



**ORIGINAL RESEARCH PAPER**

**Radiodiagnosis**

**CASE REPORT- IMAGING OF ANKYLOSING SPONDYLITIS**

**KEY WORDS:** Ankylosing spondylitis, Seronegative spondyloarthritis, Radiography.

**Dr. A.sravan Krishna Reddy**

Post Graduate, Department of Radiology, Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry, Affiliated to Bharath University Chennai, India.

**Dr. S. Shrinivasan\***

Passociate Professor, Department of Radiology, Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry, Affiliated to Bharath University Chennai, India. \*Corresponding Author

**Dr. S. Sajith**

Assistant Professor, Department of Radiology, Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry, Affiliated to Bharath University Chennai, India.

**Dr.r.chidambaram**

Professor, Department of Radiology, Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry, Affiliated to Bharath University Chennai, India.

**ABSTRACT**

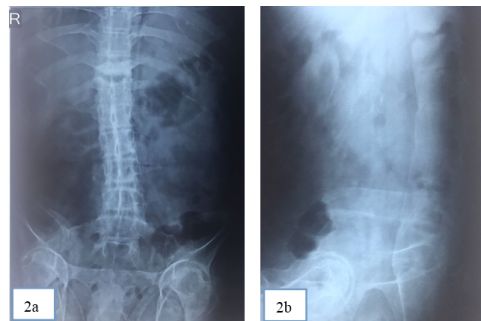
Ankylosing spondylitis is the commonest type of seronegative spondyloarthritis which is characterized by inflammation of multiple articular and para-articular structures which in turn results frequently in bony ankylosis. Here we report a case of a 43yr old male with a history of back pain and radiographic imaging revealed the spectrum of classical imaging findings of ankylosing spondylitis.

**INTRODUCTION**

Ankylosing spondylitis (ankylos = stiffening, spondylos = vertebra) (AS) also called as Bechterew disease or Marie Strümpell disease is a chronic inflammatory disorder of the axial skeleton. Spondylitis refers to inflammation of one or more vertebral bodies. It is most commonly seen in young adolescent males (M: F - 4 to 15:1) with median age of onset around 26-27 years. It is commonly associated with the genetic marker HLA-B27.<sup>1</sup>

**CASE REPORT-**

A 43 year male patient presented to our hospital with history of chronic back pain. The pain was increasing in severity, persistent throughout the day, radiating to both flanks and was aggravated by his daily activities and lifting heavy loads. Neck movements were restricted and he was unable to flex, extend or rotate his neck. On examination, his vital signs were normal. There was no history of other constitutional symptoms like vomiting, skin rash, abdominal pain, other major medical or surgical conditions. Plain radiographs were taken. Cervical spine radiograph(Fig 1a.) showed bony ankylosis of the vertebral bodies which is responsible for the patient's restricted movements of the neck. Antero-posterior view of dorso lumbar spine radiograph(Fig 2a, 2b.) shows squaring of vertebral bodies with syndesmophyte formation resulting in classical bamboo spine appearance. There is ossification of interspinous ligaments(Dagger sign). Chest x-ray showed right upper lobe fibrosis which is most common in ankylosing spondylitis (Fig 1b).



**Fig 2a.** Frontal radiograph of Dorso Lumbar spine(AP) showing squaring of vertebral bodies with syndesmophyte formation giving the appearance of 'Bamboo spine'. Supraspinous and interspinous ligament calcification giving rise to a 'Dagger sign' appearance. Fig 2b. Lumbar spine(Lateral) shows vertebral body squaring and syndesmophyte formation

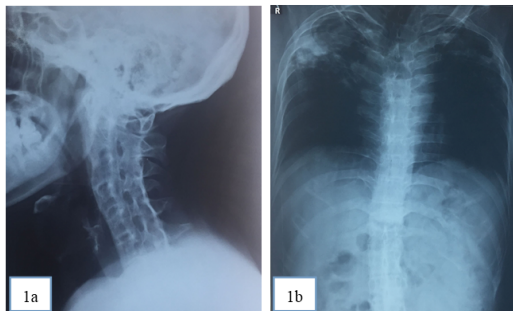
**Discussion**

The sacroiliac and spinal facet joints and the paravertebral soft tissues are most commonly affected in Ankylosing spondylitis. It is characterized by the sequelae of articular bony ankylosis followed by ligamentous ossification leading to manifestations of enthesopathy.

Sacroiliitis, regarded as a hallmark of the disease, occurs early in the course of ankylosing spondylitis. Syndesmophytes (bony spurs) formation is the hallmark of spinal disease in ankylosing spondylitis. These spurs start as thin vertically oriented projections of bone that develop due to ossification within the outer fibres of the annulus fibrosus of the intervertebral disc. Syndesmophytes are seen on the anterior and lateral aspects of the spine projecting from the corner of the vertebra.

In patients with ankylosing spondylitis initial conventional radiography of the lumbar and cervical spine can detect syndesmophytes, which are predictive of development of new syndesmophytes. New radiographic syndesmophytes occurrence can be predicted by MRI by the presence of vertebral corner inflammatory or fatty lesions (Shiny corner sign).<sup>2</sup>

Diffuse syndesmophytic ankylosis of vertebrae gives a "BAMBOO SPINE" appearance. Interspinous ligament calcification can give a



**Fig 1a.** Cervical spine radiograph (lateral view) showing fusion of cervical vertebra and apophyseal joints. Fig 1b. Dorsal lumbar spine (AP view) showing vertebral fusion and right lung showing fibrotic changes in the upper zone with tracheal pull towards ipsilateral side.

"DAGGER SPINE" appearance to lumbar spine.

Progressive fibrosis and bullous changes at the lung apices are the common findings in chest radiograph. These lesions need to be differentiated from tuberculosis infection and bullae may become infected.

This disease commonly affects the late teens and early twenties and can lead to progressive bony fusion of the sacroiliac joints and the vertebral column. Some patients also complain of extra-articular manifestations.<sup>3</sup> Extraspinal manifestations of ankylosing spondylitis include peripheral arthritis, iritis, pulmonary involvement, and systemic upset.<sup>4</sup> The cauda equina syndrome is occasionally encountered in long-standing ankylosing spondylitis. In patients with established ankylosing spondylitis, fractures usually occur at the thoracolumbar and cervicothoracic junctions. Upper cervical spine fractures and atlantoaxial subluxation rarely are seen. Fractures are common which extend from anterior to posterior, and frequently pass through the ossified disk and have been termed as chalk stick fractures. MRI is the investigation of choice in being able to delineate the inflammatory changes of early sacroiliitis in Ankylosing Spondylitis. These changes, which include bone marrow edema and enhancement of joint space, cannot be demonstrated on radiography or CT. Therefore, if early sacroiliitis is suspected clinically, MRI should be the preferred imaging modality for evaluating the SI joint.

However, CT is more sensitive than radiography and MRI in detailing the structural changes of sacroiliitis in ankylosing spondylitis. These changes include the presence of erosions and sclerosis in the affected joint margins.<sup>5</sup>

#### CONCLUSION

Early detection and treatment of ankylosing spondylitis is very essential as it affects the young individuals and sometimes it is life threatening. The basic changes consist of osteoporosis, erosions, and surrounding reactive sclerosis, followed by bony ankylosis. Generally, these changes are bilateral and symmetric in nature.

Thus imaging plays a vital role in diagnosis and management.

#### REFERENCES

1. Bennett DL, Ohashi K, El-Khoury GY. Spondyloarthropathies: ankylosing spondylitis and psoriatic arthritis. *Radiol Clin North Am.* 2004 Jan. 42(1):121-34
2. Mandl P, Navarro-Compan V, Terslev L, et al. EULAR recommendations for the use of imaging in the diagnosis and management of spondyloarthritis in clinical practice. *Ann Rheum Dis.* 2015 Jul. 74(7):1327-39
3. Khan MA. Clinical features of ankylosing spondylitis. In: Hochberg MC, Sil AJ, Smolen JS, Weinblatt ME, Weisman MH, editors. *Rheumatology*. Philadelphia: Elsevier Ltd; 2003. pp. 1161-81.
4. El-Khoury GY, Kathol MH, Brandser EA. Seronegative spondyloarthropathies. *Radiol Clin North Am.* 1996 Mar. 34(2):343-57, xi.
5. Vogler JB 3rd, Brown WH, Helms CA, Genant HK. The normal sacroiliac joint: ACT study of asymptomatic patients. *Radiology* 1984;151:433-7