What Is Your Diagnosis?

Figure 1—Craniocaudal (A) and mediolateral (B) radiographic views of the right stifle joint of an 18-week-old sexually intact male Vizsla that was evaluated because of a grade 3 of 4 right hind limb lameness of 3 weeks’ duration. On physical examination, deep palpation of the right patella elicited a pain response.

History

An 18-week-old sexually intact male Vizsla was evaluated because of a right hind limb lameness of 3 weeks’ duration. The owners reported no known history of trauma. Treatment with carprofen and tramadol for pain management did not result in clinical improvement. The dog was otherwise clinically normal.

On physical examination, a grade 3 of 4 lameness of the right hind limb was apparent, and deep palpation of the right patella elicited a pain response. The remainder of the physical examination was unremarkable. No abnormalities were detected on CBC and serum biochemical analysis. Radiographs of the right stifle joint were obtained (Figure 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →
Radiographic Findings and Interpretation

There is a minimally displaced, parasagittally oriented fracture of the lateral aspect of the patella. In the mid to lateral aspect of the patella, the fracture line extends through a focal, somewhat oval lucency. On the mediolateral view, this focus of lucency is surrounded by a moderate amount of sclerosis in the mid to proximal aspect of the patella. The fracture line is not evident on the mediolateral view. Moderate soft tissue swelling is seen surrounding the patella on the mediolateral view (Figure 2).

Although the patellar fracture was readily appreciated on the craniocaudal view, a flexed craniodorsal-craniodistal skyline view of the stifle joint was obtained to evaluate the patella (Figure 3). This allowed visualization of the articular aspect of this fracture not seen on previous views. For the (skyline) view, the patient was sedated and positioned in dorsal recumbency. The stifle joint was then flexed with the patella parallel to the beam and perpendicular to the plate. The skyline view reveals the patellar fracture extending from the dorsal to the articular surface of the patella. The oval lucency is evident on the medial aspect of the fracture line and is surrounded by sclerotic bone. The soft tissue swelling is also evident.

These findings represent an articular fracture of the patella and are associated with focal lysis of the lateral aspect of the patella. Differential diagnoses for the focal lysis include osteomyelitis, bone cyst, bone neoplasia, or a chronically healing fracture.
Treatment and Outcome

Because of the aggressive appearance and parasagittal location of the fracture, osteomyelitis was suspected and a regimen of antimicrobials with an anti-inflammatory agent was initiated, but there was no improvement in the lameness. A biopsy specimen of the right patella was obtained, and a section was submitted for histologic evaluation and bacteriologic culture. Histologic findings included chronic-active osteomyelitis with fibrosis leading to a diagnosis of a Brodie’s abscess. Antimicrobial treatment was based on bacterial culture results.

The dog seemed to benefit from the patellar biopsy and the subsequent formation of a fistulous tract, which allowed drainage to occur. Clinical resolution of the infection occurred after 7 days of appropriate antimicrobial treatment.

Progressive sclerosis of the right patella was observed radiographically 2 months after the biopsy, with persistence of the parasagittally oriented fracture line best seen on the skyline view. The focus of lucency through the lateral aspect of the patella was no longer visible because it had filled in with sclerotic bone. Displacement of the fracture fragment was minimal and was likely a manifestation of a fibrous union, which is common in patellar fractures, probably owing to a lack of stability. Although a grade 1 of 4 lameness persisted, signs of pain could no longer be elicited over the patella and the owners felt the dog had considerably improved hind limb function. Physical therapy was initiated during treatment and was to be continued to assist in returning the hind limb to full function.

Comments

Patella fractures are rare in dogs and usually occur from direct trauma or distractive forces generated by the quadriceps mechanism causing fractures in a transverse plane. The histopathologic diagnosis in the dog of the present report was a Brodie’s abscess, resulting in the patellar fracture. Brodie’s abscesses are usually seen in the ends of long bones in the metaphyseal or cancellous regions. It is suspected that capillary beds in these locations filter out bacteria, allowing infections to become established. This hematogenous infection is then surrounded by a wall of granulation tissue and a fibrous capsule. There have been only 3 reported cases of a Brodie’s abscess of the patella in humans, and to the authors’ knowledge, this is the first report of a Brodie’s abscess of the patella in a dog.

Brodie’s abscesses can be difficult to diagnose because they can mimic neoplastic lesions radiographically with bone loss, bone production (both periosteal and endosteal proliferation), and diffuse soft tissue swelling. In earlier stages of the infection, there may be no definitive clinical signs or there may be vague soft tissue swelling or benign periosteal reaction. Later in the process, there is a radiolucency in the bone surrounded by a zone of mild to moderate sclerosis. Lopes et al described a set of radiographic findings in humans to help refine the diagnostic signs to include medullary-based lytic lesions, a geographic pattern of destruction, well-defined edges with marginal sclerosis, and no bone enlargement.