# What Is Your Diagnosis?

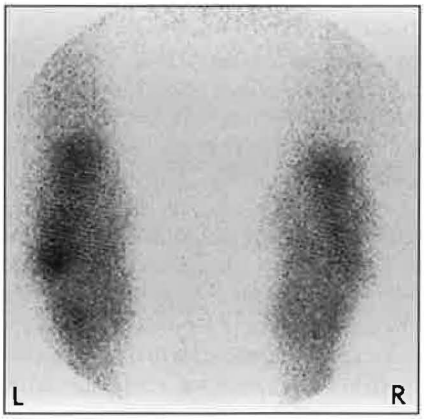


Figure 1—Plantarodorsal scintigraphic view of the bone phase of both tarsi of a 4-year-old Thoroughbred filly.

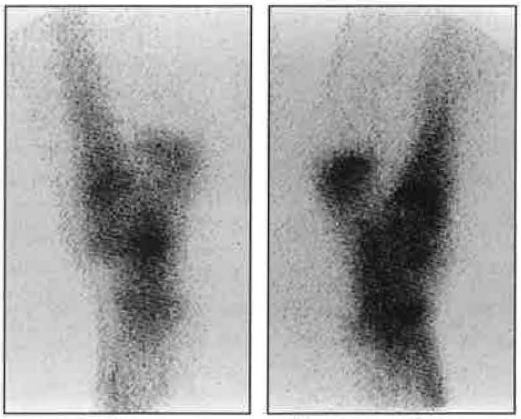

Figure 2—Lateral scintigraphic views of the bone phase of the left (left) and right (right) tarsi of the horse in Figure 1.

Figure 3—Dorsoplantar xeroradiographic view of the left tarsus of the horse in Figure 1.

**History**

A 4-year-old Thoroughbred filly was referred for scintigraphic examination of both hind limbs. The filly had a successful racing career, but 3 weeks before admission, it became lame in the left hind limb.

Areas of heat or swelling could not be detected on physical examination of the hind limbs, but lameness examination revealed a grade 3/4 lameness in the left hind limb. Flexion of this limb did not make the horse more lame. Scintigraphy of both hind limbs was performed. On the plantarodorsal and lateral scintigraphic views (Fig 1 and 2), intense focal uptake of radiopharmaceutical (technetium Tc 99m medronate) could be seen laterally in the tibiotarsal region of the left hind limb. Xeroradiographs of the left tarsus were obtained (Fig 3).

**Determine whether additional imaging studies were required, or make your diagnosis from Figures 1 through 3—then turn the page ▸**

Figure 4—Same xeroradiographic view as in Figure 3. The avulsion fracture is indicated by arrows.

## Diagnosis

**Xeroradiographic diagnosis**—Avulsion fracture of the calcaneus at the attachment of the long lateral collateral ligament of the tarsus (Fig 4).

## Comments

The long lateral collateral ligament of the tarsus attaches proximally to the lateral malleolus of the tibia. The distal attachments include the distolateral surface of the calcaneus, lateroplantar surface of the talus, lateral surface of tarsal bone IV, and adjacent lateral surface of metatarsal bone III.[1] The long lateral collateral ligament has fibers that spiral medially. These fibers are taut during extension of the limb and loose during flexion.[1]

Injury of the lateral collateral ligaments of the tarsocrural joints has been reported in Standardbred pacers.[2] Lameness associated with injury varies from subtle to severe, and flexion of the limb does not always worsen lameness. Joint effusion may be associated with injury, but is uncommon because the injury is extra-articular.[2]

Injury to the lateral collateral ligaments and associated structures may be caused by the cyclic trauma of training at high speeds. It is theorized that if a horse experiences pain in a forelimb or opposite hind limb, then the compensating limb moves farther axially, creating greater forces on the long lateral collateral ligament. This may result in injury at the attachments of the long collateral ligament.[2] Intense uptake of radiopharmaceutical in the tarsometatarsal region of the right hind limb (Fig 2) of the horse of this report is consistent with active degenerative changes, such as bone spavin, and indicates the horse may have had pain in this limb. Gait adjustments made by the horse in an attempt to minimize pain in the right hind limb may have resulted in injury to the left hind limb.

Nuclear scintigraphy is a sensitive indicator of bone remodeling after injury[3] and may help to identify injuries to the lateral collateral ligaments and associated structures. Seven of the 9 Standardbreds described as having had such injuries had intense uptake of radiopharmaceutical laterally in the tibiotarsal region on scintigraphic studies.[2] All 9 horses had characteristic changes (enthesiophyte formation and new bone production) detected by radiography; many of these changes became more evident with time.[2]

Treatment consists of 4 to 6 months of rest as well as adjunctive physical therapy and administration of nonsteroidal anti-inflammatory drugs. Prognosis appears to be guarded to fair for return to racing. Nuclear scintigraphy can be used to detect continuing bony activity before horses are returned to work. The horse of this report was confined to a stall for 4 months, with daily hand walking after the first 4 weeks. Nuclear scintigraphy 3 months later revealed radiopharmaceutical uptake that was within reference limits. During a follow-up examination, the horse was determined to be sound and is back in training.

1. Updike SJ. Functional anatomy of the equine tarsocrural collateral ligaments. *Am J Vet Res* 1984;45:867–874.

2. Boero MJ, Kneller SK, Baker GJ, et al. Clinical, radiographic, and scintigraphic findings associated with enthesitis of the lateral collateral ligaments of the tarsocrural joint in Standardbred racehorses. *Equine Vet J* 1988;20(Suppl 6):53–59.

3. Twardock AR, Allhands RV, Boero MJ, et al. Nuclear scintigraphy of the equine skeletal and pulmonary systems: overview of the technique, its capabilities and limitations, in *Proceedings*. Am Assoc Equine Pract 1986;32:495–503.

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