Osteomyelitis
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History
Pre-teen with escalating severe pain since fall 4 days ago.

Diagnosis
MRSA Osteomyelitis

Additional Clinical
Erythema and swelling at knee.
Purulent periosteal fluid was drained at surgery and grew Methacillin-resistant Staphylococcus aureus.

Discussion
Osteomyelitis in children occurs primarily as a hematogenous event with the metaphyses of long bone most commonly affected. Patients usually present within several days to one week with signs of inflammation, tenderness over the affected bone, and limitation in motion of adjacent joints. Laboratory abnormalities include leukocytosis, elevated c-reactive protein, and elevated erythrocyte sedimentation rate; blood cultures are positive in about one-half of patients. Extraosseous fat-fluid level is a specific sign of osteomyelitis. Marrow fat accumulates in the periosteal region because microdestruction of the cortex related to osteomyelitis. CT features of bacterial osteomyelitis include 1) soft tissue edema, 2) periosteal reaction, 3) patchy low attenuation of the medullary space, 4) resorption of trabeculae, 5) cortical erosion and destruction, 6) intraosseous gas. MR is helpful to identify abscess, sinus tract, and sequestra. MR is more sensitive and accurate in defining marrow edema and inflammation. MR is also helpful to evaluate for myositis and synovitis which may be associated with osteomyelitis or mimic osteomyelitis.

Findings
CR-Normal.
CT-Periosteal fat; otherwise normal.
MR-Cor T1, IR and FS postgadolinium T1, axial FS FSE2 and FS postgadolinium T1 images. Serpinginous T1 hypointensity in proximal left tibial metaphysis. Periosteal T1 hyperintensity laterally along the proximal left tibia which suppresses on IR and FS sequences. Periosteal enhancement is also present posteriorly.

Reference
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