MSK Ultrasound of the Lower Extremities in Infants and Children

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No disclosures
MSK Ultrasound

- Considerations Pediatric Patients
- US vs MRI
- Approach to Major Joints
- Interesting Cases
- Discussion
MSK Ultrasound

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Pediatric MSK Ultrasound

Established Indications

- DDH
- Hip Pain
- Foreign Body
- Soft tissue masses
- Infection
Pediatric MSK Ultrasound

Other Diagnostic Applications

- Arthritis
- Tendon tears, tendinopathy
- Muscle strain injuries
- Bursae
Challenges
Pediatric MSK Ultrasound

- Requires knowledge of MSK anatomy, pathology and function

- Variable levels of MSK expertise in large radiology departments and US divisions
Pediatric MSK Ultrasound

- Effectiveness is highly operator dependent
  
  • Less ability to rely on sonographers
  • Time consuming for Radiologist
Pediatric MSK Ultrasound

- Orthopedic Surgeons & Sports Med Physicians
  - Comfortable interpreting radiography and MRI
  - Relative lack of comfort and familiarity with US may limit utilization
Pediatric MSK Ultrasound

- MSK ultrasound has tremendous potential in pediatric population

- Cost-effective
- Readily available
- High level of patient safety
Patient Comfort and Positioning
Transducers: MSK
MSK Ultrasound

- Considerations Pediatric Patients
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Pitfalls of MRI

- Patient positioning
- Patient phobia
- Patient motion (Sedation)
- Expensive
- Limited availability
Advantages of Ultrasound

- Spatial resolution
- Rapid
- Contralateral side
- No contraindications
Advantages of Ultrasound

– No sedation
– Dynamic exam
– Less expensive
– Readily available
Pitfalls of Ultrasound

- Limited evaluation of deep soft tissue on bony structures

- Limited evaluation of primary osseous abnormalities

- Operator dependent
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Gluteus Medius
Ischiogluteal
Trochanteric
Iliopsoas
Hip Joint
Hip Joint
Knee
Knee
Prepatellar

SQ and Deep Infrapatellar

Suprapatellar

Pes Anserinus

Semimembranosus
Quad / Patellar tendon
Med joint line

RIGHT MEDIAL JOINT LINE
Ankle / Foot
SQ Medial & Lateral Malleolar

SQ Calcaneal

Retro Calcaneal

Tibialis Anterior
MSK Ultrasound

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MSK US Cases

- Rheumatologic
- Infection / Inflammation
- Tumor
- Trauma
MSK US Cases

- Rheumatologic
- Infection / Inflammation
- Tumor
- Trauma
15 yo male
hx ARPKD,
s/p Renal TX at age one
Gout
15 yo female w lateral knee pain
11 yo female with UC and left hip pain
Enteropathic arthropathy
MSK US Cases

- Rheumatologic
- Infection / Inflammation
- Tumor
- Trauma
21 yo male w hx foot amputation, pain and swelling right prox leg
21 yo male w hx foot amputation, pain and swelling right prox leg
Abscess
9 yo male, soccer injury, fever and left hip pain
Post Streptococcal synovitis / iliopsoas bursitis
MSK US Cases

- Rheumatologic
- Infection / Inflammation
- Tumor
- Trauma
One month old female with RLE weakness

Courtesy: Susan Connolly, M.D.
Infantile Fibrosarcoma

Courtesy: Susan Connolly, M.D.
10 month old female with knee mass
Tumoral Calcinosis
MSK US Cases

- Rheumatologic
- Infection / Inflammation
- Tumor
- Trauma
13-year-old female with right anterior thigh pain while playing soccer. She denies direct impact. Later she noticed a “lump” in the area of pain.
Flexion

W/O FLEX

W/FLEX
Rectus Femoris Strain
1-day-old male w multiple congenital anomalies.

After delivery, patient was noted to have a recurvatum deformity of the right leg.
Displaced physeal fracture
5 year old male fell playing soccer, and presented with persistent right anterior knee pain and difficulty ambulating
MSK Ultrasound

• Considerations Pediatric Patients
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• Interesting Cases
• Discussion
Advantages of Ultrasound

- Spatial Resolution
- Rapid
- Safe
- Less expensive
Pediatric MSK Ultrasound

- Many Orthopedic Surgeons, Sports Medicine physicians and Rheumatologists have a portable US machine in their office.

- If Radiologists don’t learn to use US for MSK applications, someone else will.
Pediatric MSK Ultrasound

- In current climate of cost containment, MSK ultrasound has tremendous potential in pediatric population
Pediatric MSK Ultrasound

- Sonographer Training

- Radiologist Training
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