ORIGINAL ARTICLE

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

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ABSTRACT

Background: Lumbar 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 lumbar 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 lumbar 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.

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. Most of the ruptured (sequestrated) disc fragments migrate within the spinal canal in cranial, caudal and lateral directions. Dorsal extradural sequestration of disc herniation is very rare.

The 1st case of dorsal epidural migration was reported by Lombardi in 1973. Since then only few cases have been reported. This dorsal migration is thought to be limited by a sagittal midline septum (septum posticum) that spans the posterior longitudinal ligament and vertebral bodies.

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.

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.

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As limited literature is available on the posterior epidural migration of lumbar 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 lumbar 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 lumbar 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 lumbar 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.4,10,11,13

In this study period we operated on 1209 patients for lumbar disc herniation, of which 11 had posterior epidural migration of ruptured fragment making it 0.9% of the total. Carviy Nievas et al16 re-viewed 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 lumbar 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

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 lumbar disc herniation in the study groups.

The clinical presentation is indistinguishable from the typical lumbar disc herniation and varies from simple backache to cauda equina syndrome.11-13 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 colleagues17, 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 lumbar disc fragments.4

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

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency (number)</th>
<th>Relative frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>08</td>
<td>72.72</td>
</tr>
<tr>
<td>Female</td>
<td>03</td>
<td>27.28</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Clinical features</th>
<th>Frequency (number)</th>
<th>Relative frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiculopathy</td>
<td>06</td>
<td>54.5 %</td>
</tr>
<tr>
<td>Neurogenic claudication</td>
<td>02</td>
<td>18.2 %</td>
</tr>
<tr>
<td>Cauda Equina syndrome</td>
<td>03</td>
<td>27.3 %</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>100 %</td>
</tr>
</tbody>
</table>
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.2,9,20 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.7,15 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 colleagues21 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