

The Limping Adolescent

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HPI

12 y/o old male presented to MSU Sports Medicine with right hip pain in November of 2018. It was inconsistent with its timing over the last year but progressed recently unprovoked. He was in football this fall. He denied any inciting event or trauma. The pain is deep in the right hip and described as an ache. The pain was worse with prolonged standing, sitting, and walking. There was no radiation of the pain. He denied fevers, night sweats, weight loss, fatigue.

Previous Treatment

- The patient had seen his PCP and diagnosed with “Dumb butt” and sent to PT
- Did well initially with PT but had recently regressed
- NSAIDS without relief
- Ice without relief

Initial Visit

- Physical Exam
 - Gen: A & O x 3
 - Pulm: non labored, no distress
 - Psych: insight WNL, mood WNL, memory intact
 - MSK:
 - Non-tender over greater trochanter, ASIS, iliac crest, sacral base and ILA
 - B/L pes planus, genu valgum
 - ROM: equal and symmetric hip extension (30 degrees) and flexion (110) along with internal and external rotation
 - Strength
 - 4-/5 B/L hip abduction, otherwise 5/5
 - RLE
 - FABER: -
 - FADIR: +
 - Scour Test: -
 - Modified Thomas Test: +

Osteopathic Exam

- Standing flexion: + L
- Left anterior innominate with long leg
- Stork: + L
- R on L sacral torsion
- Myofascial restrictions lumbar paraspinals, iliopsoas

Differential

1. Constellation of weak gluts, midfoot cavus, and somatic dysfunction
2. Stress fracture
3. Slipped capital femoral epiphysis (SCFE)
4. Malignancy
5. Septic joint/deep tissue abscess

Evaluation

- Xrays





Plan

- Conservative plan with OMM, inserts for arch support, PT, HEP for core strengthening, NSAIDS

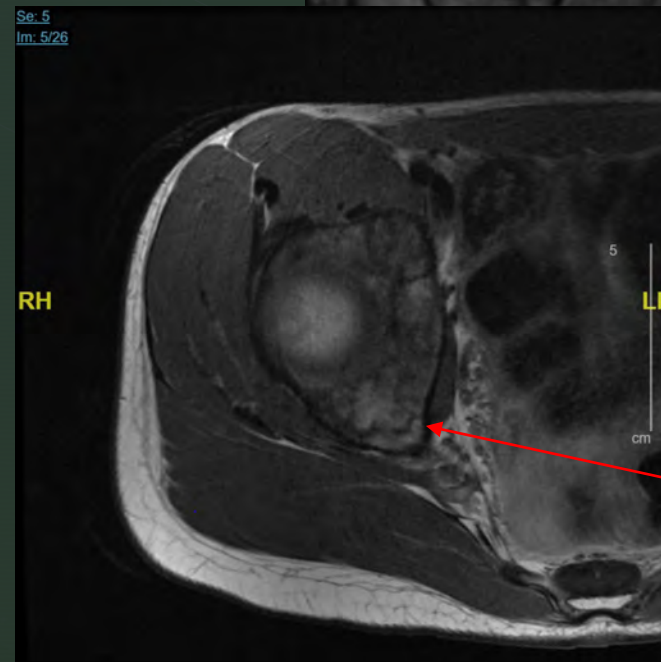
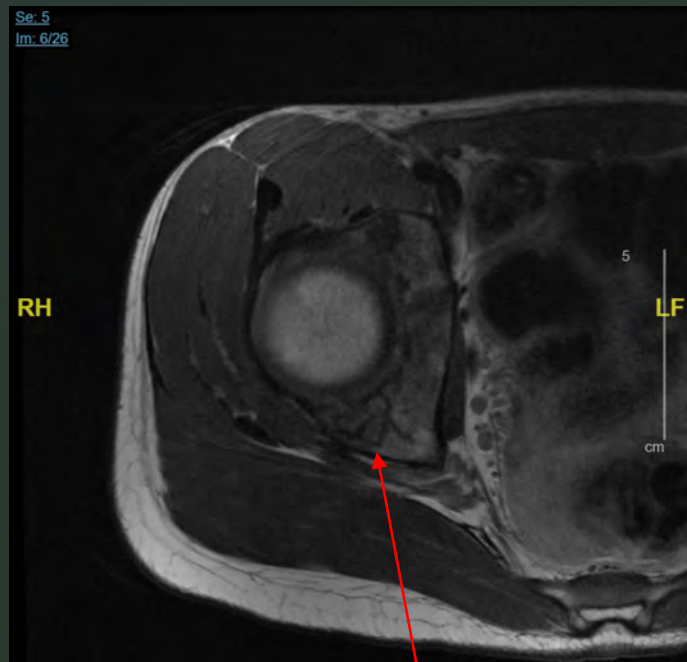
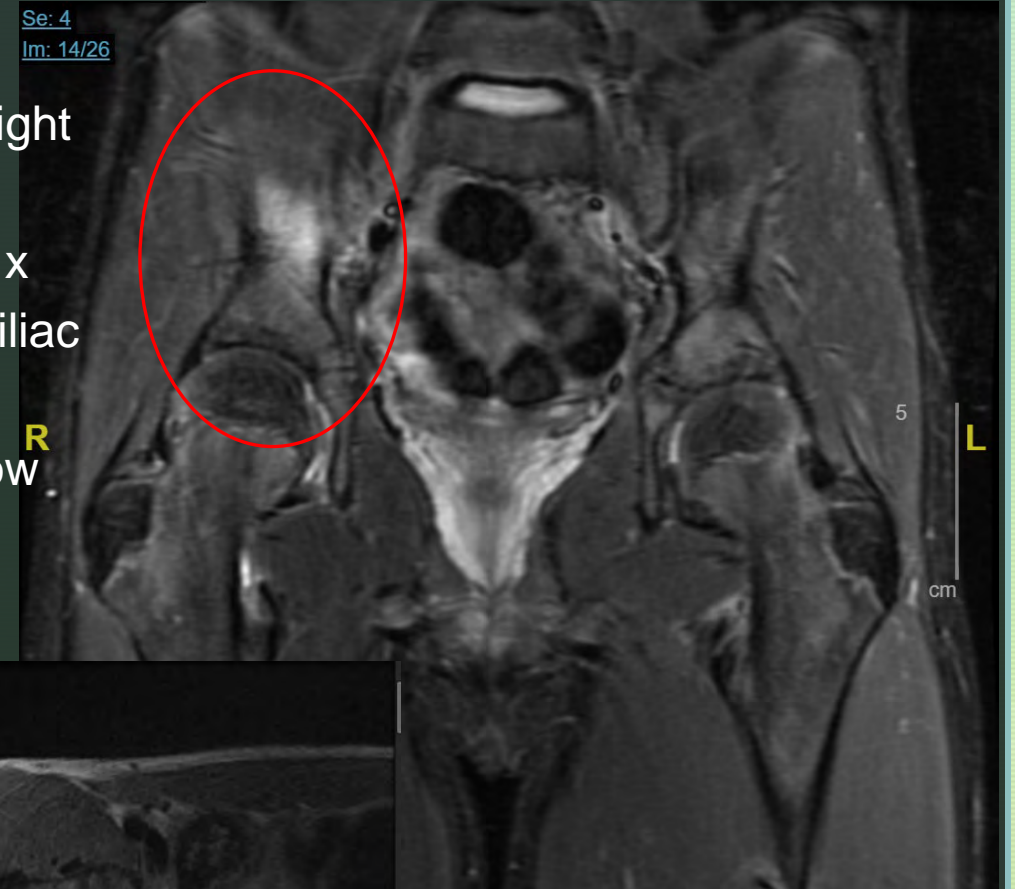
Follow up

- 1 month follow-up
 - Patient regressed and is now on crutches
 - Pain with any weight bearing or activity
 - OMM and PT didn't provide any relief
 - NSIADs not helpful

Additional Studies

- MRI

▣ Regional abnormal bone marrow signal intensity/marrow replacement within the right ilium, encompassing a region measuring about 5.3 cm AP x 4.6 cm proximal-distal x 1.3 cm transverse dimensions, along the iliac side of the sacroiliac joint. The finding is concerning for malignant neoplasia/marrow replacement.



▶ Pediatric Orthopedic Oncology at University of Michigan

- Ordered MRI pelvis with/without contrast
 - Multiple locations
 - Known right ilium
 - Additional: sacrum and left greater trochanter
- CT guided biopsy
 - Surgical pathology
 - No abnormal cells/infection
 - Cultures
 - No fungal, anaerobic or deep tissue culture growth
- Blood work
 - Normal Sed Rate, CRP, CBC
- Whole body MRI
 - 1. Improvement of previously identified lesions within the left proximal femur and posterior right ilium.
 - 2. New lesions within the anterior right ilium, right proximal femur and left ilium.
- Pediatric Infectious Disease
 - Cleared patient
- Pediatric Rheumatology
 - Currently managing patient

Diagnosis

- Chronic Recurrent Multifocal Osteomyelitis (CRMO)
 - Chronic Nonbacterial Osteomyelitis (CNO)
 - Synovitis, Acne, Pustulosis, Hyperostosis, Osteitis (SAPHO)

Chronic Recurrent Multifocal Osteomyelitis^{1,2}

- Non-infectious autoimmune inflammatory disorder
- Osteomyelitis indicating inflammation of bone, not infectious
- Epidemiology
 - 1/1,000,000 Orphan disease designation
 - Median age 10 years old
 - Female:Male is 2:1
 - Average time to diagnosis 18 months
 - 1/3 will have additional autoimmune disease
- Pathophysiology
 - Not well understood but believed to immune based
 - TNF- α levels are elevated

Chronic Recurrent Multifocal Osteomyelitis

- Lesion Location^{1,2}
 - Most common is the clavicle
 - Typically metaphysis and epiphysis of long bones of lower extremity
 - Spine can be involved
 - Less commonly the ribs and sternum

Chronic Recurrent Multifocal Osteomyelitis

- Treatment^{1,2}
 - Rheumatology
 - NSAIDS as first line (2 year course here)
 - DMARDs
 - Bisphosphonates
- Prognosis
 - Favorable
 - >75% have no long term disability
 - But pain/recurrence is common
 - No increase risk of pathologic fracture
 - As long as not in spine ok for football/full contact sports
 - Cleared for activity with symptom control

Chronic Recurrent Multifocal Osteomyelitis

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- Citations

1. Mallick, A., et al. "Chronic Recurrent Multifocal Osteomyelitis." *JBS Case Connector*, vol. 6, no. 2, 2016, doi:10.2106/jbjs.cc.15.00119.
2. Costa-Reis, Patrícia, and Kathleen E. Sullivan. "Chronic Recurrent Multifocal Osteomyelitis." *Journal of Clinical Immunology*, vol. 33, no. 6, 2013, pp. 1043–1056., doi:10.1007/s10875-013-9902-5.