

## What Is Your Diagnosis?



Figure 1—Lateral (left) and ventrodorsal (right) radiographic views of the cervical vertebral column of a 10-day-old colt with tetraparesis of 12 hours' duration.



### History

A 10-day-old warmblood colt was referred because of a 12-hour history of ataxia and tetraparesis. The colt fell over backwards the night before referral. Physical examination revealed signs of depression, a left-sided head tilt, asymmetry of the cervical musculature on the right side immediately caudal to the skull, and a palpable malposition of the cranial portion of the cervical vertebral column. The foal could suckle, but would occasionally lean on the mare for support. Neurologic examination revealed tetraparesis, decreased tail tone, grade-3 ataxia in the forelimbs, and grade-4 ataxia in the hind limbs.<sup>1</sup> Survey radiographs of the cranial portion of the cervical vertebral column were obtained (Fig 1).

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



Figure 2—Same ventrodorsal radiographic view as in Figure 1. The occipital condyles (short arrows) are deviated cranially and to the left in relation to the articular surface of the atlas (curved arrows).

## Diagnosis

**Radiographic diagnosis**—Atlanto-occipital luxation.

## Comments

The occipital condyles did not articulate with the atlas, and the skull was displaced cranially and to the left (Fig 2). Traumatic subluxation of the vertebral column is a common finding in horses; however, luxation of the atlanto-occipital joint is rare.<sup>2</sup> Spinal cord trauma in young horses often occurs secondary to falling or colliding with a large stationary object. Fractures and subluxations of the cranial cervical vertebrae commonly develop secondary to cervical hyperflexion and falling over backwards in association with halter breaking or when a tied horse pulls back against a secured

lead.<sup>2</sup> Luxation or subluxation of the vertebral column is more common in young horses than adults and results in damage to the spinal cord, surrounding ligaments, and musculature. Horses with subluxation or luxation of the cranial portion of the cervical vertebral column typically develop tetraparesis that may progress to paralysis, ataxia, and proprioceptive deficits.

In equine practice, plain radiography of the vertebral column is the imaging method of choice for documenting bony malformation, luxation, subluxation, and fracture.<sup>3</sup> Positive-contrast myelography is typically not required to detect these conditions but should be considered before surgery to confirm the sites, extent, and nature of the lesion in the spinal cord.<sup>3</sup>

Prognosis for horses with atlanto-occipital luxation is poor. The abnormal neurologic signs may progress in severity because of instability of the joint and compression of the spinal cord. To our knowledge, closed reduction of the luxation has never been reported. Reduction of the luxation may result in further trauma to the brainstem or spinal cord, leading to deteriorating neurologic signs or sudden death. Surgical decompression and stabilization of atlanto-occipital luxation also has not been reported.

Because of its deteriorating neurologic status, we did not believe that the foal described in this report was safe to handle, nor did we believe that this foal would develop into a useful working or performance horse. The owner elected to euthanize the foal because of the poor prognosis and limited treatment options. Necropsy revealed a wide space between the occipital condyles and the atlas. Hemorrhage and downward compression of the medulla oblongata adjacent to the luxation were also evident. However, some ligamentous attachments remained between the atlas and the occipital bone.

1. DeLahunta A. *Veterinary neuroanatomy and clinical neurology*. Philadelphia: WB Saunders Co, 1983;218–219.

2. Matthews HK. Spinal cord vertebral and intracranial trauma. In: Reed SM, Bayly WM, eds. *Equine internal medicine*. Philadelphia: WB Saunders Co, 1998;457–465.

3. Mayhew IG. *Large animal neurology: a handbook for clinicians*. Philadelphia: Lea & Febiger, 1989;49–56.

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