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Original Article

Prevalence of facet joint arthrosis in lumbago patients—CT scan evaluation

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ABSTRACT

Introduction: There are multiple causes of low back pain (LBP), the leading ones being degeneration of intervertebral disc, lumbar spinal stenosis(LSS) and facet joint arthrosis(FJA). There are number of studies done earlier on disc degeneration and LSS, however the studies on facet joint arthrosis are limited and incomplete. Hence the present study was undertaken to assess the prevalence of FJA of lumbar spine in lumbago patients of Delhi NCR region of India.

Method: The present study was conducted in the Departments of Radiodiagnosis of Santosh Medical College, Ghaziabad and Safdarjung Hospitals, New Delhi. Thirty eight patients were selected for CT scan imaging after pre-defined questionnaire and informed consent. The images were assessed on Philips Dicom viewer for facet joint arthritic changes.

Results: A high prevalence of 52.6% was seen in cases of LBP. FJA was seen in 80% of female cases and the highest prevalence of arthrosis was seen at lumbar spinal level of L4-L5.

Discussion: Facet joint arthrosis plays an important role in low back pain. The prevalence of FJA increases caudally from L1 to L5, with the highest incidence being at the L4–L5 spinal level. The prevalence of FJA is seen more in females than males.

1. Introduction

The degenerative changes of lumbar spine are one of the leading causes of lumbago/low back pain (LBP). These changes occur in the intervertebral discs (IVDs), bony lumbar canal and facet joints (FJs). The IVD and FJ together act as three-joint complex, to resist the force generated by the transmission of body weight acting on each motion segment of the spine.[1] The force acting on this complex divides into – the compression component occurring maximally in plane perpendicular to the disc and the shear or rotational component occurring in the horizontal plane of the disc at the level of facet joints. Derangement of either of these articulations, causes impairment of force transmission, termed as the *"tripod effect"*.[2,3]

The facet joints play an important role in load transmission, by stabilizing the motion segment in flexion and extension and limiting the axial rotation.[4] The facet joints are the typical synovial articulations with hyaline articular cartilage, synovial membrane, joint space and joint capsule (Fig. 1).

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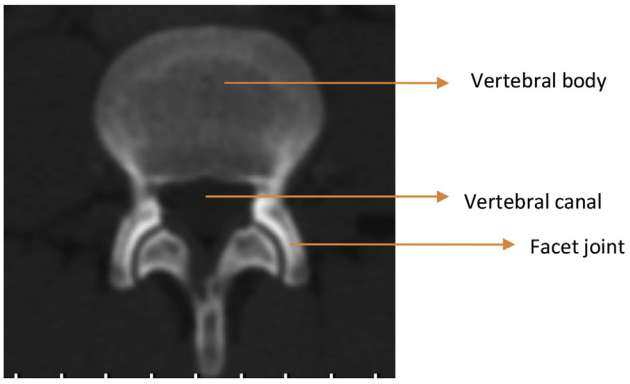

Fig. 1 – Normal facet joint on CT imaging.

They undergo degenerative changes identical to that of osteoarthritis seen in other synovial joints.[5] Osteoarthritis of the FJs may be related to repeated stress or trauma and spinal deformity with secondary overload.[6,7] The term commonly used to describe degeneration and arthritis of the facet joints is *Spondylosis*. The first indication that the FJ can be a source of low back pain was described by Joel Goldthwait in 1911.[8] It has been estimated that FJ pathology is a contributory factor in 15%–52% of patients with chronic LBP.[9–11] However, it has also been reported that the prevalence of isolated facet joint pain may be as low as 4%.[12] The fact that pain can originate from the FJs is widely accepted in the radiologic and orthopedic literature.[13,14] This is supported by investigations employing successful intra-articular or periarticular nerve blocks and the prevalence of facet joint arthrosis(FJA) has been reported to range from 7.7% to 75%.[15] Still the cardinal role of facet joint abnormalities in patients with LBP is debated.

The degenerative changes (of the IVDs, or lumbar canal) of the lumbar spine involving are most common cause for lumbar surgery and with advancement of science and technology, surgery rates have increased markedly over the past decade and gaining acceptance too.[16,17] Since degeneration sets in not only at the IVDs but also in associated facet joints, it is imperative to study the frequency of concurrent occurrence of degenerative changes at the three joint complex at different levels of lumbar spine. The ongoing debate on choosing criteria for conservative and surgical treatment depends not only on the extent of IVD degeneration but also on the degenerative changes in the FJs.

Table 1 – Prevalence of FJA in population with sex predilection.

FJA	Total ($n = 38$)	Male ($n = 14$)	Female ($n = 24$)
Present	20	4	16
Absent	18	10	8

There have been considerable work on degenerative disc disorders (DDD) and lumbar spinal stenosis (LSS) in the past, but there is hardly any work on facet joints particularly in living subjects and especially in Indian sub-continent. Hence the present study was undertaken to define prevalence of FJA of lumbar spine in lumbago patients of Delhi NCR region of India.

2. Materials and method

The present study was conducted in the Departments of Radiodiagnosis of Santosh Medical College, Ghaziabad and Safdarjung Hospitals, New Delhi. The individuals of low back pain were selected by a pre-defined modified questionnaire, prepared on the basis of Oswestry and Quebec LBP questionnaire.[18] Thirty eight patients, 14 men and 24 women of mean age 44.7yrs, with complaints of LBP were included in the study. The selected patients were subjected for CT scan evaluation after obtaining informed consent and Institutional ethical clearance. The images obtained were studied on Philips dicom viewer and the facet joints were classified as Joint-1 between L1 & L2 vertebrae, Joint-2 between L2 & L3 vertebrae, Joint-3 between L3 & L4 vertebrae, Joint-4 between L4 & L5 vertebrae, Joint-5 between L5-S1and arthritic changes in each joint was observed. The changes at the facet joints were noted

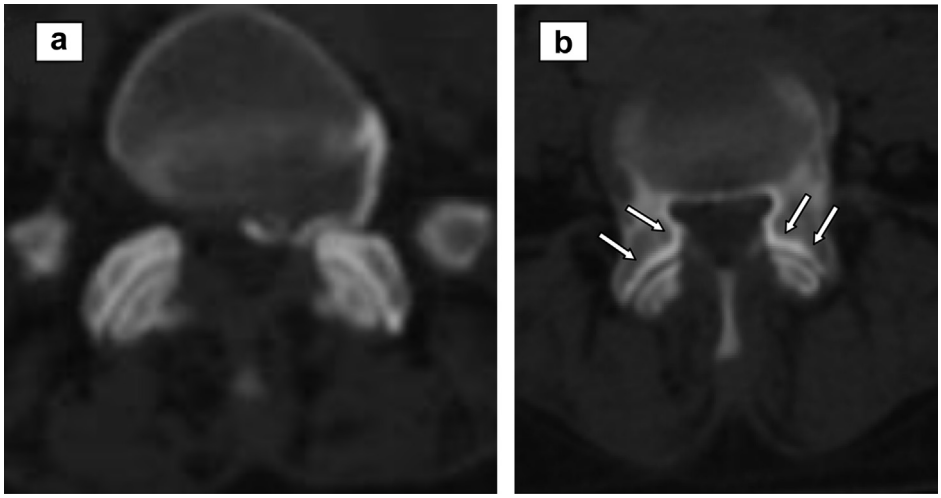

Fig. 2 – FJA (a) decreased joint space (b) hypersclerotic joint margins.