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A Prospective Study of Efficacy of Epidural Steroid Injections in the Treatment of Low Back Pain and Lumbosacral Radiculopathy

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ABSTRACT

Introduction: Low back pain and Lumbosacral Radiculopathy are the most common complaints of patients with an herniated disc. Most commonly used treatment modality is a simple, effective epidural steroid injection. The aim of this study is to assess the effectiveness of epidural steroid injection in low back pain.Epidural steroid injections is one of the non-operative management of back pain. These injections are recommended in patients with signs and symptoms of nerve root irritation. Relief of pain is attributed to the anti-inflammatory effect of the steroid.

Material and Method: This is a prospective observational study. It was carried out on the patients presenting with low back pain and Lumbar radiculopathy not responding to conservative management and had MRI proven lumbar disc prolapse at different levels.

Injection methyl prednisolone 80 mg with 2ml of 0.5% bupivacaine was diluted in 6ml of normal saline and injected into the lumbar epidural space. Seventy patients received epidural steroid injection,out of which eight patients required further surgery.The remaining sixty two patients were analyzed,followed-up for 8 months.The functional status and pain response of patients were analyzed and significant improvement was found during the follow-up period.The success rate of study was 88.5 %. No complications were encountered.

Conclusion: Epidural steroid injection for lumbar radicular pain is an Effective mode of treatment.

KEYWORDS : low back pain , epidural steroid injection.

INTRODUCTION:

Low Back Pain (LBP) and Lumbar Radiculopathy continue to be a leading cause of disability in our country. Particularly, in the last decade, owing to an phenomenal increase in the number of youngsters choosing IT jobs and due to the nature of their work and increase hours of sitting, Cases of Low Back Pain also are on the rise. Especially, with lack of knowledge about proper sitting posture and the need for back strengthening exercises, this problem takes its toll.

Despite a large differential diagnosis, the precise etiology is rarely identified, although musculoligamentous processes are usually suspected. For most patients, back symptoms are nonspecific, meaning that there is no evidence for radicular symptoms or underlying systemic disease.

Lumbar disc herniation seems to be one of the most frequent causes of LBP, nevertheless it is well known that many patients, complaining of LBP as well as of radiating leg pain suggesting sciatica, did not show lumbar disc herniation in magnetic resonance imaging (MRI) and Computed Tomography.[1]

There is emerging evidence suggesting that this "paradox" must be probably attributed to the fact that nerve root compression is not sufficient by itself to cause nerve root pain[2], since painful radiculopathy may be the end-result of a local chemical contribution from injured tissue.[3]

Treating patients -suffering from LBP can also be challenging and this is probably why so many treatment methods (ranging from conservative measures to operations) have been introduced and are supported by the literature.[1]

Patients with acute radiculopathy have better response compared to patients with chronic symptoms. Improvement may not be noted until 6 days after the injection. The depression of the hypothalamic-pituitary-adrenal (HPA) axis lasts 3 weeks.

Although the actual mechanism of action is not fully known, there is evidence that corticosteroids achieve pain relief by inhibition of pro-inflammatory mediators (e.g. neural peptides, phospholipase A, acid hydrolases, histamine, and kinin) and by causing a reversible local anesthetic effect (decreased sensitivity of nerve roots to irritants).[4,5]

Epidural steroid injection (ESI) is a nonsurgical treatment for managing for low back and radicular pain caused by herniated lumbar disc. The low back pain of mechanical origin,accompanied by signs and symptoms of nerve-root irritation, respond to epidural steroid injection with gratifying results, It relieve pain, improve function, and reduce the need for surgical intervention.

Therefore, the long acting epidural steroid injection has been widely used and has been shown to provide analgesia for variable periods.[6,7] While complications have been reported, these are rare.

Hence, this study to assess the effectiveness of epidural steroid injection for low back and radicular pain.

MATERIAL AND METHOD:

This is a prospective observational study, conducted over a period of one year, from september 2013 to July 2014. During this period seventy patients who presented to the hospital with complaints of low back pain radiating to legs and not responding to conservative treatment (i.e. Medicines (NSAID's, Tricyclic Anti-depressants, Pregabalin), Physiotherapy including IFT and IPT, Continuous Pelvic Traction, and MRI proven lumbar disc prolapsed at different levels were included in the study. Exclusion criteria included distal motor deficit, prior lumbar disc surgery, Bladder or Bowel involvement. T

This study was approved by the hospital research committee. Written and informed consent was obtained from each patient. Then thorough history was taken and clinical examination was done. The findings of straight leg raising test (SLR), motor and sensory deficit, and deep tendon reflexes (DTR) were recorded.

Routine laboratory investigations including prothrombin time, bleeding time, clotting time, platelets, PT, APTT, random blood sugar was done. The Epidural Steroid Injection was given by trained anaesthesiologist in the operation theatre.

During the procedure, peripheral venous access was secured in all the patients with 18 G intravenous cannula on the dorsum of hand.

All the patients were kept in sitting position. Cleaning and draping of the part was done under aseptic precaution. The disc level for the injection was located by surface anatomy.

Using strict aseptic technique, 3 ml of 1% lidocaine was infiltrated into the skin and subcutaneous tissue for surface anaesthesia.

An 18 gauge epidural needle was inserted into the epidural space of the herniated lumbar disc through translumbar route with the bevel upward and stylet in position. The epidural space was identified by loss of resistance to air technique.

Injection methylprednisolone 80 mg and 2ml of 0.5% bupivacaine was diluted in 6 ml of normal saline and injected into the lumbar epidural space.

After the procedure, patients were advised to lie supine in case of bilateral symptoms and to lie on right or left lateral position in case of only right or left sided symptoms respectively .During this period they were observed for any possible complications.

The patients were first reviewed after one week, and then further follow up was carried out at one month & four months & eight months after the epidural steroid injection.

During follow up, the Oswestry disability index (ODI) and visual analog score (VAS) were used to evaluate the response of treatment.

The ODI was employed to quantitate the level of functional disability. It consist of ten questions, each with six alternative scores 0–5.[8,9] The sum of the scores was expressed as a percentage. A change of more than 10 points or a change of a minimum of 20% was considered a significant clinical improvement.

VAS score was used for assessment of current back and lower extremity pain, ranging from 0 (no pain) to 10 (worst pain possible).

Patients with low back pain not responding Epidural Steroid Injection were considered for surgery. The success rate of epidural steroid injection was presented as percentage. Patients were advised to do extension back exercises after substantial post-procedure pain relief.

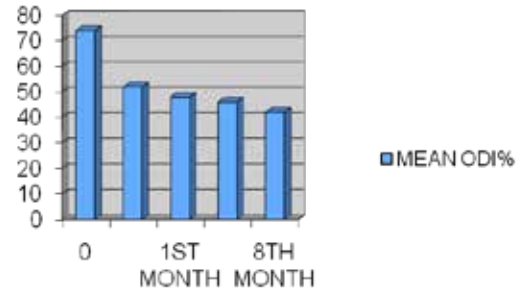
RESULT:

Out of seventy patients, Eight patients required further surgery. In the analysis of the remaining 62 patients, 30 (48.3%) were males and 32(51.7%) were females. The Mean age of patients was 41.2 (±9.6) years.

Single level disc prolapse was present in 38(61.3%) and multiple level disc prolapse was present in 24 (38.7%) patients. Among the single level disc prolapse, L4-L5 was the commonest level in 20 patients (52.6%) and L5-S1 was present in 18 patients (47.4%).

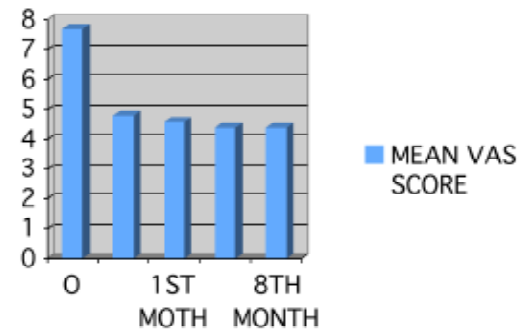
Significant Functional status improvement was observed in all follow up visits, which is shown in chart 1.

Chart 1



Similarly, significant reduction in pain intensity was observed in all follow up visits, which is shown in chart 2.

Chart 2



Eight patients underwent surgery. Hence, the success rate of Epidural steroid injection was estimated at 88.5%.No Complications were observed with this procedure.

DISCUSSION:

The first reported use of epidural steroid in the treatment of Low Back Ache was in 1952 by Robecchi and Capr[10] and is still an integral part of non-surgical management of low back and radiating pain. They used hydrocortisone in the first sacral root.

Later on various researchers used injection methylprednisolone and reported better results.

Epidural steroid is found to be beneficial in PIVD, spinal canal stenosis and degenerative disc disease,- whereas in non specific back pain, facetal arthritis, metastatic and metabolic causes, it is found to have no benefit.[11,12] Though the short term effect (i.e. < 6 weeks) is superior in the transforaminal method than the interlaminar or interspinous technique of epidural steroid deposition, the long term outcome is found to be similar.[13] We are using methylprednisolone 80 mg as it has relatively long duration of action.

In Bogduk series, out of 40 studies more than 4000 patients on lumbar and caudal steroid injections, 36 studies recommended in favour of the use of ESI in lumbosacral pain.[14]

Similarly, Koes et al review the 12 randomised controlled trials to assess the efficacy of epidural steroid injections for low-back pain and found effective in six studies.[15]

In several studies patients were followed after ESI for periods ranging from weeks to one year, showed to be beneficial.

The ODI was decreased by more than 34% by first week and by more than 38% by the end of eight months following epidural steroid injection. Similarly VAS score was decreased by 34% in the first week and by 47% at the end of eight months. This result indicates that the functional status of patients and pain intensity was significantly improved in all follow up visits.

The treatment of low back pain with radicular involvement has re-

mained a matter of controversy because- of multifactorial etiology and varying therapeutic modalities. Non-steroidal antinfalmatory drugs, antidepressants, parenteral steroids, transcutaneous electrical nerve stimulation (TENS), traction and IFT have been used alone or in combination but without any proved efficacy.[16]

Surgery is particularly indicated in cases with definite surgically correctable herniated discs but with a failure rate of as- high as 30%.

Hence ESI was found to be an alternative treatment modality with good results in symptomatic herniated disc, we also found the same result in this study.

In this study we used methylprednisolone for the management of low back pain.

Our study showed significant relieve of the symptoms of herniated disc as well as improvement in the functional status of the patients.[17]

Methyl prednisolone is a corticosteroid and is well known for its anti-inûammatory[18] properties and also stabilizes neural membranes, suppress ectopic neural discharges, and may have direct anaesthetic effect on small unmyelinated nociceptive C-fibers.[19]

In our study we found 8 patients did not improve with Epidural Steroid Injection. They underwent Discectomy. Considering these factors, success rate in this study is 88.5%.

CONCLUSION:

We conclude that epidural steroid injection for lumbar radicular pain is an Effective mode of treatment.

REFERENCES

Alston, P. (1983) 'The Universal Declaration at 35: Western and Passé or Alive and Universal', The Review of International Commission of Jurists, Vol. 31. | Baehr, P. R. (2001) Human Rights: Universality in Practice (New York: Palgrave). | Bell, D. (1960) The End of Ideology? : On the Exhaustion of Political Ideas in the 1950's (New York: Free Press). | Bobio, N. (1996) Age of Rights (Cambridge: Polity Press). | Cassese, A. (1990) Human Rights in a Changing World (Cambridge: Polity Press). | Cranston, M. (1962) Human rights today (London: Ampersand Books). | Cumaraswamy, Dato'P. (1997) 'The Universal Declaration of Human Rights: Is It Universal?', Human Rights Solidarity, Vol. 7. | Donnelly, J. (1989) Universal Human Rights in Theory and Practice (Ithaca and London: Cornell University Press). | Donnely, J. (1998) 'Human Rights: Old Scepticisms, New Standards' in International Affairs, Vol. 47. | Donnely, J. (1999) 'The Social Construction of International Human Rights' in Dunne and Wheeler, Human rights in Global Politics. | Draft Declaration on the Rights of Indigenous Peoples (1993), reprinted in Netherlands Quarterly of Human Rights, 1994, Vol. 12. | Eide, A., et al, (eds.) (1992) The Universal Declaration of Human Rights: a Commentary (London: Scandinavian University Press). | Espiell, H. (1998) Human Rights: 50th Anniversary of the Universal Declaration (Oxford: Blackwell). | Hoof, G. J. H. (1996) 'Asian Challenge to the Concept of Universality: Afterthoughts on the Vienna Conference on Human Rights', in Baehr, P., et al, (eds.) Human Rights: Chinese and Dutch Perspectives (Boston: Martinus Nijhoff Publishers). | Howard, E. R. (1993) 'Cultural Absolutism and the Nostalgia for Community', Human Rights Quarterly, May, Vol. 15. | Hunt, P. & J. Burger, (1994) 'Towards the International Protection of Indigenous Peoples Rights', Netherlands Quarterly of Human Rights, Vol. 12 | Indigenous Peoples, Advisory Report (1993) 'Advisory Committee on Human Rights and Foreign Policy', The Hague, 8th June, No. 16. | Jacobson, M & O. Brunn (Eds.) (2000) Human Rights and Asian Values (Richmond, Surrey: Curzon) | Lyotard, J. H. (1979) The Postmodern Condition: A Report on Knowledge (Manchester: Manchester University Press). | McIntyre, A. (1981) After Virtue (London: Duckworth). | Nickel, J. W. (1987) Making Sense of Human Rights: Philosophical Reflections on the Universal Declaration of Human Rights (Berkeley: University of California Press). | O' Byrne, D. J. (2007) Human Rights: An Introduction (New Delhi: Pearson Education Pvt. Ltd.). | Our Voice: Bangkok NGO Declaration on Human Rights (1993) (Bangkok: Asian Cultural Forum on Development). | Panikkar, R. (1985) 'Is the Notion of Human Rights a Western Concept?', Diogenes, Vol. 120. | Pollis, A. & Schwab, P. (1980) 'Human Rights: a Western Construct with Limited Applicability' in Pollis and Schwab (eds.) Human Rights: Ideological and Cultural Perspectives (New York: Praeger). | Pollis, A. (1998) 'Towards a New Universalism: Reconstruction and Dialogue', Netherlands Quarterly of Human Rights, March, Vol. 16. | Rawls, J. (1972) A Theory of Justice (New York: Oxford University Press). | Regan, T. (1984) The Case for Animal Rights (London: Routledge). | Renteln, A. D. (1990) International Human Rights: Universalism versus Relativism (Newbury Park: Sage). | Tomuschat, C. (1981) 'Is Universality of Human Rights Standards an Outdated and Utopian Concept?' in Bieber, E. (ed.) Das Europa der Zweiten Generation ('The Europe of the Second Generation') (Munich: Engel Verlag). | Van Ness, P (Ed.) (1999) Debating Human Rights (London: Routledge). | Vienna Declaration and Programme of Action (1993), 'United Nations General Assembly', A/CONF.157/23, 12th July. | Vincent, R. J. (1986) Human Rights and International Relations (Cambridge: Cambridge University Press). | Waters, M. (1995) 'Globalization and the Social Construction of Human Rights' in Australian and New Zealand Journal of Sociology, Vol. 31, No. 2. | Waters, M. (1996) 'Human Rights and the Universalization of Interests: Towards a Social Constructionist Approach' in Sociology, vol. 30, No. 3. |