Neonatal Osteomyelitis

A 2-month-old boy presented with diminished shoulder movement. Radiographs revealed irregularity and sclerosis involving the proximal left humeral metaphysis (A). Differential considerations included healing proximal humerus fracture (including nonaccidental trauma [NAT]) and infection. An US image oriented in the sagittal plane showed the humeral head in appropriate position and a complex joint effusion (arrows, B). An axial MRI image showed a rim-enhancing joint effusion (arrow, C), abnormal signal within the humeral proximal metaphysis and epiphysis (oval, C), periosteal reaction, and soft-tissue edema (star, C). An enhancing lesion within the deltoid was concerning for abscess. Findings suggested multifocal osteomyelitis and septic arthritis.

Neonatal osteomyelitis is a problematic diagnosis. Since fever may be absent, radiographic findings are often misinterpreted as a healing fracture and dislocation or Salter Harris I injury. Multifocal bone abnormalities are often questioned as NAT.

Osteomyelitis is primarily a disease of infants and young children, with one-third of cases occurring before 2 years of age. The diagnosis is often delayed secondary to nonspecific symptoms. Neonates are at highest risk due to their immature immune system and transphyseal blood supply. In cases of delayed or missed diagnoses, 40% of infants have extremity deformity due to physeal injury. Adjacent septic arthritis is common in infants under 1 year of age.\(^1\)

On radiographs, lucency and a permeative appearance can be seen at 7-10 days with bony destruction beginning at 7-10 days. Osteomyelitis commonly occurs in metaphyses, with long bones most frequently involved (70%). Sonography is useful for evaluating joint alignment and presence of a joint effusion, and demonstrating metaphyseal and epiphyseal destruction. Contrast-enhanced MRI is best for surgical planning. A bone survey and bone scintigraphy may evaluate multifocal disease.\(^2\)

REFERENCES