MUSCLE SKELETAL RADIOLOGY

Michael Maristany MD
Contributions from Carlos R. Giménez, MD

LOUISIANA STATE UNIVERSITY
MEDICAL CENTER
School of Medicine in New Orleans
Diagnostic modalities
DIAGNOSTIC IMAGING

SKELETAL

PLAIN RADIOGRAPH
NUCLEAR MEDICINE
CT
MRI
ANGIOGRAPHY
BIOPSY
Diagnostic algorithm

- Radiographs of the symptomatic area
- >>> diagnosis

Yes >>> stop

MRI/CT CHARACTERIZATION

no

MRI for assessing bone & soft tissue Component

CT for assessing matrix Composition

Nuclear medicine for Assessing asymptomatic Multiplicity or activity
CONVENTIONAL Rx

IT REMAINS AS THE MOST RELIABLE IN THE HISTOLOGIC NATURE OF A SPECIFIC LESION

- DETECTION
- LOCALIZATION
- CHARACTERIZATION
It is always a good idea to start with a radiograph of the area in question.

Proceed with MRI if you are concern with ligaments or soft tissue problems, occult fracture or characterization.

A CT if you are more concern with bony problems. Sometimes you need both.
Ligament injuries

- CT is more optimal than MRI

- True or False
For the evaluation of Disc disease, ligamentous or spinal cord injury in trauma MRI is preferred.

For the evaluation of vertebral fractures in spine trauma CT is preferred.

Point: Both are use in evaluation of the spine in trauma.
DIAGNOSTIC RADIOLOGY

ANATOMY - MORPHOLOGY
PHYSIOLOGY/FUNCTION

- X-ray
- CT
- Ultrasound
- MRI
- Nuclear Medicine
TRANSMISSION IMAGING (X-RAY)

- X-Ray tube outside the body
- Patient is positioned in front of the source
- Image is recovered on X-Ray film or Matrix which is positioned behind the patient.
An advantage of radionuclide bone scanning is that the entire osseous system is demonstrated.

It relatively nonspecific and the history and correlation with other imaging modalities is necessity.
32 yo s/p trauma
TRAUMA
Indirect Signs of Thoracic Spine Injury

- Paravertebral hematoma
- Mediastinal widening
- Pleural fluid (hemothorax)
- Sternal fracture
- Rib fractures & costovertebral dislocations
- The double spinous process sign
DEGENERATIVE CHANGES / ARTHRITIS
MIGRATED L5-S1 HERNIA
CYST

SUBCHONDRAL SCLEROSIS

ARTICULAR SPACE NARROWING

OSTEOPHYTE

BUTTRESS

SUPERIOR AND LATERAL MIGRATION
HAND X-RAY: THUMB OSTEOARTHRITIS, SPACE NARROWING, OSTEOPHYTES, CYSTS, SCLEROSIS, TRAPEZIUS DEFORMITY.
RA
Carpal destruction
Penciling

C # 2520
METABOLIC DISEASE/OSTEOMALACIA
BONE DENSITOMETRY OF THE LUMBAR SPINE AP AND LATERAL VIEWS VALUES WITHIN THE INFERIOR NORMAL LIMIT.
A  Provisional Calcification

B  Irregular Metaphysis

C  Metaphyseal Deformation (Cup)

D  Small Epiphysis

E  Cortico-Medullary Indifferentiation

Rickets
TUMORS
NON OSSIFYING FIBROMA

1 A: GEOGRAPHIC WELL DEFINED, SCLEROTIC MARGINS
NON OSSIFYING FIBROMA

1A: GEOGRAPHIC WELL DEFINED, SCLEROTIC MARGINS
CENTRAL OSTEOSARCOMA OF THE FEMUR, SKIP MTT
Hx OF INDOLENT PAIN
Fractures
Typical Bone Fractures
Types of Bone Fractures

Transverse  Linear  Oblique, nondisplaced  Oblique, displaced  Spiral  Greenstick  Comminuted