



INCIDENCE OF RADICULOPATHY IN LUMBOSACRAL SPINE IN HADOTI REGION, RAJASTHAN, INDIA - A RETROSPECTIVE CROSS-SECTIONAL STUDY

Orthopaedics

Dr. Umesh Kumar Meena	Assistant Professor, Department Of Orthopaedics, Government Medical College, Kota, Rajasthan, India
Dr. Ekaansh Karir*	Junior Resident, Department Of Orthopaedics, Government Medical College, Kota, Rajasthan, India *Corresponding Author
Dr. Ram Prasad Meena	Head Of Department, Department Of Orthopaedics, Government Medical College, Kota, Rajasthan, India
Dr. Sachin Joshi	Professor, Department Of Orthopaedics, Government Medical College, Kota, Rajasthan, India
Dr. Kishan Gopal Nama	Associate Professor, Department Of Orthopaedics, Government Medical College, Kota, Rajasthan, India

ABSTRACT

Background Context: Lumbosacral radiculopathy is a syndrome occurring due to the involvement of nerve roots in the lumbosacral region, leading to symptoms such as lower limb tingling, weakness, pain as well as low back ache. **Purpose:** To estimate the burden of Radiculopathy in patients with low back ache in Hadoti Region of Rajasthan, India. **Study Design:** Retrospective Observational Cross-Sectional Study **Patient Sample Size:** 1,12,279 **Outcome Measures:** Radiological and clinical evidence of radiculopathy **Methods:** All patients presenting to the OPD were screened and patients with complaints of low back aches were eligible for the study. All patients with low back aches were evaluated clinically and radiologically using digital X-rays and MRI scans done on the same machine and with the same setup. All our results were tabulated and statistical analysis was done using the paired T-test and ANOVA for different statistical analysis **Results:** Out of the 82,281 participants, 9,641 (11.72%) patients had complains of low back ache, 1,607 (16.67%) patients had clinically and radiologically confirmed radiculopathy, 118 (7.34%) patients had involvement of the L1 nerve root, 108 (6.72%) patients had involvement of the L2 nerve root, 238 (14.81%) patients had involvement of the L3 nerve root, 276 (17.17%) patients had involvement of the L4 nerve root, 394 (24.52%) patients had involvement of the L5 nerve root, 318 (19.79%) patients had involvement of the S1 nerve root, 98 (6.1%) patients had involvement of the S2 nerve root, 10 (0.62%) patients had involvement of the S3 nerve root and 7 (0.44%) patients had involvement of the S4 nerve root, 1,239 (77.1%) patients were females, whereas 368 (22.9%) patients were males, 69 (4.29%) patients were in the age group of <20 years, 77 (4.79%) patients were in the age group of 20-30 years, 153 (9.52%) patients were in the age group of 30-40 years, 459 (28.57%) patients were in the age group of 40-50 years, 383 (23.81%) patients were in the age group of 50-60 years, 306 (19.05%) patients were in the age group of 60-70 years and 160 (9.96%) patients were in the age group of >70 years, 1025 (63.78%) patients had radiculopathy in the right limb, whereas 582 (36.22%) patients had radiculopathy in the left limb. **Conclusions:** Our study interprets that in the Hadoti region of Rajasthan, India, approximately, one out of every six patients with low back ache have radiculopathy, out of which every three out of four patients are females. Almost one out of every four patients have radiculopathy in the L5 nerve root and almost one in four patients are between 40-50 years old. Almost 6 out of 10 patients have radiculopathy in the right limb.

KEYWORDS

Radiculopathy, Rajasthan, Epidemiology, Low Back Ache,

INTRODUCTION

Lumbosacral radiculopathy is a syndrome occurring due to the involvement of nerve roots in the lumbosacral region, leading to symptoms such as lower limb tingling, weakness, pain as well as low back ache. [1] This damage is caused by compression of the nerve roots which exit the spine, levels L1- S4. Compression of nerve roots can lead to pain involving the respective dermatome, tingling sensations, anesthesia, paresthesia, hypo/hyperesthesia and numbness in the lower limb. Although radiculopathy can occur anywhere in the spine, the lumbosacral part is the most common followed by the cervical part and the thoracic part. Most patients suffering From radiculopathy can be managed with physiotherapy and medical management. One thing to keep in mind is that radiculopathy and "radicular pain" are two different entities and are not mutually inclusive.

[2] Radiculopathy and radicular pain commonly occur together, but radiculopathy can occur in the absence of pain and radicular pain can occur in the absence of radiculopathy. Radiculopathy includes the whole constellation of symptoms such as anesthesia, paresthesia, hypoesthesia, motor weakness as well as pain. Radicular pain and nerve root pain can be defined as a single symptom (pain) that can arise from one or more spinal nerve roots. Lumbar sacral radiculopathy is a disorder of the spinal nerve roots from L1 to S4. [3] Our objectives in this study were to estimate the incidence of Radiculopathy in patients with low back ache, predominance of sex, side, age as well as levels associated with Radiculopathy most commonly. We wish to estimate the burden of Radiculopathy in patients with low back ache in the Hadoti Region of Rajasthan, India.

MATERIALS AND METHODS

We did a retrospective observational cross-sectional study for a duration of 1 year between July 2023 to June 2024 at the Department Of Orthopaedics, Government Medical College, Kota. All patients presenting to the OPD were screened and patients with complaints of low back ache were eligible for the study. Any patients with a prior history of back or lower limb surgery, knee, hip or ankle disorder or known nervous system disorder were excluded from the study.

All patients with low back ache were evaluated clinically and radiologically using Digital Xrays and MRI Scans done on the same machine at the same setup. Proper history was taken from the patients regarding the pain, Radiculopathy symptoms, socio-economic status, pre-existing conditions/factors, history of trauma etc.

We estimated the incidence of Radiculopathy in patients with low back ache. A patient was said to have radiculopathy only if both clinical as well as radiological signs and symptoms matched the description. We also estimated the predominant sex, the predominant limb and the most common age of onset in patients with low back ache with radiculopathy.

To eliminate observers' bias in our study, we clinically evaluated the patient before any radiological investigations. After radiology, the matching of the symptoms with the films was done based on the radiologist's reports and not on the treating doctor.

Our study size included the entire OPD footfall in one year at our Hospital which is the main hospital in the Hadoti Region of Rajasthan, India.

Our OPD footfall was 1,12,279 throughout the duration, out of which

29,988 were repeat visits or visits for follow-up of various conditions.

Unique footfall throughout our study was 82,281 which was our initial sample size.

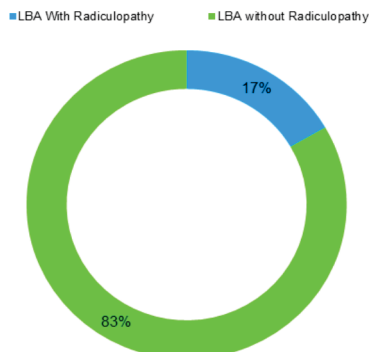


Figure 1 - Incidence of Low Back Ache in Patients presenting to the Orthopaedic OPD

All our results were tabulated and statistical analysis was done using the paired T-test and ANOVA for different statistical analysis.

RESULTS

We evaluated 82,281 participants in our study from July 2023 to June 2024 at the Orthopaedic OPD at Government Medical College, Kota.

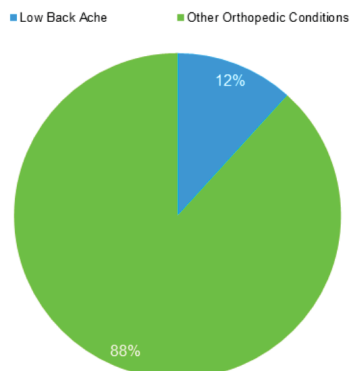


Figure 2 - Incidence of Patients with Low Back Ache with Radiculopathy features

Out of the 82,281 participants, 9,641 (11.72%) patients had complaints of low back ache with no other known disorders of the spine/pelvis/hip/knee/ankle/related systemic condition. ($P = <0.0001$) [FIGURE 1]

Out of the 9,641 patients with low back ache, 1,607 (16.67%) patients had clinically and radiologically confirmed radiculopathy. ($P = <0.0001$) [FIGURE 2]

Out of the 1,607 patients with radiculopathy, we estimated the most predominant nerve root involved, (in the case of patients with multiple radicular involvement, radiologically and clinically the most severely involved was chosen).

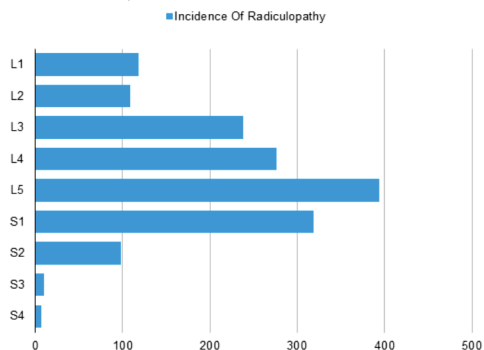


Figure 3 - Distribution of Nerve Root Involved in Radiculopathy Patients

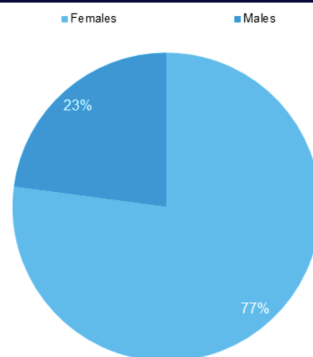


Figure 4 - Sex Distribution of Patients with Radiculopathy

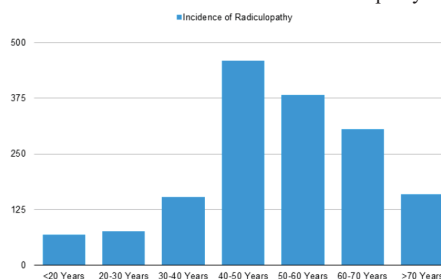


Figure 5 - Age Distribution Of Patients with Radiculopathy

118 (7.34%) patients had involvement of the L1 nerve root, 108 (6.72%) patients had involvement of the L2 nerve root, 238 (14.81%) patients had involvement of the L3 nerve root, 276 (17.17%) patients had involvement of the L4 nerve root, 394 (24.52%) patients had involvement of the L5 nerve root, 318 (19.79%) patients had involvement of the S1 nerve root, 98 (6.1%) patients had involvement of the S2 nerve root, 10 (0.62%) patients had involvement of the S3 nerve root and 7 (0.44%) patients had involvement of the S4 nerve root. (P value = 0.001711) [FIGURE 3]

Out of the 1,607 patients with radiculopathy, 1,239 (77.1%) patients were females, whereas 368 (22.9%) patients were males. (p value = <0.0001) [FIGURE 4]

Out of the 1,607 patients with radiculopathy, 69 (4.29%) patients were in the age group of <20 years, 77 (4.79%) patients were in the age group of 20-30 years, 153 (9.52%) patients were in the age group of 30-40 years, 459 (28.57%) patients were in the age group of 40-50 years, 383 (23.81%) patients were in the age group of 50-60 years, 306 (19.05%) patients were in the age group of 60-70 years and 160 (9.96%) patients were in the age group of >70 years. (P Value = 0.01594) [FIGURE 5]

Out of the 1,607 patients, 1025 (63.78%) patients had radiculopathy in the right limb, whereas 582 (36.22%) patients had radiculopathy in the left limb. (In case of multiple nerve root involvement, clinically and radiologically the most severe nerve root involved was chosen). (p Value = <0.0001) [FIGURE 6]

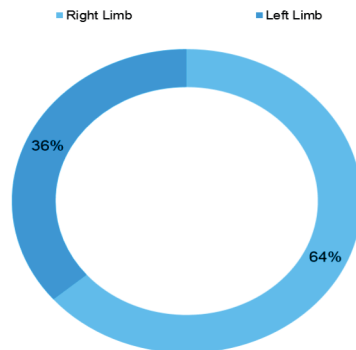


Figure 6 - Limb Distribution of Patients with Radiculopathy

DISCUSSION

Our study aimed to establish the epidemiology of Radiculopathy in

patients in the Hadoti Region of Rajasthan, India.

According to our study, 11.72% of patients with orthopedic conditions are suffering from low back ache.

Out of these patients, 77.1% of patients are females, while only 22.9% patients are males.

Out of all patients suffering from low back ache, 16.67% of patients had radiculopathy in one or more than one nerve root.

Out of all patients with radiculopathy, the most common nerve root involved was L5 (24.52% of patients), followed by the S1 nerve root (19.79% of patients). The least common nerve root involved was the S4 nerve root (0.44% of patients) followed by the S3 nerve root (0.62% of patients).

The most common age group of onset of radiculopathy in patients in our study was 40 - 50 years (28.57% of patients) followed by 50 - 60 years (23.81% of patients). The least common age group was <20 years (4.29% of patients) followed by 20 - 30 years (4.79% of patients).

Out of all the patients suffering from radiculopathy, 63.78% of patients had radiculopathy in the right limb compared to only 36.22% of patients in the left limb.

The possible limitations in our study may include that a certain proportion of patients in the region may also go to Private hospitals and get treated by quacks or other forms of medicine instead of our hospital and hence may not form a part of our sample size and results.

CONCLUSION

Our study interprets that in the Hadoti region of Rajasthan, India, approximately, one out of every six patients with low back ache have radiculopathy, out of which every three out of four patients are females. Almost one out of every four patients have radiculopathy in the L5 nerve root and almost one in four patients are between 40-50 years old. Almost 6 out of 10 patients have radiculopathy in the right limb.

Due to the extremely large size of our study, our findings should be generalizable to the entire Hadoti Region population of Rajasthan, India.

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