

What Is Your Diagnosis?

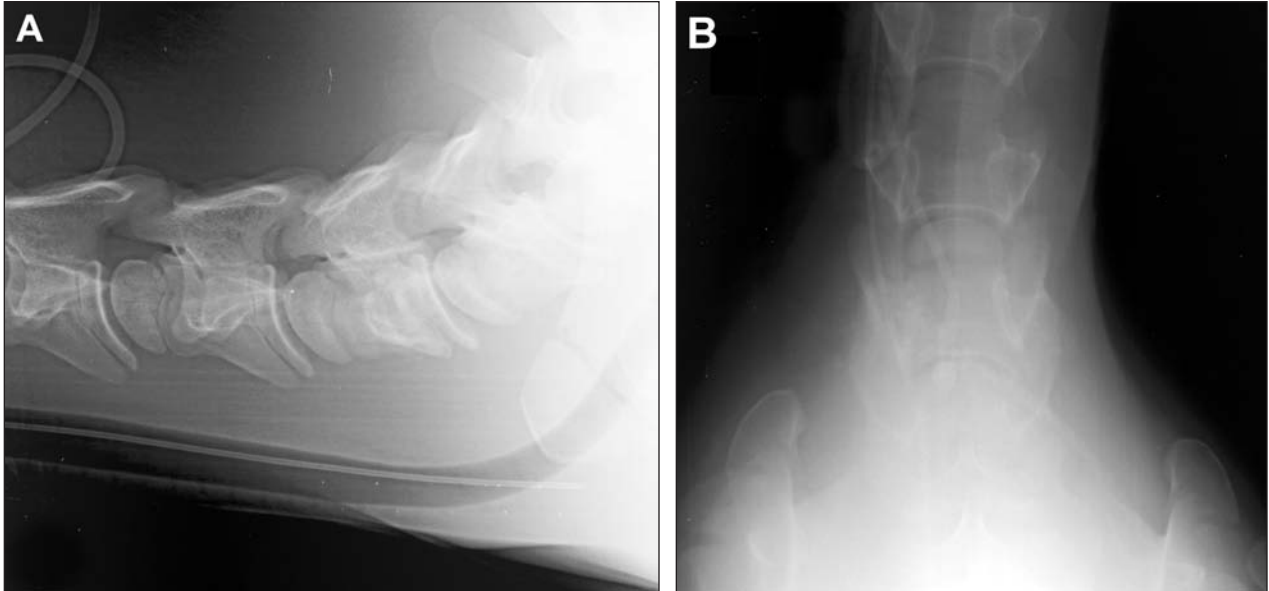


Figure 1—Lateral (A) and (B) ventrodorsal radiographic views of the caudal cervical portion of the vertebral column of a 2-week-old foal evaluated for severe lameness of the right forelimb that had progressed to paraparesis during the previous 24 hours.

History

A 2-week-old Paint foal was evaluated for severe lameness of the right forelimb that had progressed to paraparesis during the previous 24 hours. On physical examination, the foal was mentally alert and responsive; however, the foal was recumbent and unable to stand. Neurologic examination revealed that cranial nerve function was normal. Conscious proprioception could not be evaluated because of the foal's inability to stand. The flexor reflexes of the forelimbs were absent, and there was no conscious perception of painful stimuli. Palpation of the cervical region was unremarkable. The foal's hind limbs were hyperextended and rigid. The patellar reflexes were exaggerated, whereas the perineal reflex and muscle tone of the tail were normal. On the basis of the neurologic examination findings, the lesion was localized from vertebrae C6 to T2. Results of CBC and serum biochemical analyses indicated leukocytosis (17.4×10^3 WBCs/ μ L; reference range, 5.30 to 16.8×10^3 WBCs/ μ L), neutrophilia (14.965×10^3 cells/ μ L; reference range, 2.20 to 7.4×10^3 cells/ μ L), monocytosis with cytologic evidence of inflammatory changes (1.565×10^3 cells/ μ L; reference range, 0 to 0.9×10^3 cells/ μ L), and hyperfibrinogenemia (1,300 mg/dL; reference range, 200 to 400 mg/dL). Radiographs of the caudal cervical portion of the vertebral column 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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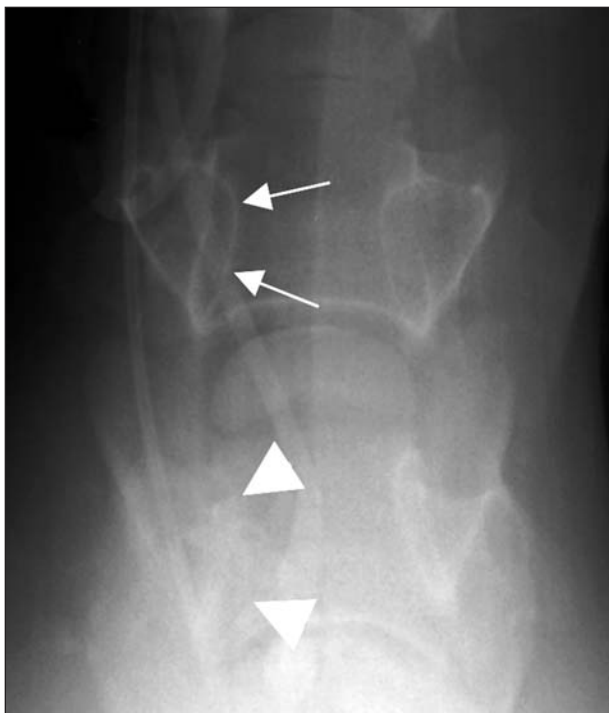


Figure 2—Same ventrodorsal radiographic view as in Figure 1 (enlarged). Multifocal areas of ill-defined permeative osteolysis within the vertebral body and right pedicle and transverse process of vertebra C6 are evident and best detected by lack of visualization of the right pedicle of C6 (arrowheads). Notice the normal radiographic appearance of the right pedicle (arrows) of C5.

Diagnosis

Radiographic diagnosis—A soft tissue mass effect can be seen ventral to the caudal cervical portion of the vertebral column causing ventral deviation of the trachea (Figure 1). Multifocal areas of ill-defined permeative osteolysis are seen within the vertebral body and right pedicle and transverse process of C6 (Figure 2).

Comments

Radiographic findings were consistent with an aggressive process within the vertebra causing osteolysis. Considering the age of the foal, vertebral osteomyelitis with associated soft tissue abscess was considered as the primary differential diagnosis. Ultrasonography of the soft tissues of the cervical region revealed a thick-walled hypoechoic mass ventral to the caudal cervical portion of the vertebral column. The cortex of the underlying vertebral body and transverse process was irregular, consistent with osteolytic or osteoproliferative changes. Blood and ultrasound-guided fine-needle aspirates of the hypoechoic mass were obtained for bacteriologic culture.

Diatrizoate (740 mL/kg [336 mL/lb], IV), a water-soluble ionic iodinated contrast agent, was administered to the foal. **Computed tomography (CT)** of the caudal cervical portion of the vertebral column revealed a thick-walled hypodense mass that had a contrast-enhancing capsule (Figure 3). The mass measured 9 × 3 × 7 cm and was ventral to vertebrae C6 and C7. Permeative osteolysis with mild osteoproliferative changes was identified within the vertebral body, pedicle, and transverse processes of C6 and involving the cranial end plate of C7. Extension of the hypodense mass into the vertebral canal

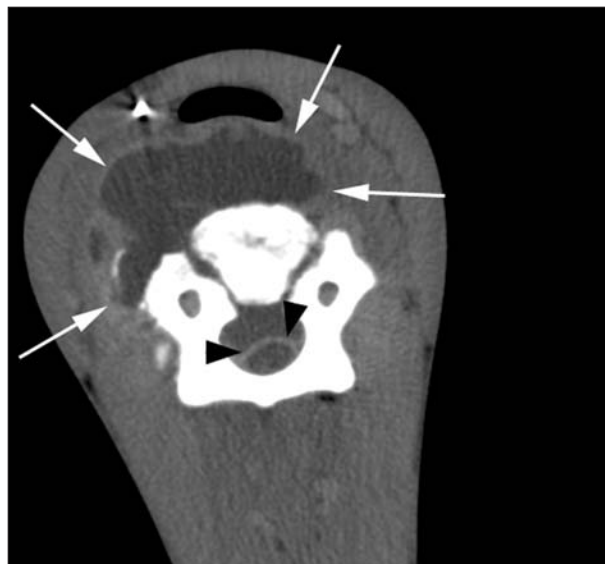


Figure 3—Transverse computed tomographic image at the level of C6 after IV administration of diatrizoate. The foal is in dorsal recumbency. Notice a thick-walled hypodense mass that has a contrast-enhancing capsule (white arrows). Extension of the hypodense mass into the vertebral canal is causing dorsal and mild leftward displacement of the spinal cord, severe extradural spinal cord compression (black arrowheads), and dorsal compression of the trachea.

caused dorsal and leftward displacement of the spinal cord. Severe extradural spinal cord compression and partial loss of epidural fat were seen at the level of the C6-7 intervertebral disk space. The CT findings were consistent with vertebral body osteomyelitis and paravertebral abscess formation with extension of the abscess into the spinal canal causing extradural spinal cord compression.

Because of the poor prognosis, the foal was euthanized. Necropsy findings were consistent with radiographic, ultrasonographic, and CT findings. Multiple nodules throughout the pulmonary parenchyma and septic degenerative joint disease of the right hip joint and carpus were also detected on necropsy. A mixed population of *Rhodococcus equi* and *Salmonella* spp was identified on bacteriologic culture of the contents of the pulmonary nodules obtained during necropsy. *Salmonella* spp were identified on bacteriologic culture of the vertebrae obtained during necropsy and on bacteriologic cultures of blood and fine-needle aspirates of the mass obtained antemortem.

Osteomyelitis of a vertebral body is a rare condition in horses and has a grave prognosis, which is most likely the result of the advanced stage of disease that is present when radiographic changes are initially identified. In horses without radiographic evidence of disease, nuclear scintigraphy has been used to detect lesions before radiographic changes can be identified.¹ In foals, hematogenous spread of bacteria through slow-flowing vertebral capillaries is considered the most likely mechanism of infection.² Clinical signs most frequently observed in horses with vertebral body osteomyelitis are neurologic signs caused by extradural compression of the spinal cord.¹

1. Markel MD, Madigan JE, Lichtensteiger CA, et al. Vertebral body osteomyelitis in the horse. *J Am Vet Med Assoc* 1986;188:632-634.

2. Prescott JF. *Rhodococcus equi* vertebral osteomyelitis in foals. *Equine Vet J* 1994;26:1-2.