What Is Your Diagnosis?

History

A 2-year-old Quarter Horse gelding was referred to the Cornell University Hospital for Animals with a 5-week history of repeated episodes of stumbling and occasionally falling during exercise. On neurologic examination, both mentation and cranial nerve function were normal. Substantial ataxia and proprioceptive deficits were present in both the pelvic (3/4) and thoracic limbs (2/4), characterized by profound circumduction of the outside limb when circling, a hypermetric gait, and a marked worsening of clinical signs when the horse’s head was elevated, leading to a neuroanatomic diagnosis of cervical spinal cord disease. There were moderate signs of pain upon palpation and manipulation of the neck as well as a marked decrease in range of motion. Left-to-right lateral radiographic views of the cervical portion of the vertebral column were obtained while the horse was standing (Figure 1).

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

Figure 1—Left-to-right lateral radiographic view of the cervical portion of the vertebral column at the level of C4 through C6 of a 2-year-old Quarter Horse gelding with a 5-week history of bilaterally symmetric ataxia that worsened with the head elevated. Radiograph obtained while the horse was standing.

This report was submitted by Holly D. Sparks, DVM; Alan J. Nixon, BVSc, MS, DACVS; and Ashlee E. Watts, DVM, DACVS; from the Veterinary Medical Center, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853. Dr. Sparks’ present address is Department of Large Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, SK S7N 5E8, Canada. Address correspondence to Dr. Nixon (ajn1@cornell.edu).
Severe narrowing of the articular process (facet) joint at C5-6, a linear lucency within the cranial articular process of C6, and a large amount of irregular periarticular and periosteal new bone formation present dorsally along the articular process at C5-6 (black arrows); findings are diagnostic of a chronic articular process fracture along the cranial aspect of C6.

Myelography was performed while the horse was anesthetized and in lateral recumbency to further classify lesion location and to assist with surgical planning (Figure 3). On the left to right lateral myelographic projection with the neck in a neutral position, a > 50% narrowing of the dorsal myelographic column at C6-7 appeared minimally compressed. Myelography revealed that the true compressive myelopathy was farther caudad, at C6-7, indicating the importance of obtaining a complete series of images during myelography. Moreover, although the fracture and fracture callus evident on survey radiographs were suggestive of spinal cord compression at this site, further investigation with myelography revealed that the true compressive myelopathy was farther caudad, at C6-7, indicating the importance of contrast radiography for horses with a preliminary diagnosis of cervical vertebral compressive myelopathy.

Cervical spinal fluid collected at the time of myelography was submitted for western blot analysis, which ruled out equine protozoal myeloencephalitis as a differential diagnosis. The horse was treated with ventral cervical interbody vertebral stabilization at both sites, C5-6 and C6-7, with partially threaded titanium baskets 1 week following recovery from the myelogram. The compressive lesion identified via contrast radiography at C6-7 was seemingly a result of a chain reaction of events, being exacerbated by the reduced range of motion of the cranially located joint secondary to the formation of a large fracture callus. The decision to additionally fuse the more proximally located joint at C5-6 was made because the presence of the large periarticular and periosteal new bone formation indicating likely continued instability at C5-6, despite lack of myelographic evidence of compression. Twelve hours after surgery, the horse's ataxia had improved dramatically. Long-term follow-up (3 years after surgery) revealed that the horse was successfully trained for riding at 3 years of age and had no signs of neurologic disease.

During the myelogram, multiple neutral and dynamic images were acquired but the compressive lesion at C6-7 was best visualized with the neck in a neutral position. Of note, on the left to right lateral view acquired with the horse's neck in ventroflexion, the dorsal myelographic column at C6-7 appeared minimally compressed. This minimal compression is clinically relevant as the dynamics of C6-7 differ from vertebrae in the midcervical region in that the dorsal myelographic column tends to broaden with ventroflexion in both normal and affected horses. Therefore, any reduction in the size of the dorsal myelographic column at this location is important. These variable responses to flexion and extension of the cranial and caudal cervical portion of the vertebral column highlight the importance of obtaining a complete series of images during myelography. Moreover, although the fracture and fracture callus at C5-6 evident on survey radiographs were suggestive of spinal cord compression at this site, further investigation with myelography revealed that the true compressive myelopathy was farther caudad, at C6-7, indicating the importance of contrast radiography for horses with a preliminary diagnosis of cervical vertebral compressive myelopathy.