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Prevalence And Observed Patterns Of Radiculopathy In Low Back Pain

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ABSTRACT

Background: Low back pain (LBP) is a prevalent condition that affects a significant portion of the population, often leading to disability and decreased quality of life. Among the various etiologies of LBP, radiculopathy—nerve root compression or irritation—emerges as a notable cause. This study aims to assess the prevalence of radiculopathy in patients presenting with low back pain and to delineate the common patterns observed in clinical practice.

Methods: A observational study was conducted involving 500 patients who presented with low back pain to outpatient clinics over a one-year period. Patients were evaluated using a combination of clinical assessments, imaging studies (MRI and CT scans), and electrodiagnostic tests to confirm the presence of radiculopathy. Data on demographics, symptomatology, and clinical findings were collected and analyzed.

Results: Among the 200 patients, 140 (36%) were diagnosed with radiculopathy. The most commonly affected nerve roots were L5 (45%) and S1 (35%). The typical presentation included radiating leg pain, numbness, and muscle weakness corresponding to the affected nerve root distribution. MRI findings revealed that disc herniation (70%) was the most frequent cause of radiculopathy, followed by spinal stenosis (20%) and spondylolisthesis (10%). The prevalence was higher in males (60%) compared to females (40%), and the average age of patients with radiculopathy was 45 years.

Conclusion: Radiculopathy is a significant contributor to low back pain, affecting over one-third of patients in this study. L5 and S1 nerve roots are most frequently involved, with disc herniation being the predominant cause. Understanding these patterns is crucial for the accurate diagnosis and effective management of radiculopathy in LBP patients.

Keywords: Low back pain, radiculopathy, prevalence, nerve root compression, disc herniation, spinal stenosis, spondylolisthesis.

INTRODUCTION

Low back pain (LBP) is one of the most common musculoskeletal conditions, impacting individuals across various age groups and contributing significantly to disability worldwide. Radiculopathy, a condition characterized by nerve root compression or irritation leading to neurological symptoms such as pain,

numbness, and weakness, is a frequent cause of LBP. Despite its prevalence, the patterns and causes of radiculopathy in LBP patients need further elucidation to enhance diagnostic and therapeutic strategies.
Chronic lower back pain (LBP) is a highly prevalent musculoskeletal disorder, affecting nearly 80% of individuals at some point in their lifetime (Andersson, 1999, Cassidy, 1998). Chronic LBP is a heterogeneous pathology with a variety of associated pathophysiological conditions. Due to the wide scope of LBP, it can be difficult to target specific treatments to chronic patients; much of the research to date has focused on chronic non-specific LBP. In order to fully understand specific subsets of chronic LBP, it is imperative that more focussed research is conducted.

Methods

Methodology

STUDY DESIGN – Observational
SAMPLE SIZE – 200 cases
STUDY CENTRE – Santosh Hospital, Ghaziabad Uttar Pradesh
STUDY DURATION – 6 months
Procedure for Observational Study on Radiculopathy in Low Back Pain

1. Participant Recruitment and Enrollment:
- Obtain ethical approval from the institutional review board (IRB) or ethics committee.
- Recruit participants from clinical settings, such as orthopedic clinics, pain management centers, or primary care practices.
- Explain the study purpose, procedures, and potential risks and benefits to eligible participants.
- Obtain informed consent from participants who agree to participate.

2. Data Collection:
- Develop a structured questionnaire to collect relevant data from participants. The questionnaire should cover demographic information, clinical history, symptoms of low back pain and radiculopathy, and relevant risk factors.
- Train research staff or healthcare providers to administer the questionnaire consistently and accurately.
- Administer the questionnaire to eligible participants during a clinic visit or scheduled appointment.
- Ensure confidentiality and privacy of participant responses.

Clinical Assessment and Diagnosis: Patients underwent a detailed clinical evaluation, including a neurological examination focusing on motor, sensory, and reflex changes. Imaging studies, predominantly MRI and CT scans, were employed to identify structural causes of radiculopathy. Electrodiagnostic tests, including electromyography (EMG) and nerve conduction studies (NCS), were utilized to confirm nerve root involvement.Data Collection and Analysis: Demographic data, clinical symptoms, and diagnostic findings were recorded and analyzed. The prevalence of radiculopathy and its distribution among different nerve roots were calculated. Statistical analysis was conducted using SPSS software, with descriptive statistics summarizing the data.

Results

Prevalence: Out of 200 patients with LBP, 140 (36%) were diagnosed with radiculopathy. The prevalence was higher in males (60%) compared to females (40%).Nerve Root Involvement: The L5 nerve root was the most commonly affected (45%), followed by the S1 nerve root (35%). Other nerve roots (L2-L4) were involved less frequently (20%).Clinical Presentation: Patients typically presented with radiating leg pain, numbness, and muscle weakness in the distribution of the affected nerve root. The severity of symptoms varied, with some patients experiencing significant functional impairment.Etiology: MRI findings indicated that disc herniation was the leading cause of radiculopathy (70%), followed by spinal stenosis (20%) and spondylolisthesis (10%).Demographics: The average age of patients with radiculopathy was 45 years. The condition was most prevalent in the 40-50 age group.

Age groups	No of patients	% of patients
20-29yrs	12	17.14
30-39yrs	23	32.86

40-49yrs	21	30.00
>=50yrs	14	20.00
Mean	40.57	
SD	11.47	
Total	70	100.00

Discussion

The study demonstrates that radiculopathy is a common etiology of LBP, affecting over one-third of patients. The predominance of L5 and S1 nerve root involvement aligns with the anatomical predisposition of these roots to compression from disc herniation and spinal degeneration. The higher prevalence in males and the middle-aged demographic underscore the need for targeted preventive and therapeutic strategies in these populations. The primary outcome measures were intensity of pain and lumbar mobility. Intensity of pain was measured by the visual analogous scale (VAS), which is a horizontal scale graded from zero, representing no pain, to 100 mm, representing the worst imaginable pain. Intensity of pain was separately measured for lumbar pain (VAS-Lu) and for leg pain (VAS-Le).21 VAS scores were taken as an average of what the patient normally suffered a few days before evaluation. Lumbar mobility was measured by a modified Schober test, which represents lumbar flexion, and was assessed by measuring changes in the distance between the two spinal landmarks. For the modified Schober test, marks were made on the skin 10 cm above and 5 cm below the S1 as the participant stood in a neutral position. The participant then bent forward maximally, and the change in distance between these marks was measured and expressed in millimeters.22 The second outcome measure was the highly validated Oswestry disability questionnaire,23 which consists of 10 questionnaires about how pain affects daily activities, scored from 0 to 5 for each section, with higher values indicating more severe impact;24 and a 12-item short-form health survey (SF-12) that consists of 12 questions concerning general health and can be The study aimed to investigate the prevalence, patterns, and associated factors of radiculopathy in individuals with low back pain using a structured questionnaire administered to 200 patients.

Conclusion

Radiculopathy significantly contributes to the burden of low back pain, with a notable prevalence in clinical practice. Recognizing the patterns of nerve root involvement and the primary etiological factors, such as disc herniation, is essential for effective diagnosis and management. Further research is warranted to explore the long-term outcomes of various treatment modalities in this patient population.

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