

Frequency Of Magnetic Resonance Imaging Findings In Patients With Lower Back Pain

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ABSTRACT

Aims and objectives: To assess the MRI findings in patients who had lower back pain. Lower back pain affects most of the adults at some time in their lives. **Background:** The most common anomaly is lumbar disc degeneration, which can be caused by degenerative disc changes, narrowing of spaces in lumbar spinal, cancer, infection, or trauma. In the evaluation of patients with lower back pain, Magnetic Resonance Imaging (MRI) has been the best modality to determine because this one is radiation free, non-invasive imaging modality with great both resolution (spatial and contrast).^[1] Goal of this research was to find out the findings on MRI in patients who had lower back pain.

Methods: This Descriptive cross-sectional study a total of 63 patients was conducted at the Radiology Department of Punjab Diagnostic Centre, Gujranwala, who had a lumbar spine MRI for severe and persistent lower back pain, radiculopathy, claudication (neurogenic), or other symptoms and indications that could indicate low back discomfort. The age range of patients was 16 to 68 years. Non-contrast MRI scans were done. SPSS was used for statistical analysis. Magnetic Resonance Imaging (MRI) scan findings for patients who had lower back pain were determined.

Results: Out of 63 patients there were (57.1%) 36 male patients and (42.9%) 27 female patients participated in this study. In Lumbar spine straightening out of 63 patients in which there 23 patients (63.5%) noted (10) female and (13) male respectively.

In 40 cases, the most well-known category was disc bulging at the L4/L5 level (63.4 percent) and L5/S1 level was noted in 31 cases (49.1%) followed by L3-L4 level was noted in 11 cases (17.5%) in order of decreasing frequency. And Disc herniation was seen at total 16 patients (25.4 percent) respectively. Disc herniation was more common at L4/L5 level. Disc desiccation was the most well-known category at L5/S1 in 35 cases (55.6%), L4/L5 level was noted in 24 cases (38.1%), L3/L4 level was noted in 14 cases (22.2%) and L2/L3 was noted in 7 cases (11.1%) in order of decreasing frequency. Indentation of anterior theca was observed in 41.3% (26) of the total cases. In 76.2% (48) patients compression of the nerve root was seen out of total cases. Stenosis of the spinal canal was seen in 38.1% (24) out of the total cases.

Keywords: Magnetic resonance imaging (MRI), lower backache, disc bulge, disc desiccation, herniated disc, spinal canal stenosis, sciatica, lower limb weakness.

Article Information

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INTRODUCTION

MRI stands for Magnetic Resonance Imaging (MRI) technology and this one is radiation-free, non-invasive imaging modality that provides great both resolution (spatial and contrast). As a result, it's become the established method of examining patients who had lower back problems or radiculopathy. Non-body parts or "soft tissue" regions such as muscles, ligaments, and tendons are detected with MRI scanners. An allergic reaction to an MRI contrasting agent is less likely. Other imaging techniques can't match. MRI's ability to produce exceptionally high, detailed pictures of

soft-tissue structures. It's also becoming the examination of choice used for herniated disc over the other selections and herniation disc diagnosis has become a gold standard.^[2] Patients suffering from sciatica due to lumbar disc herniation might benefit from MRI for surgical planning.^[3] As a result, MRI is becoming a more common diagnostic radiological technique in the treatment who had lower back pain.

In our clinical practice, lower back ache is one of the most significant MRI signs. Seventy to eighty percent of patients have low backache at some point in their life, according to studies.^[4] Disc Degenerative changes, narrowing of spaces in lumber spinal, neoplasia, infection, malignancies, and inflammatory or arthritic conditions are all causes of lower back ache. The most common is lumbar disc degeneration usually detected abnormality related to lower back ache. A multiple factors contribute to this condition.^[5] Disc degeneration is caused by aging, axial disc stress, growth (vascular), and collagen anomalies. This degenerative process leads to herniated disc with radiculopathy and persistent lower back discomfort caused by disc.^[6]

MRI stands for Magnetic Resonance Imaging (MRI) technology and this one is radiation-free, non-invasive imaging modality that provides great both resolution (spatial and contrast). As a result, it's become the established method of examining patients who had lower back problems or radiculopathy. So it is also becoming the examination of choice for a herniated disc over the other selections and herniated disc diagnosis has become a gold standard.^[2] Patients with sciatica caused by lumbar disc herniation might benefit from MRI for surgical planning.^[3] As a result, in the treatment of lower back ache , MRI is becoming a more common diagnostic radiological technique.^[1]

MATERIAL METHODOLOGY

This is a hospital-based descriptive cross-sectional research of 63 lumbar spine. MRI results conducted at the Punjab Diagnostic Centre in Gujranwala at the Radiology Department of Punjab Diagnostic Centre, Gujranwala, from 1st October to 31st December, who had a lumbar spine MRI for severe and persistent lower back pain, radiculopathy, claudication (neurogenic), or other symptoms and indications that could indicate low back discomfort. The age range was between 16 to 63years. On the basis of MRI results spinal infection (acute), recent shock, malignances, spinal bifida, and metabolic syndrome were all ruled out. Non-Contrast Magnetic resonance imaging Scans were obtained. Simple Random Sampling Technique was used and on the basis of First Hand Observation, Data was obtained with the assistance of Radiologist. All the data was entered into a pre-design Performa SPSS version 22 was used to enter and evaluate the data.

RESULTS

The current study was conducted among 63 cases of all age groups were enrolled in this research. Mean age of the study population was 40.89 ± 13.037 with minimum age of 16years and 68years as maximum age.

The total number of patients was 63 of which there were 36 males (57.1%) and 27(42.9%) females as shown in Table 1.

Table 1

Gender	Frequency	Percent
Male	36	57.1
Female	27	42.9
Total	63	100.0

Table1: Gender of Patients

Table 2 shows the Lumbar Spine Straightening was noted in 23 (63.5%) patients.

Table 2

Lumbar Spine Straightening	Frequency	Percent
No	40	63.5
Yes	23	36.5
Total	63	100.0

Table 2: Lumbar Spine Straightening

Table 3 shows the incidence of various types of disc desiccation, disc bulge and disc herniated was calculated.

The most well-known category was disc desiccation observed at L5/S1 in 35(55.6%), L4/L5 level was noted in 24(38.1%), L3/L4 level was noted in 14(22.2%) and L2/L3 was noted in 7cases (11.1%) in decreasing order of frequency. The most common disc bulge was observed at L4/L5 level in 40 cases (63.4%) and L5/S1level was noted in 31 cases (49.1%) followed by L3-L4 level was noted in 11 cases (17.5%) in decreasing order of frequency. And the Disc herniation was seen at total 16 patients (25.4%) respectively. Disc herniation was noted most common at L4/L5 level as shown in table 3.

Table 3

Level	Disc Desiccation		Disc Bulge		Disc Herniated	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
L1/L2	4	6.3				
L2/L3	7	11.1	4	6.3		
L3/L4	14	22.2	11	17.5	2	3.2
L4/L5	24	38.1	40	63.4	9	14.3
L5/S1	35	55.6	31	49.1	5	7.9

Table3: Various categories of Disc desiccation, bulge, herniated at different levels.

Table 4

	Indentation of anterior theca		Nerve root compression		Spinal canal stenosis	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
No	37	58.7	15	23.8	39	61.9
Yes	26	41.3	48	76.2	24	38.1
Total	63	100.0	63	100.0	63	100.0

Table4: Frequency distribution of indentation of anterior theca, nerve root compression and spinal canal stenosis.

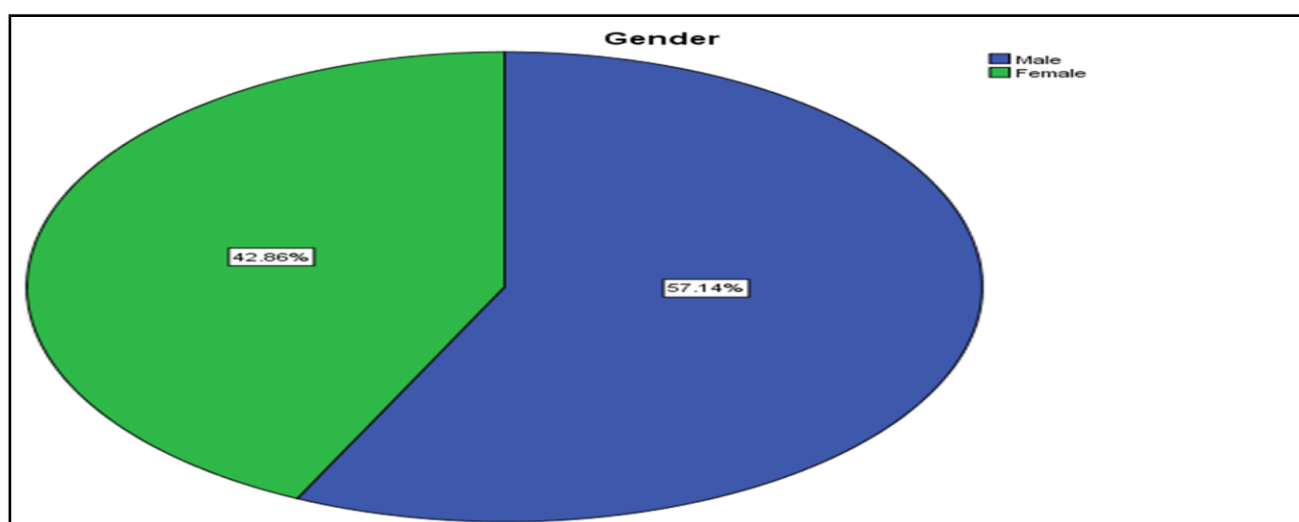
In Table 4 shows the Indentation of anterior theca was observed in 41.3% (26) of the total cases. Out of the total cases in 76.2% (48) compression of the nerve root was seen. Out of the total cases in 38.1% (24) stenosis of the spinal canal was seen.

Table 5

Gender		Lumber spine Straightening		Total
		No	Yes	
	Male	23	13	36
	Female	17	10	27
Total		40	23	63

Table5: Cross tabulation of Lumber spine straightening

In Lumber spine straightening out of 63 patients in which there 23 patients noted (10) female and (13) male respectively. (Figure 1)



DISCUSSION

The descriptive cross-sectional study established the spectrum of Magnetic Resonance Imaging examination the patients' conditions who had lower back ache in the research. The mean age of patients experiencing low back pain was 40.89 years. The age of the patient who had lower back pain presented remains consistent with prior research.^[7-9] The L4-L5 level (63.4 percent) and L5-S1 level (63.4 percent) were found to be the most commonly involved in this investigation (49.1 percent). Most anomalous MRI results at the lowest lumbar levels are consistent with this (L4-L5 & L5-S1). And Disc herniation was seen at total 16 patients (25.4%). The incidence of disc desiccation observed at L5/S1 (55.6%). Nerve root compression was the most prevalent consequence of degenerative alterations in this investigation, occurring in 76.2 percent (48) of the total cases. Higher rates of compression of the nerve root and different types of stenosis were reported in the current investigation, which might be attributable to the inclusion of older individuals.^[1] Degenerative disc is frequently misinterpreted as a cause of lower lumbar pain, prompting medicinal and surgical procedures be occasionally ineffective improving the patient's symptoms.^[10] As a result, greater study comparing the clinical importance of MRI degenerative alterations in symptomatic and asymptomatic patient's is needed.^[1]

LIMITATIONS

The study's limitations were the detail that it was a descriptive cross-sectional study with a limited sample size as well as the fact that each radiologist would report differently.

CONCLUSION

The goal of this research study was to look at the range of Magnetic Resonance Imaging findings (MRI) in patients who had lower back pain. The magnetic resonance imaging (MRI) technology this one is radiation-free, non-invasive imaging modality that provides great resolution (spatial and contrast). As a result, it's become the established method of examining patients who had lower back problems and radiculopathy. It's also becoming the examination of choice used for herniated disc over the other selections and herniation disc diagnosis has become a gold standard.

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