CASE REPORT

Role of Deflazacort in Intervertebral Disc Prolapse

Mohammed Shakeel Mohammed Bashir[1], Mohammad Saleem[2], Uday Choudhari[3]

1. Associate Professor, Department of Pharmacology, Faculty of Dentistry, Taif University, KSA
2. Assistant Lecturer, Department of Anatomy, NKP Salve Institute of Medical Sciences & Research Centre, Nagpur
3. Consultant Dermatologist, Nagpur

Abstract

Intervertebral disc prolapse is not an uncommon condition. Oral corticosteroid is one of the treatment modality among the various available approaches. In the present case, Deflazacort, a derivative of Prednisolone with equal efficacy and lesser adverse drug reaction profile in same anti-inflammatory doses is used to treat the condition. We found that Deflazacort is useful drug along with other supportive drugs for the management of the condition.

***Keywords**: Corticosteroid, Deflazacort, Intervertebral disc prolapse*

Address for correspondence: Dr. Mohammed Shakeel Mohammed Bashir, Faculty of Dentistry, Taif University, Taif, drmsmbashir76@rediffmail.com

Received on :13/10/2016 Revised :11/11/2016 Accepted : 07/12/2016

Introduction

Intervertebral discs are the protective pads between the vertebrae. These discs may rupture or can bulge depending upon the severity of causing factors. Bulging or rupture may causes herniation of disc cartilage which leads to escape of inner gel portion of the disc into the surrounding regions. This jelly like substance put pressure on spinal cord and emerging nerve roots leading to pressure associated sign and symptoms.

Causative factors include sudden forceful acute trauma, injury from improper lifting, and excessive strain due to heavy physical activities or age related degeneration etc. Commonly low back and neck are involved. If low back is involved then pain in buttocks, back, legs, or feet or in these entire region with or without numbness, tingling or weakness is observed.[1]

Treatment includes analgesic, anti-inflammatory medication including a short course of corticosteroid or sometimes addition of short course of muscle relaxant to relive muscle spasm. If therapy is unsuccessful in few weeks then epidural steroidal injections and/or surgical removal of the herniated disc is performed commonly.[1,2,3]

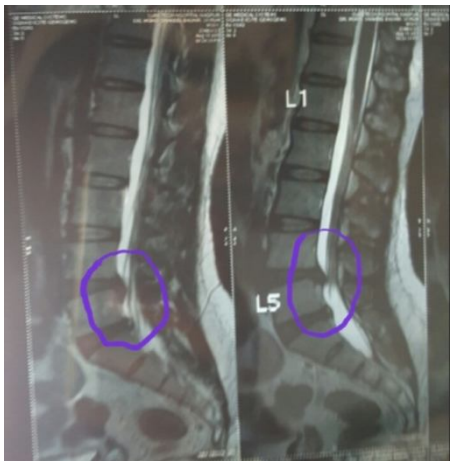
Among the several advantages of oral corticosteroids, it is less expensive, does not require MRI, carries less risk and can be easily given, infact it is good alternative treatment option other then epidural steroidal injections or lumbar discectomy.[4]Among the corticosteroids used to treat disc herniation, Prednisolone or Methylprednisolne are common. In the present case, Deflazacort is used which is a derivative of Prednisolone with equal efficacy and lesser adverse drug reaction profile in same anti-inflammatory doses.[5,6,7,8]

Case Report

An adult male aged 38 years, weight 60 kg with history of heavy physical activity including driving reported with moderate low backache since 3 months and severe pain since last 10 days. Initially it was low intensity pain but aggravated day by day. Muscular pain was diagnosed and tablets Aceclofenac 100mg with Paracetamol 325mg daily and Pantaprazole 40mg once daily for 5 days and bed rest advised. After one week patient returned with severe low back pain radiating to entire right leg. History suggested involvement of severe physical activity and avoidance of bed rest. Clinical examination suggested right lower limb

radiculopathy with loss of power in right great toe and positive straight-leg raise test.

On MRI examination, diffuse posterior protrusion with large posterocentral extrusion with inferior migration of L4-L5 disc was causing severe compression of thecal sac, bilateral budding and exiting nerve roots which was causing moderate narrowing of spinal canal and complete obliteration of bilateral lateral recess was observed. Focal posterocentral protrusion of L5-S1 disc compressing thecal sac, bilateral budding nerve root and causing mild canal narrowing was also observed. Hence, diagnosis as acute L_4-L_5 and L_5-S_1 Intervertebral Disc Prolapse with severe Radiculopathy was made.



Five days course of tablet Deflazacort 36mg twice daily with Aceclofenac 100mg twice daily, Paracetamol 325mg twice daily and Pantaprazole 40mg once daily were prescribed along with Tolperisone 450mg once daily. Great improvement was observed with the treatment course as intensity of pain was substantially decreased and improvement in the movement of toe was observed as early as from the 2nd day. Hence, after the 5th day, tapering of Deflazacort dose was done. Deflazacort was reduced to 18mg twice daily for another 5 days followed by 6 mg for next five days which followed 6mg once daily dose. After that Deflazacort was withdrawn. Tolperisone 450mg was administered only for 10 days and Aceclofenac and Paracetmol combination with Pantaprazole was given for a total period of one month. One month of drug therapy was responsible for recovery of the patient with no further pain or radiculopathy. Total recovery from loss of power of the toe was seen.

During the period of Deflazacort administration, Deflazacort induced acne form eruption was observed over the neck, chest, upper abdomen, back and both the arms which was controlled by using 100mg Doxycycline, Adapalene and Benzoyl peroxide gel.

Discussion

Deflazacort is a glucocorticoid used for anti-inflammatory and immunosuppressive action in various diseases. It is a heterocyclic methyloxazoline derivative of Prednisolone with similar clinical efficacy but lesser side effects in comparison to Prednisolone. Deflazacort 6 mg is equivalent to 5 mg of Prednisolone with the average potency ratio of Deflazacort to Prednisolone 0.69–0.89 but the therapeutic dosage ratio ranges from 1:1.2 to 1:1.5. In equivalent doses, immunosuppressive and anti-inflammatory property of Deflazacort is similar to Prednisolone and Methylprednisolone with reduced side effects.[5,6,7,8,9]

Deflazacort suppresses inflammatory response to injury irrespective of type of insult nonspecifically such as reduction of increased capillary permeability, local exudation and cellular infiltration. Several steps of inflammation are interfered, among them the most important is recruitment of inflammatory cells. Inflammatory mediators such as leukotrienes (LTs), platelet aggregating factors (PAF), Tumor necroting factors (TNF) and other Prostaglandins production is suppressed by negative control of COX and other enzymes. Prostaglandins (PGs) and LTs synthesis is inhibited by inhibition of phospholipase A enzyme which is responsible for release of arachidonic acid from membrane phospholipids needed for PG and LT synthesis. Inhibition of phospholipase A occurs by induction of formation of anti-inflammatory protein lipocortin, which inhibits phospholipase A.[10]

Goldberg H et al, used 15-day tapering course of oral Prednisone in patients suffering from acute radicular pain for 3 months or less due to herniated lumbar disc but observed no improvement in pain with modestly improved functions.[4] Holve RL and Barkan H found very little and insignificant impact of 9-day tapering course of prednisone among 13 cases of acute sciatica with only slightly more rapid improvement in painful situation.[11] Hedeboe J et

al did not observed any significant difference among intramuscular Dexamethasone and Placeborecipient patients of prolapsed lumbar disc group.[12] Haimovic IC and Beresford HR also did not observed any significant difference among Dexamethasone and Placebo groups of lumbosacral radicular pain among study involving 33 patients.[13]

Roncoroni C et al, were against the use of systemic corticosteroid therapy for the management of sciatica. In their systemic review and meta-analysis they found several disadvantages of systemic steroid use. Among those, efficacy of systemic steroid was similar to placebo for pain relief, no beneficial effect of therapy and on the return to work parameter, poor tolerance of drugs as number and severity of adverse reactions increased. They also found that surgical intervention was more frequent among the systemic steroid recipients.[14] The literature is not in much favor of use of systemic corticosteroid for the management of prolapsed disc with radiculopathy. But in the present case usefulness of short course Deflazacort, a derivative of Prednisolon, is seen in herniated disc with radicular pain which indicates its future role in such conditions.

Conclusion

In the present case, we found Deflazacort as useful drug along with other supportive drugs like muscle relaxant etc. for the management of prolapsed disc with radiculopathy. It showed only drug eruption as adverse drug event. Large scale clinical trials will be useful to compare its role in the management of intervertebral disc prolapsed.

Conflict of Interest: *None declared*
Source of Support: *Nil*
Ethical Permission: *Obtained*

References

1. Schumacher HR and Chen LX. Musculoskeletal Sign and Symptoms. In: Klippel JH, Stone JH, Crofford LJ, White PH, editors. Primer on the Rheumatic Diseases. 13th edition, New York: Springer, 2008. p. 61-67.
2. Koes BW, van Tulder MW, Peul WC. Diagnosis and treatment of sciatica. BMJ. 2007;334(7607):1313-1317.
3. Weinstein JN, Tosteson TD, Lurie JD, Tosteson AN, Hanscom B, Skinner JS, Abdu WA, Hilibrand AS, Boden SD, Deyo RA. Surgical vs non operative treatment for lumbar disk herniation: the Spine Patient Outcomes Research Trial (SPORT): a randomized trial. JAMA. 2006;296(20):2441-2450.
4. Goldberg H, Firtch W, Tyburski M, Pressman A, Ackerson L, Hamilton L, Smith W, Carver R, Maratukulam A, Won LA, Carragee E, AvinsAL.Oral steroids for acute radiculopathy due to a herniated lumbar disk: a randomized clinical trial. JAMA. 2015 May 19;313(19):1915-23.
5. Markham A, Bryson HM. Deflazacort. A review of its pharmacological properties and therapeutic efficacy. Drugs. 1995 Aug;50(2):317-33.
6. Coirini H, Flores D, Vega MC, Gonzalez Deniselle MC, De Nicola AF. Binding of the anti-inflammatory steroid deflazacort to glucocorticoid receptors in brain and peripheral tissues. In vivo and in vitro studies. J Steroid Biochem Mol Biol. 1994 May;49(1):43-9.
7. Surajit Nayak and Basanti Acharjya. Deflazacort versus other glucocorticoids: A comparison. Indian J Dermatol. 2008;53(4):167–170.
8. Joshi N, Rajeshwari K. Deflazacort. J Postgrad Med 2009;55:296-300.
9. Stellato C, Casolaro V, Renda A, Genovese A, Marone G. Anti-Inflammatory Effect of Deflazacort. Int Arch Allergy Immunol 1992;99:340–342.
10. George P. Chrousos. Adrenocorticosteroids and Adrenocortical Antagonist. In: Bertram G Katzung, SB, Masters, AJ Trevor, editors. Basic and Clinical Pharmacology. 12th edition, New York: McGraw Hill (Lange), 2012. p. 702.
11. Holve RL, Barkan H. Oral steroids in initial treatment of acute sciatica. J Am Board Fam Med. 2008 Sep-Oct;21(5):469-74.
12. Hedeboe J, Buhl M, Ramsing P. Effects of using dexamethasone and placebo in the treatment of prolapsed lumbar disc. Acta Neurol Scand. 1982;65(1):6-10.
13. Haimovic IC, Beresford HR. Dexamethasone is not superior to placebo for treating lumbosacral radicular pain. Neurology. 1986;36(12):1593-1594.
14. Roncoroni C, Baillet A, Durand M, Gaudin P, Juvin R. Efficacy and tolerance of systemic steroids in sciatica: a systematic review and meta-analysis. Rheumatology (Oxford). 2011;50(9):1603-1611.