

# ROLE OF MAGNETIC RESONANCE IMAGING IN EVALUATION OF ACUTE NON-TRAUMATIC MUSCULOSKELETAL LESIONS

Hesham Taha Kotb, Rim Aly Bastawi, Mena Micheal Moussa,\* Hassan Mohamed Hassan

Department of Radiodiagnosis and Intervention, Orthopaedic Surgery and Traumatology,\* Faculty of Medicine, Alexandria University

## Introduction

Non-traumatic musculoskeletal lesions (NTMLs) maybe defined as pain of musculoskeletal origin occurring in absence of an external force or with injury related resulting from snowballing effects which may happen with repetitive movements associated with pain.

NTMLs disorders include: septic arthritis, osteomyelitis, stress & pathologic fractures, pyomyositis, rhabdomyolysis and compartment syndrome and are pathologies where initial diagnosis and intervention usually lead to an improved outcome.

Magnetic resonance imaging (MRI) is used in the diagnosis because of its high sensitivity and specificity compared with other modalities. MRI plays an important role in the assessment of non-traumatic musculoskeletal lesions, given its exquisite contrast resolution, lack of ionizing radiation, and excellent soft tissue contrast, multiplanar imaging capability and high degree of anatomic detail. It's useful in detecting small foci of infection, necrosis and pathologic fluid collections, thus it's superior to ultrasonography (US) and other cross-sectional imaging modalities such as computed tomography (CT).

## Aim of the work

The aim of this study was to evaluate the role of MRI in evaluation of acute non-traumatic musculoskeletal lesions.

## Patients and Methods

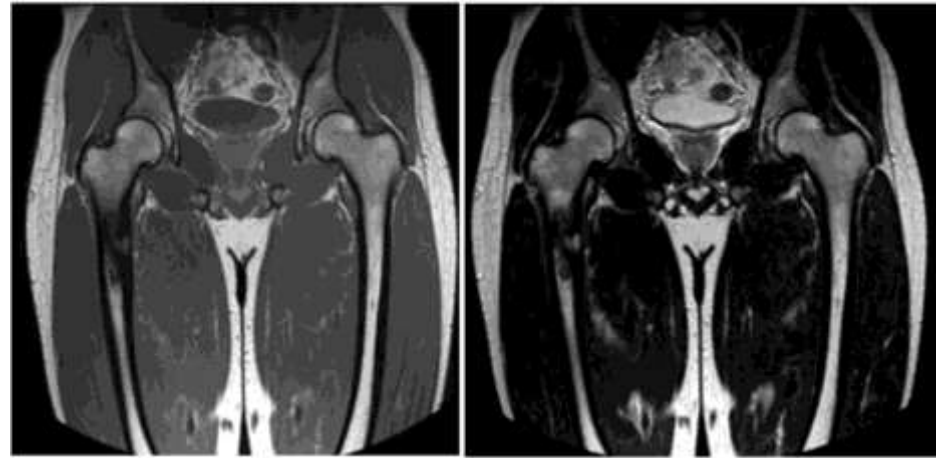
The current study was conducted on Twenty-five patients with acute non-traumatic musculoskeletal lesions. Majority (72%) of the patients were males, while females constituted 28% of the cases. Their ages ranging from 10 to 70 years with median age of 28.5 years.

Majority (68%) of the patients presented with pain as the chief complaint, 16% patients presented with swelling as the main complaint, while only 12% complained of limited mobility.

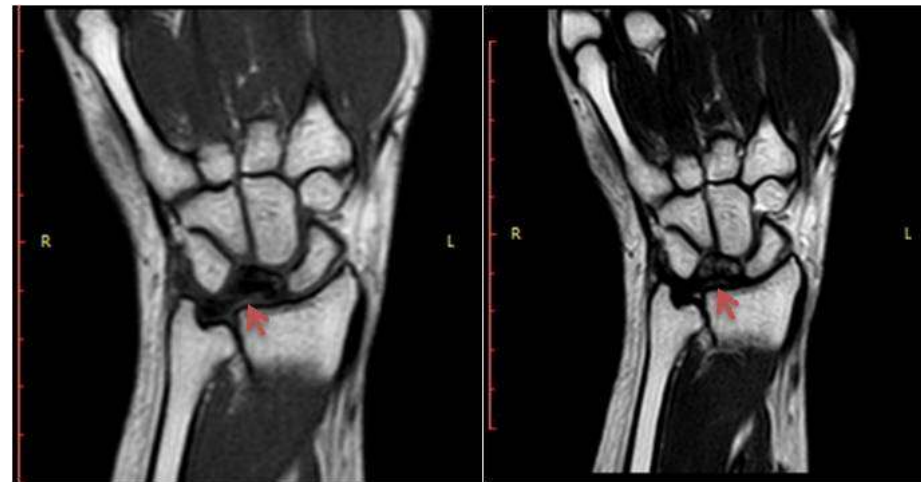
The most common pathology encountered in the study was osteomyelitis 28% followed by osteonecrosis 20% and septic arthritis 16% (n=25).

Contrast injection seems to be cut point confirming the inflammatory nature of the lesions. Contrast MRI is a mandatory step to better depict devitalized regions, abscesses, sinus tracts and joint involvement.

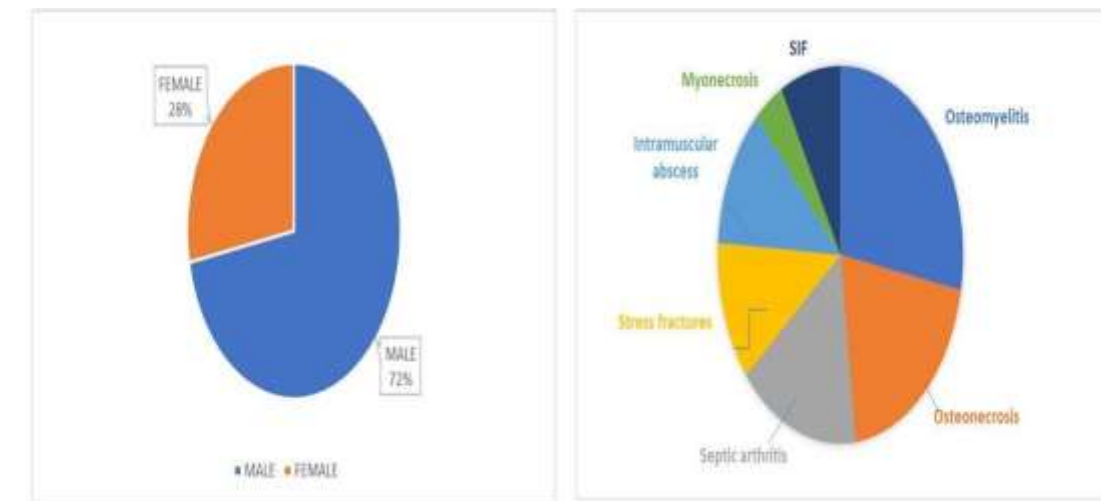
## Results



**Figure 1:-** 20-year-old male patient with history of right thigh pain, (A&B) coronal T1 & T2 weighted images Shows a well-defined right proximal shaft lesion, the lesion is intramedullary with cortical extension associated with cortical thickening and periosteal reaction medially expressing T1 isointense signal with T2 hyperintense signal. Diagnosis of Brodie's abscess was made.



**Figure 2:-** 33-year-old female patient presented with pain of right wrist joint with no history of trauma. There's abnormal marrow signal of the lunate, showing T1 hypointense, T2. Features are impressive of AVN of lunate (Kienbock's disease).



**Figure 3:** Pie chart showing Distribution of the patients according to sex (n=25)

**Figure 4:** Pie chart showing Distribution of the patients regarding the different pathologies (n=25)

## Conclusion

MRI is a valuable imaging modality in the evaluation of non-traumatic musculoskeletal lesions because it enables assessment of articular structures, extra-articular soft tissues, and osseous structures. MRI should be performed early in patients with persistent pain and negative radiographic findings.

MRI has distinct advantage over other modalities in being radiation free, non-invasive, excellent soft tissue contrast, multiplanar imaging capability, and high sensitivity in detecting osteonecrosis of femoral head. We diagnosed a large number of patients with early AVN where radiographs were normal and also detected AVN on contralateral hip in patients with advanced stage. Thus, MRI is the modality of choice for staging of AVN which helps in early and accurate treatment of the patients.