History

A 7-year-old castrated male Borzoi was evaluated for acute lameness of the right forelimb, which was noticed after running in the owner's yard. The dog was treated by the referring veterinarian with anti-inflammatory medication and 8 weeks of rest without improvement.

On physical examination, an intermittent non–weight-bearing lameness was detected in the right forelimb. Evaluation of range of motion of the right carpus and application of pressure to the medial aspect of the carpus elicited signs of pain. Radiographs of the right and left carpus were obtained (Figure 1).

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

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Radiographic Findings and Interpretation

Dorsomedial avulsion of the right second carpal bone with medial displacement of the proximal portion of the second metacarpal bone is evident (Figure 2).

Comments

In addition to avulsion of the right second carpal bone, there was a high probability that the dog sustained substantial injury to the medial collateral, intercarpal, and carpometacarpal ligaments. Avulsion of the accessory carpal bone has been well documented in racing Greyhounds. This type of injury most commonly occurs in the right forelimb and is attributable to racing counterclockwise around a track. Excess tension of the flexor muscles and palmar carpal ligaments is thought to cause the avulsion fractures of this bone. First described in 1950 by Bateman, early surgical techniques for correction of this type of injury included resection of the abductor digiti quinti muscle or removal of the fragment in the hope of returning the dog to racing function. In 1 study, avulsion of the accessory carpal bone was repaired by use of internal screw fixation placed via a palmarolateral open surgical approach between the fourth and fifth accessorometacarpal ligaments. In that study, repair by use of 1.5- or 2.0-mm cortical screws resulted in 10 of 12 dogs being returned to racing, with 5 dogs winning races. Pancarpal arthrodesis with accessory carpal bone excision was used successfully in 1 Greyhound, although whether the dog returned to racing was not reported. In addition, soft tissue complications developed and remained after recovery.

To the authors’ knowledge, avulsion of the second carpal bone in dogs has not been reported. In the dog of this report, avulsion of the second carpal bone was not precipitated by trauma but resulted from normal running activity. Manual reduction of the avulsed bone (confirmed with fluoroscopy) permitted closed stabilization with two 0.035-inch Kirschner wires. The wires were fluoroscopically guided through the second carpal bone to engage the radial and third carpal bone (Figure 3). Primary repair of ligament injuries was not attempted. The limb was placed in a splint, and the dog underwent cage rest for 8 weeks. Radiography performed 8 weeks after surgery revealed migration of 1 wire medially toward the soft tissue. Range of motion of the carpal area was considered excellent, and lameness was not detected. The displaced wire may require removal in the future but was left in place because complications associated with migration of the wire were not detected. Pancarpal arthrodesis would have been considered if the fixation had not been successful. However, fixation performed in the dog permitted stabilization, resulting in fewer complications secondary to soft tissue trauma and maintenance of range of motion in the joint.