ORIGINAL ARTICLE

POSTERIOR EPIDURAL MIGRATION OF HERNIATED LUMBAR DISC FRAGMENT: EXPERIENCE WITH 11 CASES

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ABSTRACT

Background: Lumber disc herniation is a common entity in neurosurgical practice. The herniated disc fragment may migrate ventrally or laterally after penetrating the posterior longitudinal ligament. Posterior epidural migration of the ruptured fragment is comparatively uncommon and may mimic clinically and radiologically with spinal tumors. The objective of this study was to analyze patients with posterior epidural migration of lumber disc for clinical features, diagnosis and outcome of surgery.

Material & Methods: This retrospective study was conducted at the Department of Neurosurgery, Post Graduate Medical Institute, Lady Reading Hospital, Peshawar from July 2007 to June, 2012 (5 years). All Patients who had posterior epidural migration of herniated lumbar disc fragment and undergone surgery (discectomy) were included in the study. Patients who had anterior or lateral epidural disc fragments or having recurrent lumber disc herniation were excluded from the study. The clinical record of the patients was evaluated for clinical features, diagnosis and outcome of surgery.

Results: Out of 11 cases, 8 were males and 3 females with male to female ratio of 2.7: 1. The mean age of the patients was 42.5 (16 to 69) years. Six (54.5%) patients had radicular symptoms followed by Cauda Equina syndrome in three (27.3%) and neurogenic claudication in two (18.2%) patients. Preoperative diagnosis was that of ruptured disc fragment in eight (72.7%) cases. 90 % patients had good results after surgery.

Conclusion: The most common clinical feature of posterior epidural migration of herniated lumbar disc fragments was that of radicular symptoms. Magnetic resonance imaging (MRI) is the investigation of choice but not diagnostic in all the cases. Most of the patients had good response to surgery.

KEY WORDS: Radiculopathy, Epidural abscess, Laminectomy.

This article may be cited as: Khan Z, Sharafat S, Ali M, Haider A, Khanzada K, Siddique M. Posterior epidural migration of herniated lumbar disc fragment: experience with 11 cases. Gomal J Med Sci 2013; 11:13-5.

INTRODUCTION

Lumbar disc sequestration is penetration of the posterior longitudinal ligament (PLL) by the nucleus pulposus which migrate within the spinal epidural space. Sequestrated disc accounts for 28.6% of all symptomatic disc herniations.[1] Most of the ruptured (sequestrated) disc fragments migrate within the spinal canal in cranial, caudal and lateral directions.[2-6] Dorsal extradural sequestration of disc herniation is very rare.[1,7]

The 1st case of dorsal epidural migration was reported by Lombardi in 973.[1,8] Since then only few cases have been reported.[9,10] This dorsal migration is thought to be limited by a sagittal midline septum (septum posticum) that spans the posterior longitudinal ligament and vertebral bodies.[10]

The clinical presentation in dorsal epidural disc herniation is variable, from low back pain without neurologic deficits to cauda equina syndrome. As several neural structures are compromised when the disc fragment migrate to dorsal epidural space, therefore these patients have more chances of neurological deficits.[11,12]

The diagnosis of dorsal herniated disc fragment is made on the basis of magnetic resonance imaging and intraoperative findings. Herniated discs are usually hypointense on T1-weighted images and hyperintense on 80% of T2-weighted images and in the rest of 20% these varies. Sometimes it is difficult to differentiate herniated disc in the dorsal epidural space from epidural hematoma, abscess and tumors.[13-15]

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As limited literature is available on the posterior epidural migration of lumber disc and only few cases and case series have published so far. The objective of this study was to analyze patients with posterior epidural migration of lumber disc for clinical features, diagnosis and outcome of surgery.

MATERIAL AND METHODS

This retrospective study was conducted at the Department of Neurosurgery, Post Graduate Medical Institute, Lady Reading Hospital, Peshawar from July 2007 to June 2012. We included patients of both genders who undergone surgery for lumber disc herniation with posterior epidural ruptured fragments and excluded patients who had sequestered disc fragments lying in the anterior or lateral epidural space and those having recurrent disc herniation. MRI and surgery (decompression and discectomy) was done in all of the patients. The patients' demographic data, clinical features, investigations and postoperative status was observed for pain and weakness improvement. Patients who had post-operative pain improvement of 2 or more than 2 levels of 10-point visual analog score (VAS) or power improvement of 1 degree or more of MRC (Medical Research Council) grading of muscle power had good outcome. All information was entered into a proforma especially designed for this purpose. The data was analyzed for frequency (number) and relative frequency (%) by SPSS version 11 (SPSS, Inc., Chicago, Illinois, USA).

RESULTS

A total of 1209 patients were operated for lumber disc herniation during the study period, of which 11 had posterior epidural migration of ruptured fragment making it 0.9% of the total cases. The mean age of the patients was 42.5 (16 to 69) years. Out of 11 cases, 8 were males and 3 females with male to female ratio of 2.7: 1 (Table 1). The clinical features of the patients are given in Table 2.

The preoperative MRI findings were that of disc fragment in 8 (72.7%) patients and that of other differentials (as tumors) in 3 (27.3%) cases. We lost follow up in one case. No improvement in one case. The remaining 9 patients (90%) had good results.

DISCUSSION

Dorsal migration of a herniated intervertebral disc is rare and may be difficult to definitively diagnose preoperatively. Reviews estimate that 35% to 72% of lumbar disc herniations manifest fragment migration, predominantly in the ventral and anterolateral epidural space.[2,10,11,13]

In this study period we operated on 1209 patients for lumber disc herniation, of which 11 had posterior epidural migration of ruptured fragment making it 0.9% of the total. Carviy Nievas et al[16] reviewed 3,000 patients with a histological diagnosis of disc herniation and found that only in 0.4% cases there was unusual migration of the disc behind the body of the vertebra and most occurred in the lumber spine. In another study 1.04% of the patients had posterior epidural migration of the sequestered disc fragment.[17] This rarity of posterior migration is because of the pattern of attachment (septum posticum) of posterior longitudinal ligament to vertebral bodies.[1]

Table 1: Gender distribution of patients with posterior epidural migration of herniated lumber disc fragment (n=11).

Gender	Frequency (number)	Relative frequency (%)
Male	08	72.72
Female	03	27.28

Table 2: Clinical features of patients with posterior epidural migration of herniated lumber disc fragment (n=11).

Clinical features	Frequency (number)	Relative frequency (%)
Radiculopathy	06	54.5 %
Neurogenic claudication	02	18.2 %
Cauda Equina syndrome	03	27.3%
Total	11	100 %

The migration of a lumbar intervertebral disc fragment to the posterior epidural space occurs mostly in men with advanced working-age population.[18] This is because of more wear and tear and degeneration in the intervertebral discs. The mean age of our patients was 42.5 (16-69) years and the male to female ratio of 2.7:1. In one of the study the mean age reported was 54.04 years with male to female ratio of 3.7:1.[17] We had comparatively younger age affected with this problem. This could be because of the differences in the risk factors for lumber disc herniation in the study groups.

The clinical presentation is indistinguishable from the typical lumber disc herniation and varies from simple backache to cauda equina syndrome.[11,12] Most of our patients (54.5%) had radicular symptoms, followed by cauda equina syndrome (27.3%) and neurogenic claudication (18.2%). The results given in studies are different. According to Akhaddar and colleagues[17], the predominant clinical disturbance was related to cauda equina compression in 46.80% patients while 40.42% presented with typical symptoms of sciatica or anterior thigh pain. While some studies report that radicular symptoms are more common way of presentation in cases of posteriorly migrated lumber disc fragments.[4]

Magnetic resonance imaging is the investigation of choice. We did it in all of our patients. The extradural herniated disc fragment appears hypo to isointense on the T1-weighted image and hyperintense on T2 images, which was similar to our case.[19,20] Definite diagnosis of posteriorly located disc fragments is difficult because the radiological images of disc fragments may mimic those of other more common posterior epidural lesions.[4] Because of this reason in 27.3% (3 cases) of our patients, the preoperative diagnosis was not that of sequestered disc fragment. The results vary from 37.5%[21] to 68%[17] in different studies.

Early surgery should be the first choice of therapy in patients with large posteriorly migrated sequestered disc fragments, to prevent severe neurologic deficits such as cauda equina and conus medullaris syndromes.[7,13] Surgical decompression and discectomy was done in all of our patients. We lost postoperative follow up in one patient, while in the remaining 10 patients, 90% (9 cases) responded well to operative therapy. Sengoz and colleagues[21] studied 8 patients with posterior epidural migration of disc fragments and improvement in symptoms were observed in 87.5% (7 cases) after surgery and no improvement in 12.5% cases. In another study 100% of the patients had good results after surgery.[17] So we have comparable results.

CONCLUSIONS

In our study the most common clinical feature of posterior epidural migration of herniated lumbar disc fragments was that of radicular symptoms. Magnetic resonance imaging (MRI) is the investigation of choice but not diagnostic in all the cases. Most of the patients had good results after surgery.

REFERENCES

1. Kim J S, Lee S H, Arbatti N J. Extradural lumbar disc herniation causing cauda equina syndrome: A Case report and review of literature. J Korean Neurosurg Soc 2010; 47: 217-20.
2. Schellinger D, Manz HJ, Vidic B, Patronas NJ, Deveikis JP, Muraki AS, et al. Disk fragment migration. Radiology 1990; 175: 831-6.
3. Ebeling U, Reulen HJ. Are there typical localizations of lumbar disc herniations? A prospective study. Acta Neurochir (Wien) 1992; 117: 143-8.
4. Dösoðlu M, Is M, Gezen F, Ziyal MI. Posterior epidural migration of a lumbar disc fragment causing cauda equina syndrome: case report and review of the relevant literature. Eur Spine J 2001; 10: 348-51.
5. Robe P, Martin D, Lenelle J, Stevenaert A. Posterior epidural migration of sequestered lumbar disc fragments: report of two cases. J Neurosurg 1999; 90: 264-6.
6. Srinivasan U S, Kumar G K, Mahesha K B. Posterior epidural migration of sequestrated cervical disc fragment: Case Series. Asian Spine J 2011; 5: 220-7.
7. Tatli M, Güzel A, Ceviz A, Karadað O. Posterior epidural migration of sequestered lumbar disc fragment causing cauda equina syndrome. Br J Neurosurg 2005; 19: 257-9.
8. Lombardi V. Lumbar spinal block by posterior rotation of anulus fibrosis: Case report. J Neurosurg 1973; 39: 642-4.
9. Kim JH, Kong MH, Lee SK, Song KY. A case of posterior epidural migration an extruded lumbar disc fragment causing cauda eqiuna syndrome. J Korean Neurosurg Soc 2004; 35: 442-4.
10. Teufack S G, Singh H, Harrop J, Ratliff J. Dorsal epidural intervertebral disk herniation with atypical radiographic findings: Case report and literature review. J Spinal Cord Med 2010; 33: 268-71.
11. Bonaroti EA, Welch WC. Posterior epidural migration of an extruded lumbar disk fragment causing cauda equina syndrome: clinical and magnetic resonance imaging evaluation. Spine 1998; 23: 378-81.
12. Sekerci Z, Ildan F, Yuksel M, Gul B, Kilic C. Cauda equina compression due to posterior epidural migration of extruded lumbar disk. Neurosurg Rev. 1992; 15: 311-3.
13. Kuzeyli K, Cakir E, Usul H, Baykal S, Yazar U, Karaarflan G, et al. Posterior epidural migration of lumbar disk fragments: report of three cases. Spine 2003; 28: 64-7.
14. Chen CY, Chuang YL, Yao MS, Chiu WT, Chen CL, Chan WP. Posterior epidural migration of a sequestrated lumbar disk fragment: MR imaging findings. Am J Neuroradiol 2006; 27: 1592-4.
15. Lakshmanan P, Ahuja S, Lyons K, Howes J, Davies PR. Sequestrated lumbar intervertebral disk in the posterior epidural space: a report on two cases and review of the literature. Spine J 2006; 6: 583-6.
16. Carvi Y, Nievas MN, Hoellerhage HG. Unusual sequestered disc fragments simulating spinal tumors and other space-occupying lesions: clinical article. J Neurosurg Spine 2009; 11: 42-8.
17. Akhaddar A, El-Asri A, Boucetta M. Posterior epidural migration of a lumbar disc fragment: a series of 6 cases. J Neurosurg Spine 2011; 15: 117-28.
18. Khattak A, Rehman L, Haider A, Ali M, Mushtaq, Ilyas. Surgical outcome of lumber disc surgery in 250 patients. Pak J of Neurol Surg 2008; 12: 27-31.
19. Liu SS, Williams KD, Drayer BP, Spetzler RF, Sonntag VK. Synovial cysts of the lumbosacral spine: diagnosis by MR imaging. Am J Roentgenol 1990; 154: 163-6.
20. Baker JK, Hanson GW. Cyst of the ligamentum flavum. Spine (Phila Pa 1976) 1994; 19: 1092-4.
21. Sengoz A, Kotil K, Tasdemiroglu E. Posterior epidural migration of herniated lumbar disc fragment. J Neurosurg Spine 2011; 14: 313-7.

CONFLICT OF INTEREST
Authors declare no conflict of interest.
GRANT SUPPORT AND FINANCIAL DISCLOSURE
None declared.