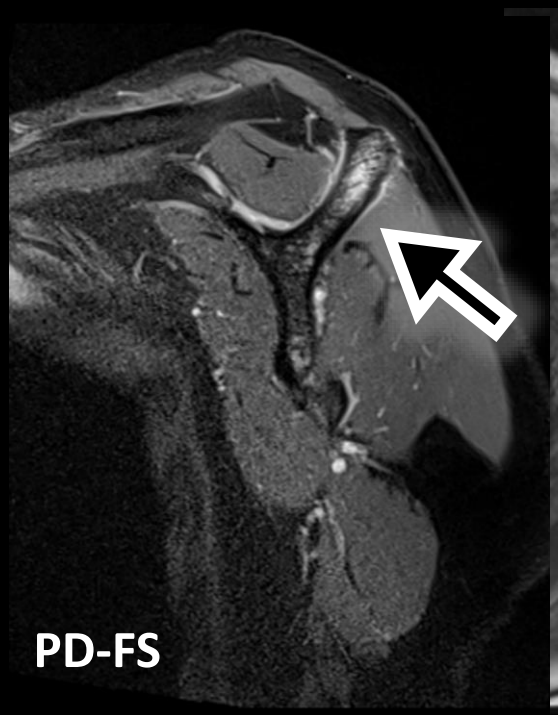
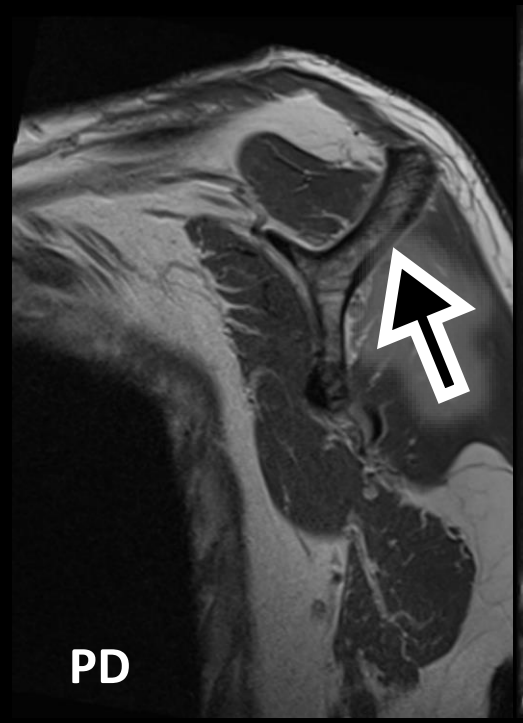
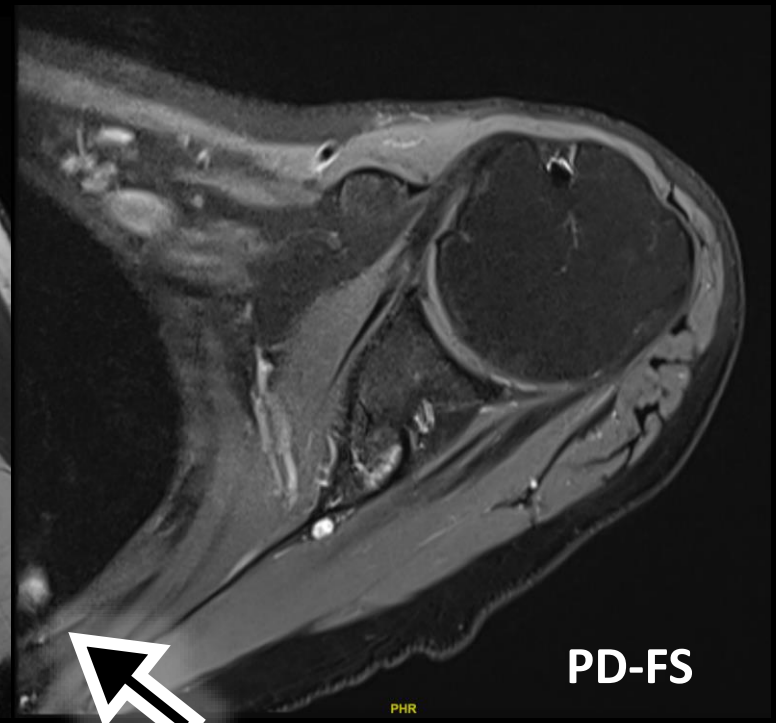
MICOD – 23/08/2024

Case contributor – Dr. Praveen Kumar Chinniah

52-year-old gentleman, suspected rotator cuff injury

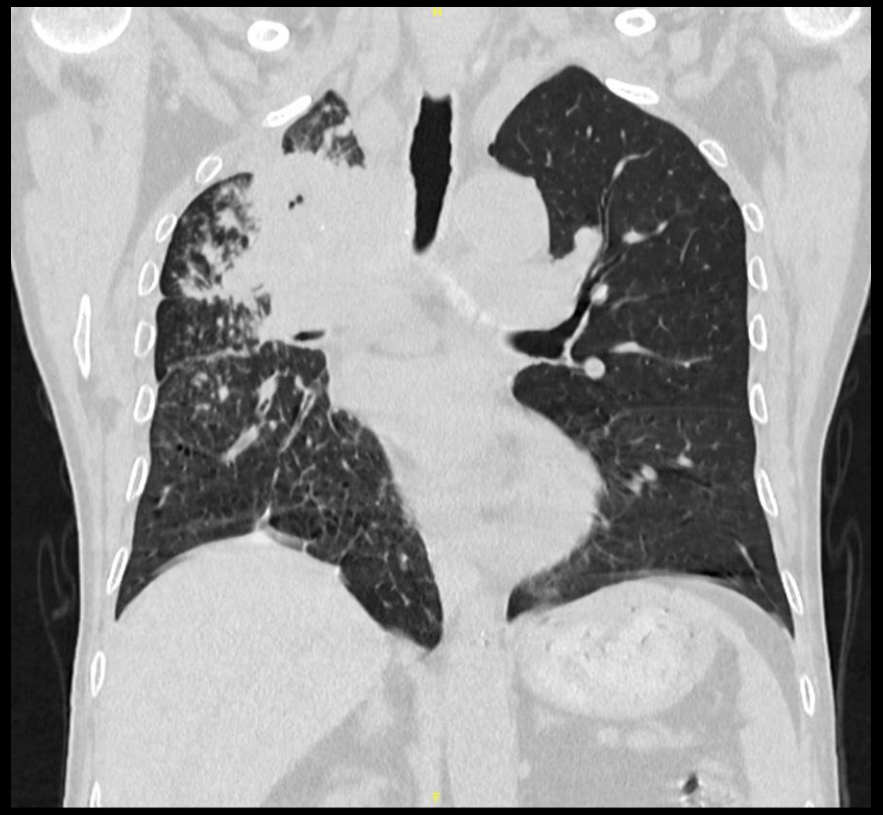






Bone marrow edema (BME) like signal in spine of left scapula and a tiny nodule in the left lung (which was missed in the initial reading)

Metastatic right lung carcinoma



Bone marrow edema (BME) like signal

Histopathology

BME refers to nonspecific MR signal increase of the marrow cavity on fluid-sensitive sequences.

Depending on etiology, histology can show interstitial hemorrhage, organizing granulation tissue, necrosis, fibrosis, cellular infiltrate, or reparative microcallus.

At microscopy, actual BME (extracellular fluid) is rarely seen. Alternative terms include BME pattern, BME-like signal, and edema-like marrow signal.

Imaging

Fat-suppressed T2W MR images are most sensitive for BME. On T1W images, marrow fat is effaced but not entirely replaced, differentiating BME from malignancy.

BME has a similar MR appearance in traumatic, degenerative, inflammatory, neoplastic, ischemic, and idiopathic conditions. BME location and clinical scenario together guide differential diagnosis.

In traumatic injury or overuse activity, subchondral BME reflects mechanical overload (e.g., bone bruise, stress response). In spondyloarthropathy, SAPHO (synovitis, acne, pustulosis, hyperostosis, and osteitis), and CRMO (chronic recurrent multifocal osteomyelitis), BME reflects inflammation (e.g., osteitis, enthesitis). Dual-energy CT can demonstrate BME using three-material decomposition algorithms

Palmer W et al. Glossary of terms for musculoskeletal radiology. Skeletal Radiol. 2020 Jul