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What Is Your Diagnosis?

Figure 1—Lateromedial (A), flexed lateromedial (B), flexed dorsoplantar (C), and dorsoplantar (D) radiographic views of the right tarsus of a 12-year-old pony mare with a 4-week history of hind limb lameness and swelling of the tarsus.

History

A 12-year-old 393-kg (865-lb) pony mare used for dressage was evaluated for a 4-week history of unilateral tarsal swelling and right hind limb lameness. At the time of initial injury, the pony was acutely reluctant to bear weight on the limb. A small laceration was found on the medial surface of the tarsus. Radiographic images of the right tarsus were obtained, with no abnormalities found.

At the time of hospital admission, all vital signs were within reference limits, with the exception that the pony was tachypneic (48 breaths/min; reference range, 8 to 18 breaths/min) and had a moderate to severe amount of effusion within the right tarsocrural joint and a small laceration (1 X 0.5 cm) along the medial aspect of the tarsus. Lameness examination revealed a grade 5/5 lameness of the right hind limb. Because of the degree of lameness and the location of the wound, arthrocentesis of the tarsocrural joint was performed and revealed an increase in synovial fluid that was subjectively of low viscosity. On cytologic evaluation, the synovial fluid had a high WBC count of 32,800 cells/µL (reference range, < 500 cells/µL). No growth was obtained on bacteriologic culture of the synovial fluid. Standard practices for aerobic and anaerobic bacteriologic culture of clinical samples of veterinary origin were used; however, the sample was not placed in blood culture medium prior to culture.

Radiographic images of the right tarsus were obtained and consisted of 6 views (ie, lateromedial, dorsoplantar, dorsomedial-plantarolateral oblique, dorsolateral-plantaromedial oblique, flexed lateromedial, and flexed dorsoplantar). The lateromedial, flexed lateromedial, flexed dorsoplantar, and dorsoplantar views are shown **(Figure 1)**.

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

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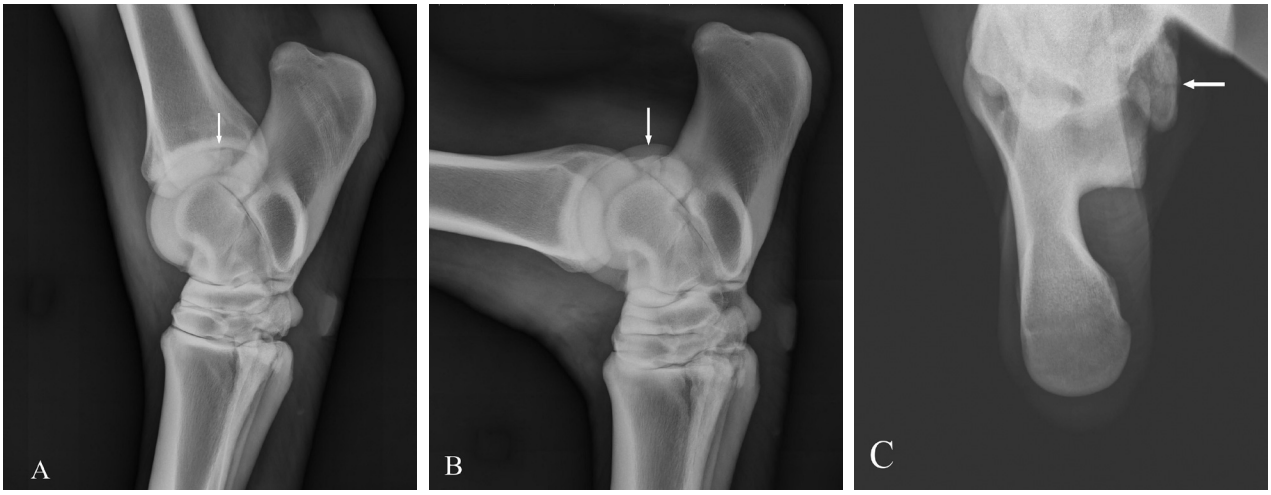

Figure 2—Same radiographic images as in Figure 1. A mild to moderate increase in soft tissue swelling is present over the tarsocrural joint. A—Notice the well-defined triangular defect of the plantaroproximal margin of the medial trochlear ridge of the talus (arrow). B and C—Notice the bony fragment that is separated from the talus by a well-defined linear lucency (arrow).

Radiographic Findings and Interpretation

A well-defined triangular bony fragment, approximately 1 X 1 cm as measured from the base to the apex, is present in the plantaroproximal margin of a trochlear ridge of the talus. The bony fragment is separated from the talus by a well-defined linear lucency. The flexed lateromedial image reveals the fragment more clearly in the plantaroproximal margin of the medial trochlear ridge, compared with the standard lateromedial image. The dorsoplantar view corroborates the medial location of the fragment **(Figure 2)**. Additionally, the intra-articular and periarticular soft tissues of the right tarsus are moderately thickened, and this is attributed to synovial effusion, synovial proliferation, or both.

On the basis of the bony fragment and linear lucency, a radiographic diagnosis of fracture of the medial trochlear ridge of the talus was made. The soft tissue findings were attributed to joint inflammation; however, in light of the results of cytologic evaluation of the synovial fluid, a diagnosis of septic arthritis was the most likely cause of the soft tissue findings and clinical signs.

Treatment and Outcome

Arthroscopy was performed to evaluate the right tarsocrural joint and remove the fragment via an arthrotomy if deemed necessary. Arthroscopy revealed marked synovitis and fibrin accumulation within the dorsal aspect of the joint. A sharply demarcated full-thickness cartilaginous defect was found between the medial malleolus and distal intermediate ridge of the tibia, with a hematoma present on the medial aspect of the joint. Arthroscopic evaluation of the plantar aspect of the joint revealed synovitis, the presence of a moderate amount of fibrinous debris, and a 5 X 5-mm cartilaginous defect along the plantaroproximal aspect of the medial trochlear ridge. The fibrin was debrided, and the joint was lavaged.

An arthrotomy, via a 10-cm incision made in accordance with radiographic findings, was performed to locate the fracture. The area of the fracture was identified, probed, and deemed sufficiently stable to warrant leaving it in place without debridement. The joint was lavaged, closure was routine, and the tarsus was sterilely bandaged.

The patient's lameness was markedly improved immediately after surgery. On the basis of the arthroscopic findings as well as the response to arthroscopic lavage, the presumptive clinical diagnosis was septic arthritis and incidental fragmentation of the medial trochlear ridge of the talus. The pony received IV administration of potassium penicillin and gentamicin for 5 days, as well as a tapering dose of phenylbutazone for 10 days. The pony was discharged from the hospital approximately 1 week later and had bandage changes every 2 to 3 days until the sutures were removed at 2 weeks after surgery. The pony was withheld from exercise for 3 months. At 6 months, the pony was back into light training. Three years after surgery, the pony was free of lameness.

Comments

The appearance and location of the fracture of the talus observed in the pony of the present report are uncommon. Individual and case series reports of fractures and bony fragments in the plantar aspect of the tarsus have been published.[1–3] In the case series by Espinosa et al,[1] fragmentation along the proximal tubercle of the talus was described, and not the medial trochlear ridge of the talus. Although this contrast is important to note, either radiographic abnormality

can be found without lameness and therefore identified as incidental radiographic findings. Confirmation of the presence and location of a radiographic lesion, such as a bony fragment, often requires several orthogonal views. In the case described in the present report, although the bony fragment was detected on the lateromedial view, corroboration on the oblique views was not possible owing to superimposition of the medial malleolus and lateral trochlear ridge of the talus. As described by Espinosa et al,[1] additional views, such as the flexed lateromedial and flexed dorsoplantar, are valuable to confirm the presence and location of the bony fragment. A flexed lateromedial view is helpful for evaluating the proximal aspects of the trochlear ridges of the talus, coracoid process of the calcaneus, and plantar aspect of the distal tibia.[3] The flexed dorsoplantar view is useful for evaluating the sustentaculum tali, tarsal groove, tuber calcanei, and proximal aspects of the medial trochlear ridge of the talus.[3] Additionally, other imaging modalities such as fluoroscopy, CT, MRI, and ultrasonography could help to provide valuable information regarding the location of the bony fragment.

The clinical consequence of fragmentation of the plantar aspect of the tarsus was described in a report of 9 cases.[1] In that report, it was shown that warmbloods were among the most affected breeds and that lameness was not usually associated with the lesion.[1] In the present report, the pony was severely lame; however, a high preoperative synovial fluid WBC count, evidence of fibrin deposition within the joint observed arthroscopically, and presence of a wound over the tarsus indicated a joint infection accompanied the fragmented talus. Results of synovial fluid culture were negative for aerobic and anaerobic bacteria; however, the synovial fluid sample was not placed in blood culture medium prior to culture. Without enrichment in blood culture medium, the culture results could have been falsely negative. Thus, the clinical signs of severe lameness coupled with the reported lack of lameness associated with a fragmentation of the plantar aspect of the tarsus suggested a joint infection.[1] Overall, these radiographic lesions should be evaluated on a case-by-case basis. In the pony of the present report, the pain was due to synovial infection secondary to a presumed joint penetration associated with the wound over the medial aspect of the tarsus. In the absence of lameness, these lesions should be completely evaluated via the standard 4-view radiographic series (lateromedial, dorsoplantar, dorsomedial-plantarolateral oblique, and dorsolateral-plantaromedial oblique) with additional flexed dorsoplantar and flexed lateromedial views.

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References

1. Espinosa P, Lacourt M, Alexander K, et al. Fragmentation of the proximal tubercle of the talus in horses: 9 cases (2004–2010). *J Am Vet Med Assoc* 2013;242:984–991.
2. Verwilghen DR, Bolen G, Paindaveine P, et al. What is your diagnosis? Bone fragment in hock joint. *J Am Vet Med Assoc* 2010;237:29–30.
3. Butler JA, Colles CM, Dyson SJ, et al. The tarsus. In: *Clinical radiology of the horse*. 3rd ed. Ames, Iowa: Blackwell, 2008;321–362.