Perspective Study of Spontaneous Resorption of Lumbar Disc Herniation in Female Population of Telangana State, India

Madhusudhan Kumar Ummadisetty, Srinivasa Mahendra Muniswamy Parasuraman

Abstract

Background: Herniation of the disc is one of the disadvantages human population is facing due to the erect posture. Herniation is the abnormal protrusion of nucleus pulposus from weak site in the annulus fibrosus of the intervertebral disc. It impairs the locomotion of the patients affected with herniation of the disc until the resorption occurs.

Method: 30 females aged between 35 to 55 years treated with conservative treatment for low back pain were included in the study. MRI was done to confirm diagnosis and to know the degree of herniation. Routine blood investigations were done to rule out any associated diseases.

Results: Out of 30 (12 (40%) were normal, 10 (33.3%) had type-II DM and 8 (26.6%) had HTN. Comparison of spontaneous resorption (in months) 7.5 ($\pm$ 2.4) mean value in large disc, 12.2 ($\pm$2.6) in small disc and P value was highly significant (P<0.001).

Conclusion: Spontaneous resorption of herniated disc can occur by different mechanisms (retraction, dehydration, and inflammatory mediated mechanism). Early clinical recovery is usually associated with quick resorption of herniated disc.

Keywords: MRI, Herniation, Spontaneous, Lumbar disc, Telangana

Introduction

Lumbar disc herniation is (LDH) is most common type of degenerative disc disease. It is mainly treated with conservative treatment. If conservative treatment fails then only surgical intervention is indicated for LDH. Surgical treatment for LDH was described almost sixty year ago, but still controversy remains between opting surgical and non-surgical treatment in symptomatic patients.

Key JA (1945) described the first case of spontaneous regression of herniated lumbar disc using myelography. Teplick and Hack (1985) detected disc regression in computed tomography scan. The development and advances of MRI encouraged many studies to evaluate the phenomenon of spontaneous resorption of herniated lumbar disc and its impact on clinical outcomes.

Hence phenomenon of spontaneous resorption of herniated lumbar disc in females without surgery was evaluated to study mechanism, predictive
factors, time for spontaneous resorption and proper time needed for conservative treatment.

**Material and Method**

30 adult females visited to Orthopaedic departments of Mallareddy Institute of Medical Sciences, Suraram, Hyderabad and Surabhi Institute of Medical Sciences, Siddipet, Telangana State, India were included in the study.

**Inclusive Criteria:** Female patients aged between 35 to 55 years suffering from low back pain with sciatica.

**Exclusion Criteria:** Low back pain patients due to other pathologies of lumbar spine like trauma, malignancy, infection were excluded from the study.

**Method:** Every patient’s history was studied in detail. Majority of patients belonged to middle socio-economic group. Routine blood examination was done in every patient to rule out any other pathologies, MRI was taken in all the patients to confirm the herniation of disc, the straight leg raising test was positive in all cases (30° to 40° degree) No motor deficits were detected in any case. Apart from herniation, any associated diseases were also studied.

Duration of study was from September-2020 to August-2022

**Statistical analysis:** Herniation and resorption in large and small disc herniations were compared with z test apart from herniation association with other diseases were studied with percentage. The statistical analysis was carried out in SPSS software.

**Observation and Results**

**Table 1:** Associated diseases in lumbar disc herniated patients – 10 (33.3%) had Diabetes Mellitus, 8 (26.6%) had Hypertension and remaining 12 (40%) were normal.

**Table 2:** Mean value of recovery was (in weeks) 6.4 (+1.2) in large disc herniations, and 6.2 (+1.4) in small disc herniations, t test value was 0.59 and p value was >0.52

Mean value of resorption (in months) in large disc herniations was 7.5 (+2.4) and 12.2 (+2.6) in small disc herniations, t test value was 7.2 and p<0.001 (p value was highly significant)

**Table 1: Disease associated with spontaneous resorption of lumbar herniated disc**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Associated diseases</th>
<th>No. of patients (30)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diabetes Mellitus</td>
<td>10</td>
<td>33.3</td>
</tr>
<tr>
<td>2</td>
<td>Hypertension</td>
<td>8</td>
<td>26.66</td>
</tr>
<tr>
<td>3</td>
<td>Normal</td>
<td>12</td>
<td>40</td>
</tr>
</tbody>
</table>

**Table 2: Comparison between Large and small herniated disc regarding time of recovery and time spontaneous resorption**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Large Disc</th>
<th>Small Disc</th>
<th>t test</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean time of recovery</td>
<td>6.4 (+1.2)</td>
<td>6.2 (+1.4)</td>
<td>0.59</td>
<td>P&gt;0.52</td>
</tr>
<tr>
<td>(in weeks)</td>
<td></td>
<td></td>
<td></td>
<td>(Insignificant)</td>
</tr>
<tr>
<td>Mean time of resorption</td>
<td>7.5 (+2.4)</td>
<td>12.2 (+2.6)</td>
<td>7.2</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>(in months)</td>
<td></td>
<td></td>
<td></td>
<td>(highly significant)</td>
</tr>
</tbody>
</table>

**Discussion**

In this study of spontaneous resorption of lumbar disc herniations (LDH) in female population of Telangana State in India - out of 30 female patients of LDH 12 (40%) were normal, 10 (33.3%) had type-II DM and 8 (26.6%) had HTN (Table-1).

In comparison of Mean time of absorption (in months) between large disc herniations 7.5 (+2.4),
12.2 (±2.6) in small disc herniations, t test was 7.2 and (p<0.001) p value was highly significant (Table-2). These findings are more or less in agreement with previous studies (6)(7)(8).

It can be hypothesized that (a) There may be appositional and interstitial growth when intervertebral disc remains vacant. During the interstitial growth cartilage divides mitotically and merges with herniated material resulting into thickened intervertebral disc. (b) Its well known that cartilage in the intervertebral disc is avascular, non-lymphatic, lacks perichondrium and is fibrocartilaginous in nature (9). Hence there is no any barrier which limits the relocation. As I.V disc degenerates, it will be occupied by fibrous annulus by resorption. (c) As age advances there will be calcification of cartilaginous tissue, as this tissue lacks nutrition via diffusion and less vascularity in the periphery of I.V disc which leads to degeneration of disc by leaving vacuum space which leads to herniation. The first mechanism depends on the retraction of the herniated disc back to disc space because it is not separated from the annulus fibrosis. The second mechanism stated that, disc resorption is because of dehydration and shrinkage of herniated nucleus pulposus. The third mechanism proposed that, the sequestrated nucleus pulposus in the epidural vascular space is recognised by the autoimmune system as a foreign material and induces an inflammatory reaction resulting in neo-vascularisation, enzymatic degradation and macrophage phagocytosis of the herniated disc material (10). The third mechanism was evaluated and supported by different studies (11). These three methods explain the resorption of LDH.

In the present study resorption of LDH is followed by improvement in inflammation, edema, and congestion by conservative treatment (12).

**Summary and Conclusion**

Present study of resorption of LDH is very much important to Orthopedicians and Neurosurgeons because conservative approach can be adapted for large extruded lumbar disc as it can resolve in the selective group of patients. In the cases of failure of resorption of LDH repeated MRIs of spine to assess the degree and severity of protrusion before making plan for any surgical intervention or further continuous conservative treatment can be done. Sometimes there may be voluminous thickness of rim of resorption, which causes more pressure on nerve roots of lumbar plexus warrants surgical interventions to alleviate the clinical symptoms.

**Limitation of study:** Owing to the remote location of the tertiary centres, small number of patients and lack of latest techniques used in this study may have limitations on the results we got. May need further studies in large number of patients, in higher centres, with more sophisticated investigations to confirm these results we have obtained.

This research work was approved by Ethical committee of Mallareddy Institute of Medical Sciences, Suraram, Hyderabad and Surabhi Institute of Medical Sciences, Siddipet, Telangana State, India

**Conflict of Interest:** No

**Funding:** No

**References**

2. Key JA – Inter vertebral disc lesions are the most common cause of low back pain with or without sciatica Ann. Surg. 1945, 232; 334-35.