

# Short Term Results After Local Application of Steroids and Anesthetics in Patients with Painful Spine Conditions

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## ABSTRACT

**Introduction:** Spinal pain is the most common of all chronic pain disorders. Imaging studies can be used to determine whether a pathological process is associated with the patient's symptoms. **Objective:** To determine the short-term efficiency of local instillation of steroids in patients with painful spine conditions. **Materials and methods:** A prospective study included 35 patients with diagnosis of lumbar or cervical radiculopathy, or cervical and lumbar syndrome at the Department for the Physical Medicine and Rehabilitation, Department for the Orthopedics and Traumatology, and Department for the Neurosurgery, Clinical Center University of Sarajevo (KCUS). A clinical examination, visual pain scale (VAS) and Oswestry Disability Index (ODI) were performed prior to the needle procedure and seven days after it. Descriptive and comparative statistics were used for comparison of pre and post-interventional results. This procedure was done for the first time in our region. **Results:** The males and females were equally represented in this study (17:18). The patients were 29 to 80 years old. The highest number of patients have been between 40-60 years, older than that have been 44,2% of patients, and younger only 8,5%. Patients have complained about the radicular pain along the legs or arms or back or neck pain. Most of them had disc herniation—57,14%, 8,57% had bulging disc, 8,57% had spinal canal stenosis, 5,71% had fasetarthrosis, rest of them had combination of those conditions. There was a statistically significant difference between the value of ODI score before procedure and 7 days later ( $26 \pm 10:16 \pm 12$ ;  $p < 0,001$ ). The difference was also statistically significant in VAS values ( $7 \pm 1:1 \pm 1$ ;  $p < 0,001$ ). **Discussion:** Our study suggests that needle instillation of steroid and lidocaine is effective in short-term pain occurs in different painful spine conditions (Sy cervicale, lumbare and radiculopathy). It is valuable alternative to the classic methods of physical and drug therapy. It can also postpone surgical treatment, and it is very useful in situations of diffuse degenerative changes when is very important to define exact source of pain, like for instance in hip-spine syndrome.

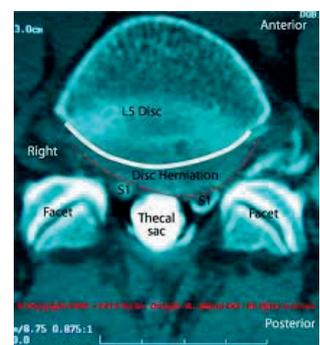
**Key words:** spine, needle, instillation, steroid.

## 1. INTRODUCTION

Spinal pain is the most common of all chronic pain disorders. There are many factors that have been implicated in the genesis of back pain and disability that can be used to determine whether a pathological process seen on imaging studies is associated with symptoms experienced by a patient (1-5). Certain of these factors are based on epidemiological studies while others are based on clinical findings and physiological tests (1-4). The life time prevalence of spinal pain has been reported as 54% to 80% (4). Annual prevalence of chronic low back pain ranges from 15% to 45% (5-8). Intervertebral disc herniation is a commonest cause of lumbosacral radiculopathy (Figure 1.).

Many interventions have been employed in the treatment of chronic low back pain and lumbosacral radiculopathy, non-surgical and surgical (9-13). A huge part of these patients recover with non-surgical treatment, and just 10%–15% of patients will require surgical care. There is no intervention which provide definite and long-term

improvement in chronic low back pain at each patient (14). Epidural steroid injections (ESI), nerve root blocks and facet joint injections has been used for decades for the treatment of spinal pain, particularly for faset arthrosis and radiculopathy (15-17). The goal of any treatment is to reduce pain, improve a function and to reduce surgical intervention (18). Many studies have demonstrated the efficacy of needle injections of steroids (19-23). Since there is no unique strategy in treatment of those conditions, we have performed this study with its aim to determine short term (one week) efficiency of selective nerve root



**Figure 1.** Disk herniation on MR axial section of a lumbar spine

and fastet blocks (SNRB, FB) at patients with lumbar and cervical syndromes as well as radiculopathy.

## 2. MATERIALS AND METHODS

A prospective study included 35 patients with diagnosis of lumbar or cervical radiculopathy, or cervical and lumbar syndrome at the Department for the Physical Medicine and Rehabilitation, Department for the Orthopedics and Traumatology, and Department for the Neurosurgery, Clinical Canter University of Sarajevo (KCUS).

The inclusion criteria were:

- syndroma cervicale, lumbare or radiculopathy (sciatica or brachialgia), isolated or in combination,
- positive MRI finding which correspond to the clinical symptoms,
- less than one year duration, no respond to non-invasive treatment.

The exclusion criteria were:

- known contraindications to procedure, or motor weakness,
- patients who decline to participate in the study.

A clinical examination, visual analogue pain scale (VAS) and Oswestry Disability Index (ODI) were performed prior to the needle procedure and seven days after it.

VAS is one way pain measurement subjective scale rated 0-10, and it is usually used in the clinical practice for assessment of pain after surgical and non-surgical interventions.

The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is important tool that researchers and disability evaluators use to measure a patient permanent functional disability. The test is considered as the „gold standard“ of low back functional outcome tools (24). On the ODI scale (0-100), its reduction 10-20 points is considered moderate, more then 10 pts. small, while more then 20 is considered substantial disability.

Selective nerve root block and facet block have been performed by needle instillation of steroid and local anesthetic—Celestone and Lidocaine under X-ray visualization by C-arm (Figure 2.), depending on the clinical finding and MRI.



Figure 2. Needle instillation of local anesthetic and steroid under C-arm control.

## 3. RESULTS

The males and females were equally represented in this study (17,18). The patients were 29 to 80 years old. The highest number of patients have been between 40-60 years—51,42%, older then 60 years have been 44,2%, and younger then 40 years—8,5%. Patients have complained about the radicular pain along the legs or arms, or back or neck pain. Most of them had disc herniation—57,14%,

8,57% had bulging disc, 8,57% had spinal canal stenosis, 5,71% had fasetarthrosis, rest of them had combination of those conditions.

There was a statistically significant difference between the value of ODI score before procedure and 7 days later ( $26 \pm 10:16 \pm 12$ ;  $p < 0,001$ ). The difference was also statistically significant in VAS values ( $7 \pm 1:1 \pm 1$ ;  $p < 0,001$ ) (Figure 3.).

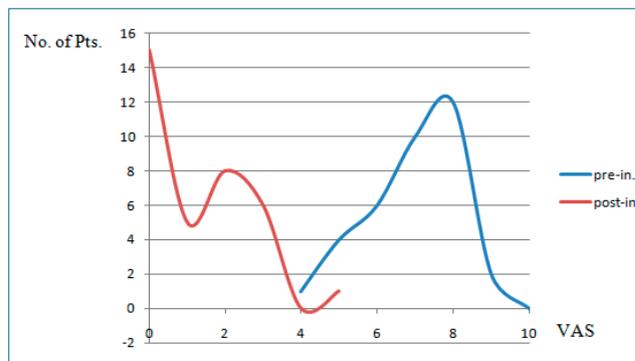


Figure 3. VAS before procedure and after 7 days.

## 4. DISCUSSION

In more than 70% of disk herniations, the disk material resolves on its own, given enough time; however, this process can be painful, and last for years. Despite SNRB and FB widespread usage, lack of randomized controlled trials resulted in questions about the efficacy of steroid injections. However, result of one study suggested that there was no difference between saline and steroids in relieving pain in the facet joint (24).

One prospective, randomized, controlled, double-blind study by Riew and others was performed in patients who were surgical candidates and who initially wished to undergo surgery to relieve radiculopathy from nerve root compression (25). Approximately 71% of those who underwent SNRB with betamethasone and bupivacaine after 14 months elected not to have surgery, whereas only 33% of those injected with bupivacaine alone avoided surgery. A subsequent follow-up study in this cohort found that most of the patients who avoided surgery for at least one year after undergoing SNRB with bupivacaine, with or without betamethasone, continued to avoid operative intervention for a minimum of 5 years (26).

Zennaro and others found the greatest efficacy of steroid injections in patients with foraminal stenosis, as compared with those who had foraminal disk herniations (27). Devulder found that SNRB with steroids was associated with decreased treatment scores in patients with failed back surgery syndrome, as compared with scores in those not treated with steroids (28). Most studies report an average time of pain relief as 1-3 months in those patients that have initial improvement, although some studies have described longer relief in a high percentage of patients.

Manchikanti performed randomized, double-blind, controlled trials to assess the efficacy of medial branch blocks for treating managing chronic neck or thoracic pain of facet joint origin (29, 30). Results were similar in patients treated with bupivacaine alone and those who received bupivacaine plus steroid: at 1 year, over 83% of

patients with neck pain and 79% of patients with thoracic pain showed significant pain relief and functional improvement. Patients required approximately 3 or 4 treatments a year.

Boswell and coauthors conducted a systematic review of facet joint interventions for treatment of chronic spinal pain (31). Their findings were as follows for cervical intra-articular facet joint injections: limited evidence for short- and long-term pain relief. For lumbar intra-articular facet joint injections: moderate evidence for short- and long-term pain relief. For cervical, thoracic, and lumbar medial branch nerve blocks with local anesthetics, with or without steroids: moderate evidence for short- and long-term pain relief with repeat interventions.

Our study suggests that needle instillation of steroid and lidocaine is effective in short-term pain revealing in different painful spine conditions (Sy cervicale, lumbare and radiculopathy). It is valuable alternative to the classic methods of physical and drug therapy. It can also postpone surgical treatment, and it is very useful for clinical testing when is necessary to define which level is responsible for the pain. Limitation of this study is a heterogeneous population of patients with cervicobrachial and lumbosacral syndrome, and its relatively low number of participants. However it has confirmed that this is important supplementation tho the therapeutic armatorium against this very common clinical problem.

## 5. CONCLUSION

Our results indicate that application of betamethasone and lidocaine causes a strong short-term improvement in reduction of pain and quality of life in patients with radiculopathy and/or back pain.

**CONFLICT OF INTEREST: NONE DECLARED**

## REFERENCES

- Andersson GB. The epidemiology of spinal disorders. In: Frymoyer JW, editor. *The Adult Spine, Principles and Practice*. 2nd ed. Philadelphia: Lippincott-Raven; 1997: 32-78.
- Burton AK, Clarke RD, McClune TD, Tillotson KM. The natural history of low back pain in adolescents. *Spine*. 1996; 21: 23-28.
- Taimela S, Kujala UM, Salminen JJ, Viljanen T. The prevalence of low back pain among children and adolescents. A nationwide, cohort-based questionnaire survey in Finland. *Spine*. 1997; 22: 1132-1136.
- Haldeman SD, Kirkaldy-Willis WH, Bernard TN, Jr. *An atlas of back pain*. New York: The Parthenon Publishing Group; 2002: 8-93.
- Abdi S, Datta S, Andrea M. Epidural steroids in the management of chronic spinal pain: A systematic review. *Pain Physician*. 2007; 10: 185-212.
- Lawrence RC, Helmick CG, Arnett FC. Estimates of the prevalence of arthritis and selected musculoskeletal disorders in the United States. *Arthritis Rheum*. 1998; 41: 778-799.
- Cassidy JD, Carroll LJ, Coté P. The Saskatchewan health and back pain survey: The prevalence of low back pain and related disability in Saskatchewan adults. *Spine*. 1998; 23: 1860-1867.
- Bressler HB, Keyes WJ, Rochon PA, Badley E. The prevalence of low back pain in the elderly. A systemic review of the literature. *Spine*. 1999; 24: 1813-1819.
- Hakelius A. Prognosis in sciatica: A clinical follow-up of surgical and non-surgical treatment. *Acta Orthop Scand Suppl*. 1970; 12: 129-136.
- Lassover EM, Alho A. Short-term prognosis in sciatica. *Amm Chir Gynaecol*. 1977; 66: 47-49.
- Saal JA, Saal JS. Nonoperative treatment of herniated lumbar Intervertebral disc with radiculopathy: An outcome study. *Spine*. 1989; 14: 431-437.
- Saal JA, Saal JS, Herzog RH. The natural history of lumbar Intervertebral disc extrusions treated nonoperatively. *Spine*. 1990; 15: 683-686.
- Weber H. Lumbar disc herniation: A controlled prospective study with ten years of observation. *Spine*. 1983; 8: 131-140.
- Bush K, Cowan N, Katz DE, Gishen P. The natural history of sciatica with associated disc pathology: A prospective study with clinical and independent radiologic follow-up. *Spine*. 1992; 17: 1205-1212.
- Khadilkar A, Milne S, Brosseau L, Robinson V, Saginur M, Shea B, et al. Transcutaneous electrical nerve stimulation (TENS) for chronic low-back pain. *Cochrane Database Syst Rev*. 2005; 3: CD003008.
- French SD, Cameron M, Walker BF, Reggars JW, Esterman AJ. A Cochrane review of superficial heat or cold for low back pain. *Spine*. 2006; 31: 998-1006.
- Clarke JA, van Tulder MW, Blomberg SE, de Vet HC, van der Heijden GJ, Bronfort G. Traction for low-back pain with or without sciatica. *Cochrane Database Syst Rev*. 2005; 4: CD003010.
- Schaufele MK, Hatch L, Jones W. Interlaminar versus transforaminal epidural injections for the treatment of symptomatic lumbar intervertebral disc herniations. *Pain Physicians*. 2006; 9: 361-366.
- Arden NK, Price C, Reading I, Stubbing J, Hazelgrove J, Dunne C, et al. A multicentre randomized controlled trial of epidural corticosteroid injections for sciatica: The WEST study. *Rheumatology (Oxford)*. 2005; 44: 1399-1406.
- Vad VB, Bhat AL, Lutz GE, Cammisa F. Transforaminal epidural steroid injections in lumbosacral radiculopathy: A prospective randomized study. *Spine*. 2002; 27: 11-16.
- Riew KD, Yin Y, Gilula L, Bridwell KH, Lenke LG, Lauryssen C. The effect of nerveroot injections on the need for operative treatment of lumbar radicular pain. A prospective, randomized, controlled, double-blind study. *J Bone Joint Surg Am*. 2000; 82-A: 1589-1593.
- Ng L, Chaudhary N, Sell P. The efficacy of corticosteroids in periradicular infiltration for chronic radicular pain: A randomized, double-blind, controlled trial. *Spine*. 2005; 30: 857-162.
- Manchikanti L. Transforaminal lumbar epidural steroid injections. *Pain Physician*. 2000; 3: 374-398.
- Carette S, Marcoux S, Truchon R, et al. A controlled trial of corticosteroid injections into facet joints for chronic low back pain. *N Engl J Med*. Oct 3 1991; 325(14): 1002-1007.
- Riew KD, Yin Y, Gilula L, et al. The effect of nerve-root injections on the need for operative treatment of lumbar radicular pain. A prospective, randomized, controlled, double-blind study. *J Bone Joint Surg Am*. Nov 2000; 82-A(11): 1589-1593.
- Riew KD, Park JB, Cho YS, et al. Nerve root blocks in the treatment of lumbar radicular pain. A minimum five-year follow-up. *J Bone Joint Surg Am*. Aug 2006; 88(8): 1722-1725.
- Zennaro H, Dousset V, Viaud B, et al. Periganglionic foraminal steroid injections performed under CT control. *AJNR Am J Neuroradiol*. Feb 1998; 19(2): 349-352.
- Devulder J, Deene P, De Laat M, Van Bastelaere M, Brusselmans G, Rolly G. Nerve root sleeve injections in patients with failed back surgery syndrome: a comparison of three solutions. *Clin J Pain*. Jun 1999; 15(2): 132-135.
- Manchikanti L, Singh V, Falco FJ, Cash KM, Fellows B. Cervical medial branch blocks for chronic cervical facet joint pain: a randomized, double-blind, controlled trial with one-year follow-up. *Spine (Phila Pa 1976)*. Aug 1 2008; 33(17): 1813-1820.
- Manchikanti L, Singh V, Falco FJ, Cash KA, Pampati V. Effectiveness of thoracic medial branch blocks in managing chronic pain: a preliminary report of a randomized, double-blind controlled trial. *Pain Physician*. Jul-Aug 2008; 11(4): 491-504.
- Boswell MV, Colson JD, Sehgal N, Dunbar EE, Epter R. A systematic review of therapeutic facet joint interventions in chronic spinal pain. *Pain Physician*. Jan 2007; 10(1): 229-53.