Four-year old boy with right knee trauma

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CLINICAL STATEMENT

• Four-year old male child
• Blunt trauma against the right patella three weeks ago
• Persistent pain and functional impairment
• Subsequent onset of fever
• Arthrocentesis: serous liquid mixed with blood
NUCLEAR SCAN TECHNICAL PARAMETERS

- **Vascular phase:**
  - 1-5 frame/sec
  - 60 sec
- **Blood pool phase:**
  - 1 frame/60 sec
  - < 2 minutes
- **Bone phase**
  - 90-120 minutes
  - Increased bone metabolism in children allows earlier image detection
1. Arthritis
2. Arthritis plus osteomyelitis
3. Osteomyelitis
4. Osteosarcoma
1. Arthritis
2. Arthritis plus osteomyelitis
3. Osteomyelitis
4. Osteosarcoma

Sinovial hyperperfusion

Increased blood pool corresponding to the joint

Faint increase of the bone phase uptake
CASE DISCUSSION

• Synovial hyperperfusion is a sign of arthritis but cannot discard osteomyelitis

• Increased blood pool limited to the joint suggests arthritis

• Faint increase of the bone phase uptake without focality is a frequent sign in arthritis
TEACHING POINT

• 3-phase bone scan is very helpful in distinguishing arthritis from osteomyelitis.