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Dr. Deepak Kumar
Assistant Professor, Department
of Orthopaedics, JNKTMCH,
Madhepura, Bihar, India

Ashutosh Kumar
Assistant Professor, Department
of Orthopaedics, DMCH,
Darbhanga, Bihar, India

Dr. Vidya sagar
Assistant Professor, Department
of Orthopaedics, JLNMC,
Bhagalpur, Bihar, India

Santosh Kumar
Professor and H.O.D.,
Department of Orthopaedics,
IGIMS, Patna, Bihar, India

Comparative study of three doses of epidural steroid injection with single dose of epidural steroid injection for lower back pain

Dr. Deepak Kumar, Ashutosh Kumar, Dr. Vidya Sagar and Santosh Kumar

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Abstract

Introduction: Low Back pain and lumbar radicular pain due to is one of the most common complaint in OPD patients. Epidural steroid injection have well established role in the treatment of lumbar radicular pain, but the exact dose of Epidural Steroid injection has yet to be decided. The aim of this study is “To Compare three doses of epidural steroid injection with single dose of epidural steroid injection for Lumbar Radicular pain patients.”

Materials and Methods: 50 patients with lumbar radicular pain were randomly allocated into 2 groups. In group A 25 patients were given 120 mg of Depo-medrol (40 mg three times) and in group B 25 patients were given 40 mg of Depo-medrol as a single dose. Both group A and Group B were matched in terms of age and gender. On visual analogue score (VAS) pain was assessed after 2 weeks, 3 months and 6 months.

Results: In group A (3 doses of depomedrol) VAS improvement at 2 weeks, 3 months and 6 months were more than group B(single dose of depomedrol) which was statistically significant ($p < 0.05$). There were no major complications like epidural hematoma or abscess formation in both groups. The overall minor complications like flushing, transient hyperglycemia and headache due to CSF hypotension were more in Group A than Group B but statistics shows no significant difference. All the complications resolved without any morbidity and no patient required further hospitalization.

Conclusion: In the case of lumbar radicular pain, Epidural Steroid Injection with 3 doses of Depo-medrol is more effective than a single dose of epidural steroid without significant increase risk of complications.

Keywords: Epidural injections, LBP, three doses, single doses

Introduction

The use of epidural injections in the cervical, thoracic and lumbo-sacral spine for both diagnostic and therapeutic purposes has developed as an important part of a comprehensive inter disciplinary approach to spinal pain ^[1, 2]. The purposes are diagnostic and therapeutic. It is well known that structural abnormalities seen on CT or MRI scans do not always cause pain, and diagnostic injections often can help correlate abnormalities on imaging studies with associated pain complaints. Therapeutically epidural injections can provide significant pain relief during which time recovery of disc and nerve root injuries can occur and patients also can progress their level of physical activity ^[7]. In acute disc injury with or without radiculopathy therapeutic injections can help manage the patient's pain without reliance on oral analgesics ^[8, 9, 2, 10].

Mechanism of Pain Relief: ^[2, 2] Primarily mechanism of action is due to potent anti-inflammatory properties of corticosteroids the marked pain relief noted with epidural steroid injections for acute radiculopathy may also be due to the stabilization of nerve root membranes by the corticosteroid suppressing the ectopic neuronal discharges, which can cause pain and paresthesias ^[1, 13].

Corticosteroids may also exert anesthetic action to block nociceptive C-fiber conduction independent of their anti-inflammatory properties ^[2].

Corresponding Author:
Ashutosh Kumar
Assistant Professor, Department
of Orthopaedics, DMCH,
Darbhanga, Bihar, India

Lumbar Epidural Steroid Injections: Lumbar epidural steroid injections are more effective in patients with pain of discogenic origin, especially if the condition is acute, involves a significant disc bulge or herniation and is associated with significant radicular pain [3, 14, 15, 16].

Identification of epidural space

When the needle enters the epidural space as compared to the marked resistance to injection with in the tough overlying ligamentum flavum and other dense soft tissues.

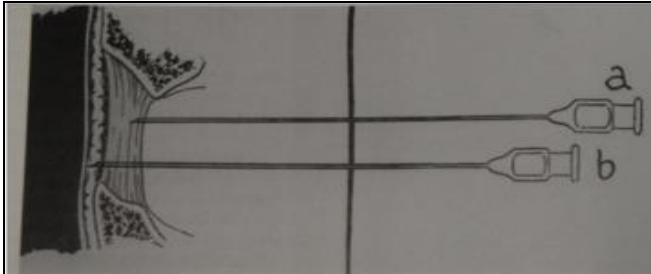


Fig 1.

Volume and Rate of injection:- 10-15 ml is most appropriate volume.

10 ml injected at the L4-L5 interspace usually spreads from L1 to S5 level.

The rate of epidural injection does not appreciably change the ultimate spread of injection.

Faster rate of injection – more pain during & after the procedure.

Patient selection & Monitoring: Each patient should be asked for Diabetes mellitus, Infection (past & present), Immunodeficiency, Any allergic reactions, Possibility of pregnancy, Blood clotting abnormalities or treatments.

General complications of medications & associated risks:

- Local Anaesthetics (lidocaine, bupivacaine) [1, 12, 16].
- CNS Toxicity – circum oral numbness, disorientation, light headedness, nystagmus, tinnitus, muscle twitchings.
- Corticosteroids [3, 17, 2]: (Methyl prednisolone, triamcinalone, beta methasone):
- Insomnia, mood swings, euphoria.
- Depression, post injection pain flare.
- Facial erythema, fluid retention.
- Hypertension, Congestive heart failure, Hyperglycemia, headache, gastritis, menstrual irregularities.
- Allergic anaphylactic reactions: Anaphylaxis occur most often within two hours after the epidural injection.
- Closed pit monitoring is important after epidural injection.

Treatment of dural puncture and Headache

24-48 hrs Bed rest. Intake oral fluids. IV or oral caffeine. Oral analgesics. Abdominal binders.

Analgesic patches may be required if headache is not subsided by 1 or 2 weeks.

Epidural abscess and hematoma: - Epidural abscess is very rare, is associated with the use of epidural catheter.

In patients with pre-existing systemic infections when we suspect epidural abscess patients complaints of severe back pain, fever & chills. Treatment is surgical laminectomy & debridement.

Any medication for blood clotting mechanism taken before the epidural injection could increase the risk of epidural hematoma (heparin, Coumadin, aspirin).

Contraindications

Caudaequina syndrome., Anti-coagulation or bleeding disorder., Suspected local or systemic infection.

Burn & Laugdon(2) documented depressed plasma cortisol levels occurring for about 2 weeks after epidural methyl prednisolone injection with a return to normal levels within 3 weeks.

Raff et.al.(2) Reported chronic suppression of ACTH secretion and decreased plasma cortisol levels for 3 months in patients receiving 80mg of triamcinalone at weekly intervals for 3 weeks.

Materials and Methods: In our study 50 patients were treated with Lumbar epidural steroid injections. 50 patients with lumbar radicular pain were randomly allocated into 2 groups. In group A 25 patients were given 120 mg of Depo-medrol (40 mg three times) and in group B 25 patients were given 40 mg of Depo-medrol as a single dose. Both group A and Group B were matched in terms of age and gender. On visual analogue score (VAS) pain was assessed after 2 weeks, 3 months and 6 months

Age ranged from 30 years to 50 years. All patients were suffering with lower back pain with sciatica. And they used analgesics and muscle relaxants for 3 to 4 weeks. Then patients opted for lumbar epidural steroid injection. X-rays were taken to see any radiological abnormalities. Routine blood investigations were done and MRI is suggested in willing patients as it is very costly. Then all patients were treated with Lumbar epidural steroid injections with midline approach [2]. Crawford or Tuohy needles are blunt, designed specifically for epidural injections were used.

Materials required are Betadine, sterile drapes, Local anesthetics, epidural needles gauge 18 or 20, corticosteroid injection vials, Loss of resistance syringe, fluoroscopy.

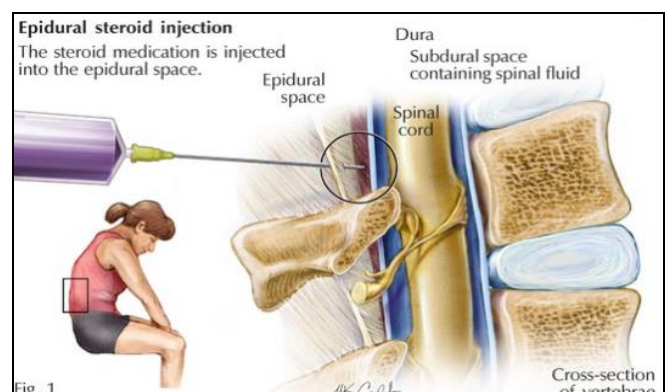


Fig 2.

Materials:



Fig 3.

Procedure: Patient is in sitting posture on stool and surgeon is sitting behind the patient, then back part is painted with betadine and draped, local anesthesia was given at a selected point. Then epidural needle was passed slowly by millimeter by millimeter in to the epidural space with the help of loss of resistance syringe. While entering the ligamentum flavum we can feel the resistance and we can appreciate the feeling of crossing the ligamentum flavum. Then once the needle is entered into the epidural space, the already prepared normal saline with steroid is injected into the epidural space.

Then needle is removed patient is shifted on to the bed and given rest for one hour in prone position. Dressing is done and patient is discharged after 2 hours.

Results And Observations: Especially in patients with lower back pain with spinal canal stenosis, after proper patient selection and evaluation, lumbar epidural steroid injections were given.

50 patients with lumbar radicular pain were randomly allocated into 2 groups. In group A 25 patients were given 120 mg of Depo-medrol (40 mg three times) and in group B 25 patients were given 40 mg of Depo-medrol as a single dose. Both group A and Group B were matched in terms of age and gender. On visual analogue score (VAS) pain was assessed after 2 weeks, 3 months and 6 months.

All 50 patients were evaluated for any pre-existing disease or illness prior to the lumbar epidural steroid injections. Results were analysed. Significant pain relief was observed in 60% of patients after the 1st dose of epidural steroid injection. After completion of 2nd and 3rd dose of injections results were observed pain relief was 90%. Physiotherapy was advised from 2nd month onwards. Follow up done up to till date. No recurrence of complaints and symptoms observed in 90% of patients. 10% of patient were not relieved by epidural steroid injections and they did not come for the follow up later on. 90% of patients reached to their normal activities within 3 months.

In our study dural puncture and headache was observed in 4 (0.5%) patients and it was relieved by giving complete bed rest for 1 or 2 weeks and plenty of oral fluids and IV fluids and advised to drink coffee 5 to 8 times a day. Headache was disappeared in all patients in 2 weeks. 2nd dose of epidural steroid injection was postponed in dural puncture patients and it was given after 3 to 4 weeks of bed rest. Blood patch was not required in any of the dural puncture patients.

Discussion: Lumbar epidural steroid injections are very effective in patients with acute lumbar discogenic pain with sciatica [19, 20, 21]. Results were compared with other studies. 90% excellent results were observed and many patients did not required surgery after lumbar epidural steroid injections and physiotherapy helped them to reach their normal activities with in shorter duration. Lumbar epidural steroid injections are appropriate for an outpatient procedure, provided all necessary resuscitative equipment available i.e. oxygen, intubation equipment, emergency drugs, IV access, monitoring pulse and BP for every 15 minutes and follow phone call after 24 hours

Conclusion: Lumbar epidurals are very effective in acute lumbar pain and may not require surgery just by MRI findings. It is very economic & Patients can reach their normal activity In many patients with proper clinical examination and evaluation if the discogenic pain is about 6 weeks duration after the onset of low backache it is better to

treat with lumbar epidural steroid injections. And we can minimize or misuse of oral analgesics, we can avoid Hospitalization and surgery just by MRI findings.

In the case of lumbar radicular pain, Epidural Steroid Injection with 3 doses of Depo-medrol is more effective than a single dose of epidural steroid without significant increase risk of complications.

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