

Osteomyelitis, Humerus

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History

11 year old with progressing left shoulder pain after basketball injury 4 days ago.

Diagnosis

Osteomyelitis

Additional Clinical

Bone biopsy revealed exudative material. Culture grew *Streptococcus pneumoniae*.

Discussion

Most cases of osteomyelitis in children arise hematogenously, occurring characteristically in the metaphysis of long bones, such as the femur, tibia, and humerus. Preceding blunt trauma to the site of the bone infection is quite common; presumably, small hematomas in the metaphysis may permit microbial seeding after transient bacteremia. Penetrating injuries or surgical manipulation with such devices as spinal instrumentation are mechanisms for direct inoculation of bacteria into bone. The least common pathway for osteomyelitis developing in children is local invasion from a contiguous focus of infection.

By far the most common bacterial pathogen causing osteomyelitis in children is *Staphylococcus aureus* in all age groups. This is likely related to virulence factors, such as the collagen adhesin encoded by the *cna* gene. Group A streptococcus, *Streptococcus pneumoniae*, and the emerging pathogen *Kingella kingae* are the next most common organisms in infants and children. Group B streptococcus and gram-negative enterics are important agents in the neonatal period. *Salmonella* species are the most common cause of osteomyelitis in children with hemoglobinopathies.

Pseudomonas aeruginosa is particularly associated with puncture wounds of the feet.

Radiographs early in the clinical course usually show soft tissue swelling and obliteration of tissue planes, but bone abnormalities, such as periosteal elevation or lytic lesions, are typically not identified until 10 to 14 days. Technetium-labeled methylene diphosphate bone scan is about 90% sensitive in detecting osteomyelitis, and is especially useful if multifocal osteomyelitis is a concern, or the site of infection is poorly localized. Periosteal abscesses can be detected readily by ultrasound. MRI is now the most sensitive modality for detecting osteomyelitis.

Findings

CR-Permeative osteolysis and periostitis involving the proximal left humerus.

CT-Permeative osteolysis and periostitis involving the proximal left humerus. No soft tissue mass.

MR-Axial fat-suppressed T2 and axial and coronal post-gadolinium T1 images show extensive marrow and soft tissue edema/inflammation and confirm osseous destruction and periostitis.

Reference

Kaplan SL. Osteomyelitis in Children. *Infect Dis Clin N Am* (2005); 19:787-797.





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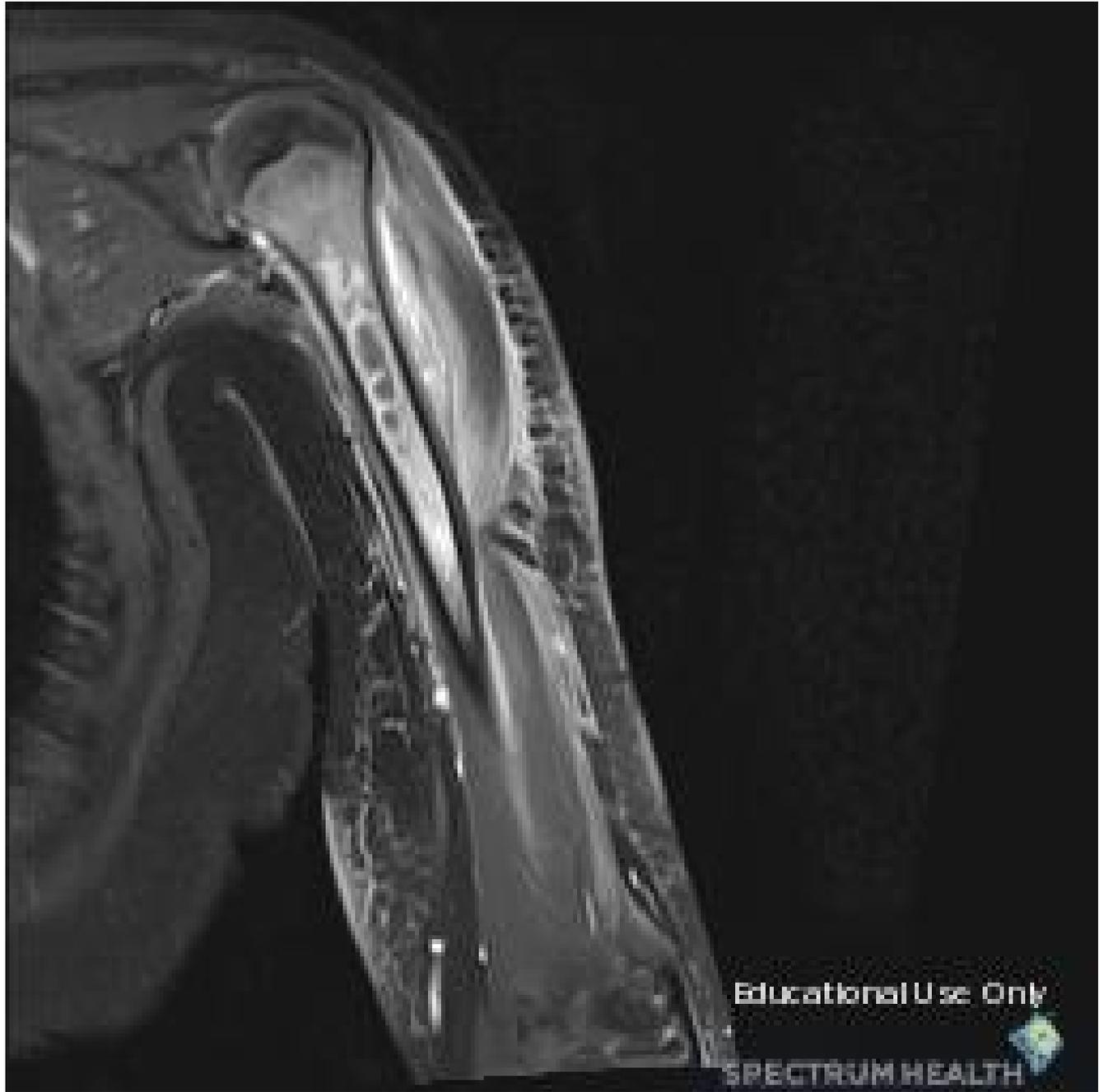
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