

Avascular Necrosis: The Mimics And Pitfalls

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Osteonecrosis, the necrosis of bone, like infarction in other organs, results from significant reduction or obliteration of affected area's blood supply. Pathogenic mechanisms of osteonecrosis consisted of ischemic changes, direct cellular toxicity, and altered differentiation of mesenchymal stem cells.

Multiple risk factors are described in osteonecrosis, which related to the pathogenic mechanisms. Any patient exposes to more than one risk factors i.e, connective tissue disease treated with corticosteroid, will increase the risk of osteonecrosis

The recent treatment options of osteonecrosis of the femoral head, which is the well-recognized location involved by osteonecrosis, are different related to the size, location, and symptoms. The proper imaging should provide adequate information for the physicians. Such information consisted of (1) lesion location and size, (2) presence or absence of head collapse, (3) degree of head depression, and (4) acetabular involvement. A number of staging systems have been proposed to date, but unfortunately, no validated classification system has received universal acceptance. The size (extent) of involvement is important for management. Subchondral lesions are concerning because of the high risk of joint collapse, while metaphyseal lesions are less ominous.

While dealing with multiple modalities of imaging of avascular necrosis (AVN); radiologists should be familiar with the classical findings, the mimics, and the pitfalls of this condition. Magnetic resonance imaging (MRI) is considered gold standard for precollapse lesion of AVN when without subchondral bone fracture, or when AVN is considered by clinical setting but plain radiograph looks normal. When subchondral fracture is suspected but not clearly delineated on plain radiograph, further investigation i.e., computed tomography (CT) or MRI should be performed with CT considered the best in this clinical situation. Once collapse or acetabular involvement is present on plain radiograph, no further imaging is needed for treatment decision-making.

This topic will emphasize on the classical findings of AVN in multiple modalities, followed by the mimics and pitfalls, and how to differentiate the pitfalls from the true diagnosis.