

What Is Your Diagnosis?



Figure 1—Mediolateral radiographic view of the right humerus of a 10-month-old goat evaluated because of a 3-month history of intermittent right forelimb lameness.

History

A 10-month-old female Nubian goat was referred because of a 3-month history of intermittent right forelimb lameness. The goat became non-weight-bearing on the affected limb 2 weeks prior to referral. The referring veterinarian evaluated the goat 3 times but could not identify the cause of the lameness. The owner twice treated the goat with oxytetracycline (10 mg/kg [4.5 mg/lb] of body weight, IM, q 6 h) for 3 days with no improvement of clinical signs. There was no history of trauma, and the goat had remained bright and alert throughout the 3 months of lameness.

Physical examination findings were within reference limits except for a high rectal temperature (40.4 C [104.8 F]). A hard swelling (approx 4 cm in diameter) was palpated on the proximalateral aspect of the right humerus. Palpation of the swelling elicited signs of pain. Severe muscle atrophy was detected over the entire region of the right shoulder. Because of the severe signs of pain elicited from the goat on manipulation of the limb, only a mediolateral radiographic view was obtained of the affected humerus (Fig 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page ▶



Figure 2—Same radiographic view as in Figure 1. Notice the radiographic evidence of abscess in the proximolateral portion of the humerus (arrows).

Diagnosis

Radiographic diagnosis—A large, oval, radiolucent defect in the proximolateral portion of the humerus (Fig 2).

Comments

Cortical bone caudal to the lesion was destroyed, and smooth periosteal new bone was evident, extending distally approximately 1.5 cm from the area of osteolysis. Radiography provides a rapid screening procedure for localizing and characterizing bone lesions. Differential diagnoses of lytic bone lesions include bone abscess, neoplasia, osteomyelitis, old fractures, metabolic bone disease, and bone cysts.¹ Each of these diseases results in signs of pain, unwillingness to move, and localized swelling. Additional diagnostic tests that may help differentiate these disease processes include examination of a fine-needle aspirate of the swelling, bacterial culture of blood samples, CBC, serum biochemical analyses, and surgery.¹

Because of the age of this goat, the high rectal temperature, and the location of the lesion, bone abscess was the presumptive diagnosis. To confirm the diagnosis and effect a cure, surgery was performed. A pneumatic drill was used to penetrate the cortex of the humerus, and copious amounts of white, creamy, purulent exudate flowed from the site. Material for aerobic

and anaerobic bacterial culture was obtained. Curettage of the devitalized bone was performed, and the defect was filled with a cancellous bone graft harvested from the ilium.² Two polymethylmethacrylate beads containing amikacin sulfate and oxacillin (2 g of each antibiotic mixed with 40 g of polymethylmethacrylate) were also placed into the bone defect.³ Treatment with lincomycin and spectinomycin (11 mg/kg [5 mg/lb], SC, q 12 h) was initiated until bacterial culture results were available. Culture and antimicrobial susceptibility results revealed *Corynebacterium pseudotuberculosis* that was susceptible to penicillin.

The goat was discharged from the hospital 6 days after surgery with instructions to the owner to restrict exercise and administer procaine penicillin G (20,000 U/kg [9,090 U/lb], SC, q 24 h) for 10 days. Four weeks after surgery, the goat was able to use its right forelimb, although muscle atrophy was still apparent in the shoulder region. Three months after surgery, the owner reported that the goat was able to bear full weight on the affected limb.

Corynebacterium pseudotuberculosis commonly causes caseous lymphadenitis in goats. If *C pseudotuberculosis* enters the general circulation, it can penetrate and colonize many tissues.⁴ Acute hematogenous osteomyelitis develops in the rapidly growing long bones of immature animals.⁵ Bacteria can colonize the metaphyses of long bones, because blood flow in these areas is slowed by capillary loops that form venous sinusoids below the cartilaginous growth plate.¹ If host defenses become overwhelmed, bacteria can proliferate and inflammation ensues. Edema causes increased intraosseous pressure that leads to decreased blood flow, and ultimately bone necrosis and resorption results.¹ The end result is a bone abscess, which can be characterized radiographically as a lytic lesion with well demarcated margins and peripheral sclerosis.

References

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