

Incidence of Sacroiliitis among Patients Presenting with Chronic Low Back Pain to a Tertiary Care Spine Center

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ABSTRACT

Inflammatory spondyloarthritis (SpA) is an underdiagnosed cause of chronic low back pain leading to prolonged suffering and numerous visits to hospitals. The aim of this study was to ascertain the prevalence of sacroiliitis, which is an early indicator of inflammatory SpA, among patients who present with chronic low back pain.

Materials and methods: A total of 200 consecutive lumbosacral (LS) spine MRI scans performed at Manipal Hospitals, Bengaluru, Karnataka, India, were analyzed by two radiologists and a spine fellow. The demographic data of the patients and the presence of sacroiliitis and other abnormalities on the scans were noted.

Results: Among the 200 patients included in the study, 119 were male, and 81 were female, with a mean age of 35.07 years. A total of 31 (15.5%) patients were diagnosed to have sacroiliitis, which included 14 males (11.76%) and 17 females (20.99%).

Conclusion: The study showed that 15.5% of patients who presented with low back pain had sacroiliitis, which is more than previously reported. Thus, it is important to carefully assess the sacroiliac joints of low backache patients both clinically and radiologically so that the diagnosis is not missed and appropriate treatment can be given.

Clinical significance: This article stresses the fact that the clinician must always look into the sacroiliac joints, both clinically and radiologically, of any patient presenting with complaints of low backache in the outpatient department.

Keywords: Ankylosing spondylitis, Low back pain, Magnetic resonance imaging lumbar spine, Sacroiliitis.

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INTRODUCTION

Low backache is a leading cause of long-term disability and lost productive time, with resultant high direct and indirect costs to patients and society.¹ Chronic low back pain can arise from numerous vertebral pathologies such as spondylolysis, spondylolisthesis, trauma, deformity, spondyloarthropathies, facet arthritis, disc degeneration, annular tears, etc. The sacroiliac joint is often a missed cause of chronic backache.² Inflammatory sacroiliitis, accounting for 88% of sacroiliac arthritis, is a pathognomonic feature of inflammatory SpA.³

Inflammatory SpA presents with early morning back pain and pain at rest, which is relieved with activity along with MRI and/or radiological features of inflammatory sacroiliitis. The typical bamboo spine appearance on radiographs and clinical features of a stiff, fused spine occurs in the later course of the disease. Hence, it is quite possible that features of inflammatory SpA are overlooked during the early days of the disease.⁴ SpA is primarily a disease of young adults and can lead to progressive and irreversible structural damage in the spine affecting productivity and life quality.⁵ The advent of biological disease-modifying drugs has led to favorable outcomes of SpA,⁶ and delayed treatment leads to significantly worse disease activity index [Bath Ankylosing Spondylitis (AS) Disease Activity Index] and damage index (Bath AS Metrology Index).⁷ Besides, the response to tumor necrosis factor (TNF) α inhibitors is more pronounced in those with short disease duration.^{8,9} Hence, it is crucial that SpA is diagnosed early to limit the pain and disability associated with the condition.

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This study aims at ascertaining the prevalence of sacroiliitis, which is considered to be an early imaging sign of inflammatory SpA, among chronic low backache patients in an Indian population.

MATERIALS AND METHODS

A total of 200 consecutive MRI scans of the LS spine done at our center were analyzed by two radiologists and a fellow in spine surgery to ascertain the presence of sacroiliitis. All patients between the ages of 15–45 years who presented with chronic low backache and underwent an MRI scan at our center were included. Those

presenting with low back pain secondary to spinal deformity, trauma, tumor, and infection and patients who had had spinal surgery in the past were excluded. The observation of subchondral bone marrow edema, synovitis, joint effusion, capsulitis, and erosions at the sacroiliac joint surface was considered evidence of acute sacroiliitis, while subchondral sclerosis, subchondral fatty deposition, erosions, bony bridges, and total ankylosis were considered features of chronic sacroiliitis.

Magnetic resonance imaging (MRI) was done at our hospital with a 1.5T MRI machine (Signa, Georgia, United States of America) using a spine phased-array coil to sagittal and axial T1 and T2 weighted sequences of LS spine and sacroiliac joints. T2 short tau inversion recovery (STIR) images were performed in an oblique coronal plane, which was parallel to the anterior sacrum, to help in the identification and evaluation of sacroiliitis. The STIR sequences were done by using the following measurements (reception time—3894 milliseconds; time to echo—60 milliseconds; inversion time—230 milliseconds; field-of-view—20 × 20 cm; slice thickness—3 mm with 0.5 mm spacing; flip angle—120°). The time taken for the fat-suppressed sequence was 3 minutes and 27 seconds.

Ethics clearance was taken from the Ethical Committee of our hospital for this study.

RESULTS

A total of 200 patients who presented with low backache to the Spine Care Centre and who underwent an MRI scan of the LS spine between August 2018 and October 2018 were included in the study. The age group of these patients was 17–45 years, and the mean age was 35.07 years. Among these 200 patients, 119 were male and 81 were female. Sacroiliitis was diagnosed in 31 (15.5%) patients. Among these 31 patients, 14 (45.16%) were males and 17 (54.84%) were females. The prevalence of sacroiliitis among male patients was 11.76%, and that among female patients was 20.99% in our study. Among the 31 patients with sacroiliitis, 22 (70.96%) patients had bilateral sacroiliitis and nine (29.03%) had unilateral sacroiliitis. A total of 15 (48.39%) patients had acute sacroiliitis, eight (25.8%) had chronic sacroiliitis, four (12.9%) had acute on chronic sacroiliitis, and four (12.9%) had acute sacroiliitis on one side and chronic sacroiliitis on the other side.

DISCUSSION

Low backache is one of the commonest reasons for seeking medical treatment all over the world after upper respiratory symptoms.¹ Around 70–85% of people suffer from backache at some point in their lives,¹⁰ and the prevalence of chronic low backache is three to four times higher in people over the age of 50 years.¹¹ A large community-based study from West Bengal found that 25% of the population suffered from low back pain.¹² SpA comprises AS, psoriatic arthritis, inflammatory bowel disease associated with SpA, juvenile SpA, and undifferentiated SpA (uSpA).¹³ AS and uSpA form the largest subgroups of spondyloarthropathies.^{14,15} SpA mainly affects young males and mostly sets in during their teenage years. It characteristically involves the spine, sacroiliac joints, enthesitis, peripheral arthritis, and extra-articular manifestations, including psoriasis, anterior uveitis, and inflammatory bowel disease.^{16,17} Irreversible structural changes, including ankylosis of the spine, sacroiliac, and hip joints, occur in the late stages of the disease.¹⁸ Inflammatory back pain is the commonest initial symptom in 87% of patients. It is diagnosed by the criteria put forward by Rudwaleit et al. This included; (1) >30 minutes duration of morning stiffness;

(2) backache, which improves on exercising and not on resting; (3) backache leading to sleep disturbances and forcing the patient to get up during the second half of the night only; and (4) buttock pain which alternates from one side to the other. If at least two of these points were present, the diagnosis of inflammatory backache was considered.⁷ Inflammatory etiology accounts for 88% of sacroiliitis and is often missed due to the absence of significant radiological findings in the early stages and difficulty in distinguishing it from pain arising due to intervertebral disc herniation and lumbar facet arthritis.³ Aggarwal et al. found a delay of 6.9 years in diagnosing AS due to incorrect diagnosis as nonspecific back pain (35.1%), rheumatoid arthritis (20.37%) degenerative disc disease (25.9%) and tuberculosis of spine (16.6%). The delay in diagnosis of this condition has also been significantly attributed to the lack of extra-articular symptoms or signs and the young age of the patient.⁷

The prevalence of SpA is between 0.1 and 1.4% globally,¹⁹ with significant heterogeneity in the geographical prevalence of SpA. The prevalence of SpA has been found to be 1.61% in Northern Arctic communities, 0.22% in South Asia, 1.35% in North America, and 0.54% in Europe.^{19,20} Axial SpA has been observed to be almost two times more common, and AS is thrice as common in American Whites than in African-Americans. The prevalence of SpA differs because of the varied human leukocyte antigen B27 (HLA-B27) allele prevalence in different population groups.²⁰ HLA-B27 is present in 86.7% of Central Americans, 62.5% of African-Americans, and 85.3% of Whites. Greater functional impairment, higher disease activity, and higher levels of C-reactive protein and erythrocyte sedimentation rate have been noted in African-Americans than in Whites and Central Americans.²¹

The clinical features of AS and the mean age of disease onset among Indian patients were similar to that in other parts of the world, except for the fact that peripheral arthritis manifestations were more common among Indian patients. Sreedhar et al.²² found a 7.86% incidence of sacroiliitis among 750 patients (aged between 7 and 89 years) presenting with low backache to a hospital in northern India with a male preponderance of 71%. A total of 87.1% of these patients were observed to be suffering from bilateral sacroiliitis of grades 2–4, and 12.8% of patients were found to be having severe (grade 3 or 4) unilateral sacroiliitis, based on the X-rays. HLA-B27 tested positive in 90% of the patients, and a history of sacroiliitis in the family was found in nearly 50% of the patients.⁷

Magnetic resonance imaging (MRI) is really important to diagnose active sacroiliitis at an early stage by showing inflammatory changes like bone marrow edema, capsulitis, enthesitis, and synovitis.^{23,24} Further, the typical characteristics of sacroiliitis, like joint asymmetry, erosions, cysts, and ankylosis, are clearly shown up on the MRI imaging.³

The incidence of sacroiliitis among patients who presented with low backache was 15.5% in this study, which is significantly higher than that reported by Owlia and Danesh-Ardkani (7.9%),³ Sreedhar et al. (7.86%),²² and Rizvi et al. (13%)²⁵ and considerably less than that reported by Schwarzer (30%).² The mean age of onset of SpA in Indian patients is reported to be 23.5 years, while the mean age of patients presenting with sacroiliitis in our study was 33.8 years. This could be attributed to the fact that our hospital is a tertiary care center with patients coming from across the country with often missed diagnoses. Secondly, we included patients between the ages of 15–45 years, which could have contributed to the higher incidence of sacroiliitis.

Ankylosing spondylitis (AS) leads to higher work disability, unemployment, reduced quality of life, and increased mortality.^{5,26} Newer treatment modalities, including TNF- α blockers, have considerably altered the suffering and disability associated with SpA. Since sacroiliitis is often missed in patients with low backache, pelvic pain, and pain radiating to the legs,²⁷ all LS MRI scans obtained for chronic low back pain should include the sacroiliac joints and radiologists and treating specialists should pay particular attention to rule out sacroiliac pathologies. Thereby, early diagnosis of sacroiliitis and, thereby, SpA leads to early initiation of treatment, thereby reducing the pain, suffering, and disability associated with the condition.

CONCLUSION

A significantly large proportion of chronic low backache sufferers were found to have sacroiliitis (15.5%) in this study. Since the delayed diagnosis can lead to poor disease outcomes and increased morbidity, we recommend that all doctors treating low back pain should screen patients for inflammatory back pain during their initial history taking. In addition to this, all LS MRI scans obtained for chronic low back pain should include the sacroiliac joints with STIR sequence, and radiologists and treating specialists should pay particular attention to rule out sacroiliac pathologies in this patient group.

Clinical Significance

This article stresses the fact that the clinician must always look into the sacroiliac joints, both clinically and radiologically, of any patient presenting with complaints of low backache in the outpatient department.

DECLARATION OF PATIENT CONSENT

The authors certify that they have got all the appropriate consents signed by the patients. The patients have consented for their clinical information to be presented in the journal, with the understanding that their identity will not be revealed in the journal, but anonymity cannot be guaranteed.

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