RADY 401 Case Presentation

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22 year old female
4 week history of right hip and thigh pain
No known injury
Patient is an avid runner and her pain is worse with weight bearing activities
Normal range of motion of the right hip with intact strength, sensation, and reflexes.
Workup started with pelvis and right hip 2 view radiographs
List of imaging studies

- AP radiograph of the pelvis
- AP radiograph of the right hip
- Frog leg lateral radiograph of the right hip
- Right hip and pelvis MRI without contrast
AP pelvis radiograph

Negative result
Negative result (Diagnosis of a stress fracture on the basis of radiography is usually made by recognizing the presence of callus formation)
Positive result **stress fracture**: Edema results in high signal intensity against the dark background of the suppressed fat. As the injury becomes more severe, findings include marrow edema identified on both T1- and T2-weighted MR images and signal abnormalities in the cortical bone. Frank stress fractures are diagnosed by identifying bandlike areas of low signal intensity in the intramedullary space that may be continuous with the cortex.\(^6\)
Positive result stress fracture: Edema results in high signal intensity against the dark background of the suppressed fat. As the injury becomes more severe, findings include marrow edema identified on both T1- and T2-weighted MR images and signal abnormalities in the cortical bone. Frank stress fractures are diagnosed by identifying bandlike areas of low signal intensity in the intramedullary space that may be continuous with the cortex.
MRI Rt hip without contrast- T2 transverse
MRI Rt hip without contrast- T2 sagittal
MRI Rt hip without contrast- T1 coronal
Typical patient treatment or outcome

- Stress fracture Rx: Strict non-weight bearing of leg with use of crutches for at least 2 weeks
- Gradually resume weight bearing on affected leg as tolerated over the next month
- Obtain weekly follow-up radiographs to ensure proper bone healing and look for complications
Femoral stress fracture work up - radiography

- Initial test of choice in patients with suitable clinical history
- Usually consists of AP pelvis and 2 views of affected hip (ex. AP and frog leg lateral)

**Pros**
- Cost - $38 – $600+<sup>2</sup>
- Radiation dose: 0.83 mSv<sup>3</sup>
- Short exam time

**Cons**
- Limited sensitivity (12% - 56%) and specificity (88% - 96%)<sup>4</sup>
- May take weeks of symptoms before radiographic changes are apparent
Diagnosis of a stress fracture on the basis of radiography is usually made by recognizing the presence of callus formation. Reactive bone is generally confined to a small area of cortex and usually involves only one of the cortical surfaces.
Femoral stress fracture work up - MRI

- Used when initial radiography is negative and a high index of suspicion for stress fracture remains

Pros
- More sensitive (68% - 99%) and specific (4% - 97%)\(^4\)
- No radiation exposure

Cons
- Expensive ($634 - $2,935)\(^5\)
- Long exam time
Findings include marrow edema identified on both T1- and T2-weighted MR images and signal abnormalities in the cortical bone. Frank stress fractures are diagnosed by identifying bandlike areas of low signal intensity in the intramedullary space that may be continuous with the cortex.
First line imaging modality for suspected femoral stress fracture is a radiograph
Must get at least 2 views and ideally image the other hip for comparison
MRI used in cases with high index of suspicion after a normal radiograph
References