The Diagnosis of Lumbar Disc Degenerative Disease and Role of MRI: A Hospital Based Study

Hemant Jain¹, Swati Kukkar², Jitendra Acharya³

¹Assistant Professor, Department of Radiodiagnosis, S.P. Medical College, Bikaner Rajasthan, India.
²Consultant Radiologist, Bikaner, Rajasthan, India.
³Senior Demonstrator, Department of Dentistry, S.P. Medical College, Bikaner Rajasthan, India.

ABSTRACT

Background: Degenerative Lumbar Disc (DLD) is widespread cause for lower back ache (LBA) Early diagnosis is most important in the treatment of DLD. Our study aimed to find out the role of MRI in the detection of degenerative disc diseases (DDD).

Materials and Methods: This study was conducted in the Department of Radiodiagnosis, S. P. Medical College, Bikaner, Rajasthan. A total of 50 patients were included in the study. The study population was subjected to MRI study. Images were collected and used for the analysis.

Results: In 50 patients, 34 showed DDD. Maximum patients showed annular disc bulge.

Conclusion: Our study evaluated and concluded that MRI plays major role in the detection of DDD.

Keywords: MRI, Lower Backache, Lumbar Disc, Disc Degeneration, Radiation.

INTRODUCTION

Magnetic Resonance Imaging (MRI) is an important tool in the diagnosis of various DDD. Inflammatory DDD also can also be easily diagnosed with use of MRI. Signal intensity in intervertebral disc spaces and spine is used to diagnose disc degenerative disease.¹ Based on the review of literature DDD is more common in males compared to females. There are three important changes that have been identified. Bone marrow edema which appears hypointense on T1 and hyperintense on T2 (Type-I), Fatty replacement, which appears hyperintense on both T1 and T2 (Type-II) and bone sclerosis, which appears hypointense on both T1 and T2 (Type-III).² Studies showed that disc degenerative disease (DDD) changes are associated with the various pathologies.³⁻⁵ MRI are able to detect DDD associated changes in the disc.⁶ This study was conducted to evaluate the role of MRI in the detection of lumbar disc degeneration.

RESULTS

Among 50 cases, 34 showed the disc degenerative disease (DDD), of these 24 were males and 10 were females. Majority of the patients showed annular disc bulge (20) followed by protrusion (8), extrusion (4) and sequestration (2). Thus annular disc bulge was found to be the most common etiology of lower back ache (LBA) (Table-1, Figure-1 & 2).
Hemant Jain et al. Diagnosis of Lumbar Disc Degenerative Disease and Role of MRI

Table 1: Distribution of Patients Based on Disk Herniation Type

<table>
<thead>
<tr>
<th>Herniation type</th>
<th>L 1-L2</th>
<th>L 2-L3</th>
<th>L3-L4</th>
<th>L4-L5</th>
<th>L5-S1</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annular disk bulge</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Disc protrusion</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Disc extrusion</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Disc sequestration</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>17</td>
<td>4</td>
<td>34</td>
</tr>
</tbody>
</table>

DISCUSSION
MR Imaging has major role in the diagnosis of DDD spine. Decreased signal intensity of the intervertebral disc image indicates disc dessication.
Spine injury, physical damage, genetic factors and decreased intake of nutritional food play an important role in the pathology of DDD. Early diagnosis is important in the prevention of progression of DDD. Birney et al. study showed the role of MRI in the detection of DDD. They observed that L4-L5 degeneration was more common as compared to other levels. Our study also showed same results. Grenier et al. study found MRI to be accurate in the diagnosis of minor degenerative changes in lumbar disc. Our study also proved MRI as a specific, sensitive, and accurate imaging modality in detecting the lumbar disc degeneration.

CONCLUSION
Disc degeneration disease is the major cause for the low back. MRI is the imaging technique of choice for detection of disc degenerative disease (DDD).

REFERENCES

Source of Support: Nil.
Conflict of Interest: None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882. This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Hemant Jain, Swati Kukkar, Jitendra Acharya. The Diagnosis of Lumbar Disc Degenerative Disease and Role of MRI: A Hospital Based Study. Int J Med Res Prof. 2018 Sept; 4(5):302-04. DOI:10.21276/ijmrp.2018.4.5.068