izlendi ve ortalama 8.4 ay arasında işlemin tekrarlanması gerekti. Hastaların %11.4'ü 1–24 ay arasında dekompresyon ve enstrümantasyon cerrahisi geçirdi. İşlemden fayda görmeyen hastaların tedavileri işlem sonrası fizik tedavi (%14.7), algoloji (%0.8) ve ortopedi (%5.7) bölümlerinde devam etti.

Sonuç: Faset eklem bloğu enjeksiyonu faset eklemlere bağlı ağrılarda cerrahi yöntemlere göre daha az invaziv olması ve diğer branşlarla uzun süreli tedavi ihtiyacını ortadan kaldırması nedeniyle başarı oranı yüksek bir tedavi yöntemidir.

Anahtar Sözcükler: Blok enjeksiyonu; faset eklem; medial dal; sinir bloğu.