

Evidence Discussion - Nuclear Medicine (MS-28)

In most patients with a musculoskeletal complaint, a diagnosis can be made based on a detailed history, physical examination and plain radiographs. X-rays can determine whether an advanced diagnostic imaging study is actually needed, what specific advanced diagnostic imaging study is warranted and if contrast is needed.

MRI and or CT are the study of choice if x-rays are non-diagnostic or equivocal. MRI may be as sensitive as nuclear medicine scans but also considerably more specific.

Given the risk of radiation from nuclear medicine imaging it is important to carefully select the proper patient indication. Based on American College of Radiology Appropriateness Criteria for bone pathology and also supported by literature nuclear medicine is used infrequently but is supported for the following musculoskeletal indication:

- Evaluation of suspected aseptic loosening of orthopedic prostheses when recent plain x-ray is non-diagnostic. Bone Scan SPECT or SPECT/CT are not the initial imaging modalities but may be used as an adjunct in cases where the MRI or CT show metal artifact or equivocal findings [1].

- Evaluation of suspected bone infection following a x-ray and if MRI or CT cannot be done and when infection is multifocal, or when the infection is associated with orthopedic hardware or chronic bone alterations from trauma or surgery. SPECT/CT or SPECT bone scan imaging along with SPECT/CT or SPECT labeled leukocyte imaging are the most sensitive nuclear studies for bone or hardware infection [2][3].

- Suspected Occult/Stress/Insufficiency Fracture/Stress Reaction and Shin Splints with negative x-ray and MRI cannot be performed, bone scan can be performed with SPECT or SPECT/CT or Three phase bone scan [4].

- Evaluation of complex regional pain syndrome or reflex sympathetic dystrophy, after failure of six weeks provider-directed conservative treatment (per General Guidelines [MS-1.0]): - Triple phase bone scan (CPT® 78315) is indicated [5].

- For detection of ischemic or infarcted regions of bone. The first imaging study is a X-ray. The next study of choice is MRI without contrast. Bone scan is rarely useful when MRI cannot be done [6].

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