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Dr. Ajith Kumar KS
Assistant Professor, Hassan Institute of Medical Sciences, Hassan, Karnataka, India

Dr. Lakshmeesha T
Associate Professor, Hassan Institute of Medical Sciences, Hassan, Karnataka, India

Dr. Sriranga N
Professor, Hassan Institute of Medical Sciences, Hassan, Karnataka, India

Dr. Poornachandra
Senior Resident, Hassan Institute of Medical Sciences, Hassan, Karnataka, India

Correspondence
Dr. Lakshmeesha T
Assistant Professor, Hassan Institute of Medical Sciences, Hassan, Karnataka, India

To study the efficacy of epidural steroid injection in the treatment of lumbar disc herniation

Dr. Ajith Kumar KS, Dr. Lakshmeesha T, Dr. Sriranga N and Dr. Poornachandra

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Abstract
Introduction: Low back pain is a problem that is common and its effective management remains a challenge [1].
Major cause of morbidity due to low back pain is prolapsed intervertebral disc which mostly affects young adults in their fourth decade of life. The treatment of lumbar disc herniation remains contro-versial. Lumbar epidural steroid injection is a reasonable non-surgical option available in lumbar disc disease.
Methods: 50 patients attending orthopaedic OPD in HIMS for the treatment of low back ache in the age group 20–70 years and who meet the inclusion criteria were selected for the study. Back pain for atleast six weeks in an adult male/female aged between 20-70 years with evidence of lumbar disc herniation at single level protrusion were included.
Results: The patients were followed up for a period of 6 months and were evaluated according VAS scores (visual analogue score) and SLRT (straight leg raising test) taken pre procedure and on follow up visits.
Beyond doubt steroid definitely helps control the chemical inflammation causing nerve root irritation which is believed to play a critical role in the genesis of radicular pain with and without the presence of mechanical compression of the nerve roots or cord. VAS score improved [pain relief] in 40 (80%) patients and worsened in 10(20%) patients.
Improvement in vas score [pain relief] by 2-4 in around 40 patients (80%) in the initial 2-16 weeks after ESI, at the end of 6 months it showed improvement in 20(40%) patients, remained almost same score 20(40%) patients and worsened in another 10 patients (20%).
SLRT was positive in 27(54%) patients, at the end of 6 months SLRT showed improvement in 13(26%) patients, remained same in 12(24%) patients and worsened in 2(4%) patients.
Conclusion: Epidural steroid injection probably accelerates pain relief in patients who eventually have natural resolution of radicular pain in a gradual delayed fashion. Epidural steroid could allow faster return to function during the natural history of sciatica.

Keywords: Epidural steroid, efficacy, lumbar disc prolapsed, VAS

Introduction
Low back pain (LBP) is the most common problem that causes morbidity and socioeconomic loss in the society. Although LBP is self-limiting, it leads to functional limitation when it is persistent and associated with radicular pain. This is among the most common reasons for use of medical services [1].
The treatment of lumbar disc herniation remains controversial. Epidural corticosteroid injections were first used to treat sciatica in the early 1950s, as reported by Lièvre *et al*. Low backache is the most common cause of work related disability in terms of worker's compensation and medical expenses. Risk factors include heavy weight lifting, twisting, obesity and poor postures etc. [2]
There are different modalities of treatment being adopted for low backache, which range from oral medications to operative interventions. More than 90% patients of lumbar disc herniation improve with conservative treatment [3]. Epidural steroid injection is a low-risk alternative to surgical intervention in some patients for whom non-invasive treatment has failed [4, 5].

It has been advocated because it modulates the body's response to inflammatory stimuli, such as those related to a disc herniation [6, 7].

Aim

To study the efficacy of epidural steroid injection in the treatment of lumbar disc herniation.

Materials and Methods

- **Source of data:** 50 patients attending orthopaedic OPD in HIMS for the treatment of low back ache in the age group 20 – 70 years and who meet the inclusion criteria will be selected for the study.
- Study period is for a period of 1.5 to 2 years with minimum follow up of 6 months.

Inclusion criteria

1. Back pain for atleast six weeks in an adult male/female aged between 20 -70 years with evidence of lumbar disc herniation at single level protrusion were included.
2. Symptomatic patients with disc herniations with positive MRI findings.

Exclusion criteria

1. Patients with low back pain lasting for less than 6 weeks,
2. osseous cause
3. bony canal stenosis
4. individuals who had undergone previous discectomy and epidural steroid injection
5. procedures
6. cauda equina syndrome and multiple level disc or spinal pathology were excluded.

Methods

All patients who presented with low back ache with radiation to one or both gluteal regions and posterior aspect of the thighs in combination with exacerbation while coughing and sneezing were evaluated initially in the outpatient department. The diagnosis was confirmed with radiographic imaging. Lateral and antero-posterior plain radiographs of lumbar spine were taken to evaluate osseous anatomy and alignment. Later magnetic resonance imaging was done to confirm the disc herniation, to grade the disc herniation and also to rule out other possible causes of back pain such as infection in spine, tumours of spine and intra-abdominal visceral causes which will have major bearing with respect to treatment and inclusion into the study. Haematological (viz., Hb, TC, DC, ESR, Platelet counts), biochemical (blood sugar, blood urea, serum creatinine), serological (HIV, HBsAg) investigation were done.

Technique

Epidural steroid injection was carried out in the operation theatre. Patient was positioned in lateral position. Injection containing Triamcinolone 40mg mixed with 3 to 4 ml of 2% lignocaine was injected to the epidural space without fluoroscopic guidance by interlaminar approach. All these injections were performed at one level cephalad to the disc herniation. All patients were prospectively assessed with clinical examination and questionnaires. The self-assessment questionnaire included a Visual analogue scale of 0 to 10 for assessment of current back pain and radicular pain. Pain drawing was used to indicate the magnitude of pain. The questionnaire and clinical examination was completed at presentation and at every follow up clinical visit. Follow up was carried out at one, six weeks, 12 weeks, 16 wks and six months interval after treatment.

Observations and Results: Out of 50 patients, 36 patients (72%) were between the Age 30-50 years, 32 (64%) were males and 18(36%) were females.

The level of disc prolapse was most common at L4-L5 in 43 (86%) patients, L5 -SI in 4 (8%) and L3-L4 in 3 (6%) patients.

VAS score improved [pain relief] in 40 (80%) patients and worsened in 10(20%) patients.

Improvement in VAS score[pain relief] by 2-4 in around 40 patients (80%) in the initial 2- 16 weeks after ESI, at the end of 6 months it showed improvement in 20(40%) patients, remained almost same score 20(40%) patients and worsened in another 10 patients.

SLRT was positive in 27(54%) patients, at the end of 6 months, SLRT showed improvement in 13 (26%) patients, remained same in 12(24%) patients and worsened in 2 (4%) patients.

Neurological involvement [slight weakness grade 3 or 4] was seen in 6 (12%) patients which remained same at 6 months follow up.

Discussion

Low back ache is a common problem among world wide population. Sciatica due to disc prolapse is the most common cause for radicular pain. Many treatment alternatives are available for the treatment of lumbar disc prolapse but many patients have a tendency to avoid surgical methods considering its complication, risk factors and cost. Lumbar epidural steroid injection is a reasonable alternative and non surgical option available in such situation. Low back pain may originate from many spinal structures including ligaments, facet joints, vertebral periosteum, paravertebral musculature, annulus fibrosus and spinal nerve roots. Most common causes are age related degenerative processes in the intervertebral disc and facet joints. Prolapse intervertebral disc is a very common disorder as evidenced by morphological abnormalities seen on MRI scanning.

Lumbar disc protrusions are more frequent in middle-aged people from third to the fifth decade of life. The herniation of the lumbar disc is more common at L4/5. In our study out of 50 patients, 36 patients (72%) were between the age 30-50 years, level of disc prolapse was most common at L4-L5 in 43(86%) patients, L5SI in 4 (8%)and L3L4 in 3 (6%) patients compared to other study [8] in which L4-L5 (58.7%) was the most common and the next common level was L5-S1(36%) this is similar with other study [9] done in 2007 (The mean age in study was 43 years range [9] from 21 to 65 years), and it is higher than other studies [10] Baldwin NG mean age of 34.96 years (range 21-72 years) [11, 12], Battie MC *et al*. Weber H.

In our study 32(64%) were males and 18(36%) were females which were comparable to study [9] Which includes 31 males (62%) and 19 (38%) females.

According to most literature, the common presentation of lumbar disc herniation was low back pain and sciatica [13]. In our study almost all patients presented with low back ache. SLRT{sciatica} was positive in 27 (64% patients), at the end of 6 months SLRT showed improvement in 13 (26%) patients, remained same in 12 patients (24%) and worsened in 2 patients (4%). This was in comparison with other studies in which all the cases presented with low back pain and sciatica. Right sciatica was found in 46.3% of cases whereas left sciatica was in 37.0% cases. Bilateral sciatica was present in

16.7% patients which are nearly similar to another study [14], Right sciatica was in 51.0%, left sciatica in 43% and bilateral sciatica in 6% of the PLID cases.

The positive straight leg raising test means is the involvement of nerve root. This test is usually positive in all levels of herniation (94%). Strongly positive test (under 30°) means that there is more frequently herniation in the lower discs. SLRT was positive in 27 pts (54%), at the end of 6 months. SLRT showed improvement in 13 (26%)patients, remained same in 12 (24%) patients and worsened in 2(4%) patients, this was in comparison to other Study [14] in which over 61% exhibited positive straight leg raising test (>30-80°) and over 11.1% were strongly positive straight leg raising test ($<30^0$).

Neurological involvement [slight weakness grade 3 or 4] was seen in 6 patients(12%) which remained same at 6 months follow up compared to other study [8] in which the presence of weakness in one or both extensor hallucis longus was reported by 42.9% participants, 35% reported the sensation of pin and needles and 737.4% reported numbness and sphincter dysfunction was present VAS score improved [pain relief] in 40 patients and worsened in 10 patients.

Improvement in VAS score[pain relief] by 2-4 in around 40 patientss (80%) in the initial 2- 16 weeks after ESI, at the end of 6 months it showed improvement in 20 patients(40%), remained almost same score in 20 patients (40%)and worsened in another 10 patients (20%) in comparison to other study [15] in which over a period of 3 months, there was an improvement in the assessment parameters of group that reached peak at the second month, and then began to change again without reaching their values before treatment. T here was a decrease in pain, confirmed by a decrease in the mean VAS value as well as a decrease in the mean ODI score.

The success rate with epidural steroid injections vary in literature, but most studies report a good success rate in short term with average success rate at 6 month has been 30-40% [16]. Wang *et al*. [17] found them to be effective in long term while Cukler *et al*. [18] reported no significant benefit by their use. Several trials have been conducted to evaluate exercise and drug treatment versus epidural steroid injections in people with Low back pain, with review articles in general reporting moderate efects. Nevertheless, for clinicians, the most important question is not which treatment is better than other, but which treatment is most effective.

Carefully planned surgical interventions, though successful, entail high cost to the person, family and thus society. Long term comparative studies conducted on patients with disc herniation have shown that although surgical treatment offers rapid improvement in first year; but in long term the results of operative and non-operative treatments are comparable. Moreover, the individual is also put to significant risk of anaesthesia and surgery. So, the epidural injection of steroid medication has been widely used as an intermediate treatment in an attempt to relieve both low backache and radicular pain.

Conclusion

1. Epidural steroid injection probably accelerates pain relief in patients who eventually have natural resolution of radicular pain in a gradual delayed fashion.
2. Epidural steroid could allow faster return to function during the natural history of sciatica.
3. Epidural steroid injection is a low-risk alternative to surgical intervention in some patients for whom noninvasive treatment has failed

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