What Is Your Diagnosis?

A 6-month-old female Rottweiler was evaluated because of a non-weight-bearing lameness of the left forelimb. The owners reported that the lameness developed acutely after the dog jumped from the bed of a pickup truck. Physical examination localized the lameness to the left elbow. Orthopedic examination with the dog anesthetized revealed mild to moderate swelling around the left elbow and crepitus on flexion and extension of the affected joint. Lateral instability of the elbow was also apparent. Survey radiographs of the left elbow were obtained (Fig 1).

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

Abnormalities were not detected on survey radiographs. A radiograph of the left elbow obtained while applying force to the medial aspect of the joint revealed a nondisplaced Salter–Harris type I fracture of the distal humeral physis (Fig 2).

Comments

Differential diagnoses for the cause of lameness on the basis of results of physical examination and survey radiography included rupture of the lateral collateral ligament, with or without avulsion fracture, and traumatic elbow joint subluxation with rupture of the lateral collateral ligament, joint capsule, or origins of the flexor and extensor muscles followed by spontaneous reduction. Radiographic views obtained while stress is applied to an affected joint are used to document and localize joint instability. In the dog of this report, the left elbow was laterally unstable. However, abnormalities were not detected on survey radiographs of the affected joint. Therefore, to better delineate the cause of lameness, a radiograph was obtained with force applied to the medial aspect of the joint. This radiographic view revealed a separation on the lateral aspect of the distal humeral physis without displacement of the metaphysis (Fig 2). Final diagnosis was nondisplaced Salter–Harris type I fracture of the distal humeral physis.

The affected limb was placed in a Spica splint for 2 weeks. A soft, padded bandage was then applied for 4 weeks with the limb positioned in standing flexion. The fracture healed without complication. Alternately, we could have stabilized the fracture by placing interfragmentary wires in the lateral epicondyle and applying a soft padded bandage. Secondary osteoarthritis of the elbow as a result of the initial trauma may worsen long-term prognosis.

Salter–Harris type I fractures of the distal humeral physis are uncommon, accounting for < 1.0% of all humeral fractures in dogs. The physis is the weak link in the bone-ligament-tendon complex, although elbow luxations and lateral condylar fractures are also more commonly reported in immature dogs. Trauma to the distal humeral physis may result in premature closure of the physis and truncated growth of the humerus. Eccentric closure of the physis secondary to trauma may result in malformation of the humeral condyle and subsequent elbow incongruity.

Diagnosis of Salter–Harris type I fractures of the distal humeral physis is dependent on orthopedic examination and radiography. Radiographic evidence of this type of fracture may include displacement of the metaphyseal fragment or obvious physeal separation. If abnormalities are not readily apparent on survey radiographs, additional radiographs should be obtained while applying stress to the elbow joint. This latter procedure was essential for diagnosing the cause of lameness in the dog of this report.


This report was submitted by Buck Clark, DVM, and Brent E. Wilkens, DVM, DACVS, from the Dallas Veterinary Surgical Center, 4444 Trinity Mills Rd, Ste 203, Dallas, TX 75287.