What Is Your Diagnosis?

Figure 1—Lateral radiographic view of the cervical and cervicothoracic portions of the vertebral column of a filly with ataxia of the hind limbs and extensor rigidity of the forelimbs.

**History**

A 3-month-old female Appaloosa was examined because of recumbency, reluctance to stand, and ataxia of the hind limbs. The filly had been galloping in a pasture when it was struck in the side by an adult horse. Physical examination 36 hours after the incident revealed ataxia of the hind limbs and moderate extensor rigidity of the forelimbs. The owner indicated that the filly stood and moved around unaccompanied several times during the 36-hour period after being struck.

A radiograph of the cervical and cervicothoracic portions of the vertebral column was obtained with the filly in right lateral recumbency (Fig 1).

Determine whether additional imaging studies were required, or make your diagnosis from Figure 1—then turn the page ↓
Diagnosis
Radiographic diagnosis—Comminution of T2 and luxation of T2 and T3 (Fig 2).

Comments
Trauma to the vertebral column of foals occurs most often in cervical, cranial thoracic, or thoracolumbar vertebrae. In adult horses, the thoracolumbar and caudal cervical vertebrae are more likely to fracture. Causes of vertebral trauma include rearing and falling over backward, collisions with immovable objects, hyperflexion or hyperextension of the neck, slipping on wet or muddy surfaces, sitting backward against solid objects, and jumping. Anatomically, the protective and supportive structure of the ribs may prevent fractures of thoracic vertebrae. However, in the filly of this report, a broad-sided blow to the shoulder region from a massive object caused a fracture of T2 and luxation of T2 and T3 (Fig 2).

A major obstacle to radiography of the vertebral column of horses is the thickness of the paraspinal musculature. For the filly of this report, short-scale technique (low kilovolts (peak), high milliampere-seconds) along with a cassette holder and grid were used to decrease scatter and emphasize bony structures. Extension of the limbs cranially also facilitated evaluation of the thoracic portion of the vertebral column by preventing superimposition of the scapulae and vertebrae.

Damage to the cranial thoracic portion of the spinal cord in the filly of this report resulted in loss of the panniculus reflex at the caudal border of the last intact dermatome and loss of upper motor neuron function in the hind limbs; however, motor function of the forelimbs was preserved. Observation of the Schiff-Sherrington sign (extensor hypertonia of the forelimbs with paresis or paralysis of the hind limbs) assisted in determining the location and extent of spinal cord injury. In large animals, this sign is rarely seen or is short lived, and the animal may assume a dog-sitting posture. However, this posture is not a specific indicator of the location of a lesion, because it is also common in animals with lesions caudal to the thoracic vertebrae.

Specific neurons called “border cells” are located on the dorsolateral border of the ventral gray column of the spinal cord from L1 through L7. Border cells prevent extensor rigidity by causing tonic inhibition of lower motor neurons in the brachial plexus. Severe injury to the thoracic portion of the spinal cord prevents this inhibition and results in the Schiff-Sherrington sign, as seen in the filly of this report.

The filly of this report was able to rise and walk for 36 hours after the injury occurred. Movement may have caused further displacement of vertebral fragments and further trauma to the thoracic portion of the spinal cord. Because of a poor prognosis, the owners of the filly requested that it be euthanatized.