AMSER Case of the Month
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Knee Pain

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Patient Presentation

• **HPI:** 12yo male presents to outpatient family medicine clinic with complaints of bilateral (L>R) knee pain and stiffness. Pain has been present for past 1 year. Recent episode where patient needed to be carried to car after snowboarding due to pain. Pain worsens after physical exercise and improves with rest.

• **PMHx:** No significant past medical history or past surgical history

• **Vitals:** AFVSS
What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

This imaging modality was ordered by the Family Medicine Physician

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiography knee</td>
<td>Usually Appropriate</td>
<td></td>
</tr>
<tr>
<td>Image-guided aspiration knee</td>
<td>Usually Not Appropriate</td>
<td>Varies</td>
</tr>
<tr>
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<tr>
<td>US knee</td>
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</tr>
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Findings (labeled)

Knee AP Weightbearing

Knee Sunrise

(→) Osteochondrial Lesion of the left medial femoral condyle

Knee L Lateral

(→) Fragmentation of the b/l tibial tuberosities with overlying soft tissue swelling

Knee R Lateral
Final Dx:

1) Bilateral Osgood-Schlatter Disease

2) Suspected Osteochondritis Descicans
Osgood-Schlatter Disease

• Osgood-Schlatter Disease is defined as osteochondrosis or traction apophysitis of the tibial tubercle
  • Caused by repeated stress injury (e.g. jumping) on secondary ossification center of the tibial tuberosity during apophyseal maturation

• Most commonly presents as anterior knee pain around the tibial tubercle in pediatric patients (boys aged 12-15yrs)
  • History of pain during sports (basketball, volleyball, soccer, sprinters)
  • Bilateral in 20-30% of cases
Osgood-Schlatter Disease

- Diagnosis is clinical with an enlarged tibial tubercle tender to palpation
  - Pain elicited on resistance to knee extension

- Lateral knee radiograph will reveal irregularity and fragmentation of the tibial tubercle
  - MRI is not indicated, but will show soft tissue swelling, thickening of inferior patellar tendon, and fragmentation of ossification center

- Treated non-operatively with NSAIDs, ice, activity modification
  - Self-limiting, but commonly will not fully resolve until growth has halted

Sagittal T2 image showing edema around inferior patellar tendon and tibial tuberosity in Osgood Shlatter Disease.

(Kadirhan Ö et al. Current Research in MRI. 2022)
Osteochondritis Dissecans

• Osteochondritis Dissecans is an idiopathic, focal, lesion of the articular cartilage and subchondral-bone that can cause instability or detachment of a bone fragment and overlying articular cartilage

• Bimodal distribution:
  • Juvenile form (open physes; 10-15yrs) – hereditary, traumatic
  • Adult Form – vascular

• Knee is the most common location (70% of knee lesions in medial femoral condyle)
  • Also seen in capitellum of humerus, talus
Osteochondritis Dessicans

- Usually detected by radiograph, but MRI required for diagnosis
  - MRI shows size and stability of lesion, degree of cartilaginous injury, presence of loose body

- Management dependent on bone age
  - Pediatric patient with stable lesions and open physes > activity modification and bracing
  - Instability, failed non-operative management, impending physeal closure > arthroscopy and subchondral drilling

- Prognosis of juvenile form correlates with age (younger patients with open physes more successfully treated non-operatively)
- Adult form commonly develops into osteoarthritis
Osteochondritis Dessicans

### Variant 3:

Adult or child greater than or equal to 5 years of age. Chronic knee pain. Initial knee radiograph demonstrates osteochondritis dissecans (OCD), loose bodies, or history of cartilage or meniscal repair. Next imaging procedure.

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This imaging modality was recommend by Radiology for further evaluation.
Osteochondritis Dessicans

**Left:** T1 Coronal sequence showing low signal fragment within the subchondral bone; **Right:** T2 Sagittal sequence showing heterogeneous low signal from the fragment within the subchondral bone in Osteochondritis Dessicans

References:


