What's Your Radiographic Diagnosis?

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After the dam has recovered from general anesthesia, the newborn pups may be returned to her. If regional anesthesia has been used for the procedure, the newborns may be returned to the dam immediately after completion of the surgery.

References


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Elizabeth A. Riedesel, DVM, DACVR

Presentation

A 4 year-old gelding Quarter horse was presented for evaluation of an incompletely healed wound. Three weeks previously the horse had sustained several skin lacerations while in the pasture. Topical ointment had been applied. The wound on the medial aspect of the left tarsus was forming a small walnut-sized granulation tissue mass. Associated with this was mild generalized soft tissue swelling. The horse was not currently lame and lameness had not been noted initially. A second wound on the right lateral metacarpus was healed. Radiographs of the tarsus were taken. Please see Figures 1 - 3.

Radiographic Findings

The soft tissue abnormalities identified on the physical examination are noted to be at the level of the distal tibia. Deep to the plane of the granulation tissue mass is an area of periosteal new bone formation that is solid except for a focal defect at the junction of its middle and distal thirds. In the cortex is a 1 cm zone of osteolysis that contains a bone opacity that is separated from the cortex. The lesion complex is best seen on the DorsoLateral-PlantarMedial Oblique (DLPOMO) view. The faint lucency of the cortex is seen on both the DorsalPlantar (DP) and LateralMedial (LM) views.

Radiographic Diagnosis

The bone changes are characteristic of sequestrum formation secondary to traumatic cortical osteitis.

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Outcome and Discussion

A sequestrectomy was done along with debridement of the granulation tissue. Prognosis for healing is good in this case. Sequestrum formation is a common sequelae of cortical osteitis due to trauma such as the laceration sustained by this horse. All lacerating wounds in horses are considered to be contaminated. If the laceration sufficiently compromises the soft tissue, the vasculature which supplies the outer cortex of the underlying bone will be compromised and bone necrosis results. Contaminating bacteria become established in the wound and around the devascularized bone. The devascularized bone is further separated from the underlying cortex by the development of granulation tissue around it. At this point the devascularized bone has become sequestered from the parent cortex. The bone continues to attempt to isolate the sequestrum by periosteal new bone production. A variable sized opening in the periosteal new bone is maintained through which drainage of necrotic debris occurs into the soft tissue. If a tract of the necrotic material gains access to the incompletely healed skin wound, an externally draining tract is established. The recommended treatment for cortical

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osteitis with sequestrum formation is surgical removal of the sequestrum. Thin sequestra have been observed to dissolve or be extruded along with drainage over several weeks.

The classical radiographic signs of sequestrum formation are a piece of bone surrounded by a radiolucent zone surrounded by a rim or “collar” of periosteal new bone. The opening in the periosteal new bone, the cloaca, may be visible. These changes are typically not apparent until 10-14 days following the wound. Because the sequestrum can be of variable size it is best visualized when it is seen “on-edge” by the x-ray beam. This may require the taking of several oblique projections. As a rule-of-thumb, an x-ray beam angle which provides a profiling shadow of the maximum bulge of the external swelling or exit point of the draining tract is most likely to catch the sequestrum on-edge. Views where the x-ray beam directly faces the swelling or draining tract will not be as likely to define the sequestrum. How-

Figure 2: DorsoPlantar view of a 4 year-old gelding Quarter horse presented for evaluation of an incompletely healed wound on the medial aspect of the left tarsus.
ever, the osteolysis is typically seen in the latter view. Such is the finding on this horse’s films. The lucencies are seen on both the LM and DP views but the sequestrum is only vaguely seen. However on the DLP MO view, the sequestrum, involucrum, and cloaca are easily seen.

References