



Article on MR Imaging on Sacro-Iliac Joint Arthritis

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ABSTRACT

MRI places a major role in detecting early sacro-iliac joint arthritis. Infective cause is more common in our hospital rather than inflammatory arthritis.

KEYWORDS : SIJ Arthritis, Sacrum, ilium, altered signal intensities, contrast enhancement

INTRODUCTION

The sacroiliac joints are frequent sites of lumbar pain and lumbosciatalgia next to the degenerative disc disease. It is commonly seen in clinical daily practice, a non-infectious inflammatory process, sacroiliitis being the most frequent cause world wide and now this study has been presented because of infective cause of SIJ arthritis being common in our set up and presented with SIJ arthritis associated with abscess in the gluteal , iliacus muscles and paraspinal region.

MATERIALS & METHODS

The MRI equipment and sequences used in this study are 1.5 Tesla MRI, T1W axial , T2W axial, STIR Coronal & T1Fat sat post contrast. Use of MR imaging in detecting pelvic pathology, in patients suffering from low back ache , spasm and restricted mobility of the back. This article is as a result of one month study of 100 patients suffering from low back ache. Out of the hundred cases six presented with sacro-iliac joint arthritis. All the six patients presented with insignificant X-ray findings. Inclusion criteria in this study are patient referred as sacro-iliac joint arthritis and all cases of low back ache. Exclusion criteria is patients presented with internal pelvic pathology, post traumatic cases and all known diagnosed cases of sacro-iliac joint arthritis.

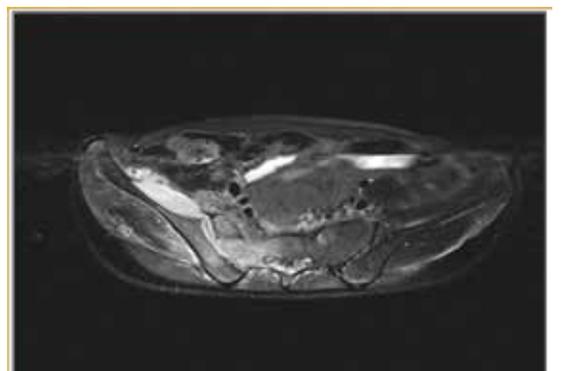
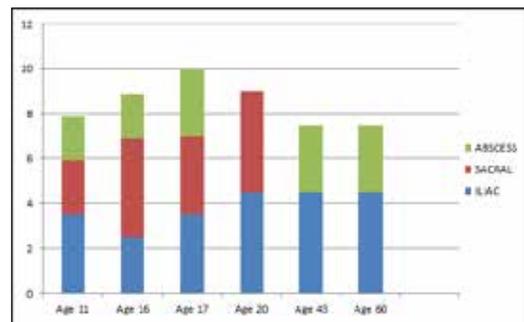
CASE STUDY.

Age group of patients in this study ranges from eleven to sixty years. The youngest is 11 years male and oldest is 60 years female . Other patients in the age group are one sixteen years male, one seventeen years male, one 20 years male and one 43 years male .No of male patients are five and one female patient. All the cases in this study presented with hypo intense signals in T1W, hyper intense signal intensities in T2W and STIR sequence. No evidence of spondylo arthropathy in the above cases.

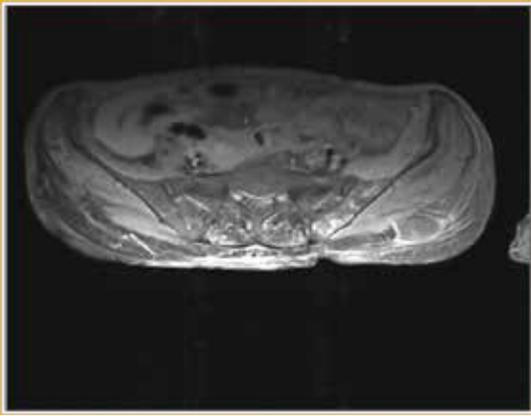
Two of the cases in the 43 and 60 years showed only oedema on the iliac bone of the sacro iliac joint and other four cases presented with edema on both the sacral and iliac bone of the SIJ. Only one patient in the twenty years of age presented with oedema on both the sacral and iliac bone of the SIJ bilaterally without any fluid collection. Other cases are all unilateral and presented with fluid collection within the joint , joint space widening , surrounding muscle oedema, abscess in the iliacus, gluteal and even psoas muscles. The youngest of the patient presented with associated congenital mega ureter and sinuses on both the loin. All are type I lesions in our study.



T2W CORONAL IMAGE SHOWING OEDEMA ON BOTH THE SACRAL & ILIAC BONES, FLUID COLLECTION



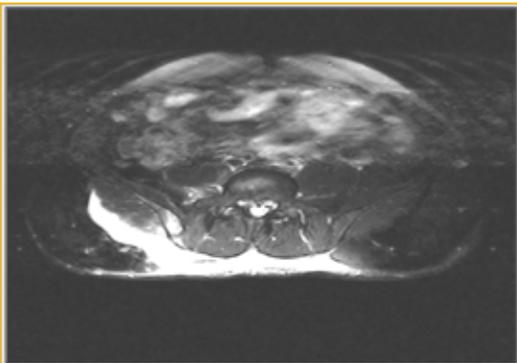
STIR TRANS IMAGE SHOWING ABSCESS RIGHT ILIACUS MUSCLE & OEDEMA IN SIJ



AXIAL POST CONTRAST T1 W FAT SAT SHOWING ABSCESS LEFT GLUTEAL & EDEMA IN ILIUM



STIR CORONAL SHOWING ABSCESS RIGHT GLUTEAL & EDEMA IN ILIUM



STIR AXIAL SHOWING ABSCESS RIGHT GLUTEAL & EDEMA IN ILIAC BONE



T2W CORONAL IMAGE SHOWING RIGHT GLUTEAL ABSCESS & EDEMA RIGHT ILIUM



T2W TRIM CORONAL SHOWING EDEMA IN BOTH SIJ

MRI FEATURES OF SACRO-ILIAC JOINT ARTHRITIS

Sacroiliitis is inflammation of the sacro iliac joint. The SIJ is formed by the union of sacrum and the ilium. Most people present with the pain in their buttocks or the lower lumbar spine , extends down to one or both the legs.

Active inflammatory lesions (ie, bone marrow edema, intra-articular fluid, synovitis, capsulitis, and enthesitis) can be visualized on STIR, fat-suppressed T2W, and contrast-enhanced fat-suppressed T1W images.(1).

Bone marrow edema manifests with increased signal intensity on fat-saturated fast spin-echo T2W or STIR images, and with enhancement on gadolinium-enhanced fat-saturated and fast spin-echo T1W images. It is located periarticularly and may be associated with structural changes such as erosions. Sacral interforaminal bone marrow signal is the standard of reference for normal bone marrow signal.

Synovitis can be differentiated from joint fluid only after the administration of paramagnetic contrast medium and manifests as enhancement in the synovial part of the joint.

Capsulitis may involve the anterior and posterior capsule, and it is sometimes easier to detect on contrast-enhanced fat-suppressed T1W images than on STIR or fat-suppressed T2W images. STIR is a more sensitive sequence it saturates the fat, differentiating it from fluid (2)

Finally, enthesitis manifests as hyper intense signal on STIR and fat-suppressed T2W images, and as enhancement on gadolinium-enhanced fat-suppressed T1W images, at sites where ligaments and tendons attach to bone. Enthesitis may also be better detected on contrast-enhanced fat-suppressed T1-weighted images than on STIR or fat-suppressed T2W images. Articular and periarticular post-gadolinium enhancement and soft tissues oedema.(3).

In chronic phase the MR features include periarticular bone marrow reconversion, replacement of articular cartilage by pannus, bone erosion, subchondral sclerosis, joint space widening or narrowing resulting in ankylosis but they do not suffice for the definition of a positive MR imaging examination (4). The normal joint space of the sacroiliac joint measures 2.5–4.0 mm (mean - 3.0 mm) which can be accurately measured in CT. (5)

Two types of lesions are identified by MRI. Type I lesions were characterized by low intensity on T1W, and high-intensity signals on T2W sequences and on images acquired after gadolinium injection. Type II lesions were characterized by low-intensity signal in all of the sequences. This observation has suggested that MRI is able to differentiate lesions with high hydric contents (inflammatory oedema) from

those with fibrous tissue or sclerosis, i.e., differentiating acute from chronic alterations. Type II lesions are associated with fat collections (6).

DIFFERENTIAL DIAGNOSIS:

Many conditions, such as osteoarthritis, septic sacroiliitis, insufficiency sacral fractures, osteitis condensans ilii, and bone tumors, may mimic the inflammatory lesions. Other relevant differential radiographic diagnoses include metabolic diseases like hyperparathyroidism and gout.

CONCLUSION:

MRI can reliably detect inflammation and structural changes in SI joints in patients very early before USG, X-ray and CT changes. Early detection of sacro iliac joint arthritis is by bone marrow oedema on iliac or sacral side or on both the sides, either unilateral or bilateral. Chronic SIJ arthritis include bone marrow reconversion, bone erosion, subchondral sclerosis ankylosis of SIJ. The MRI plays an essential role in better demonstrating the extent of the involvement of the SIJ associated abscess.

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