



What Is Your Diagnosis?

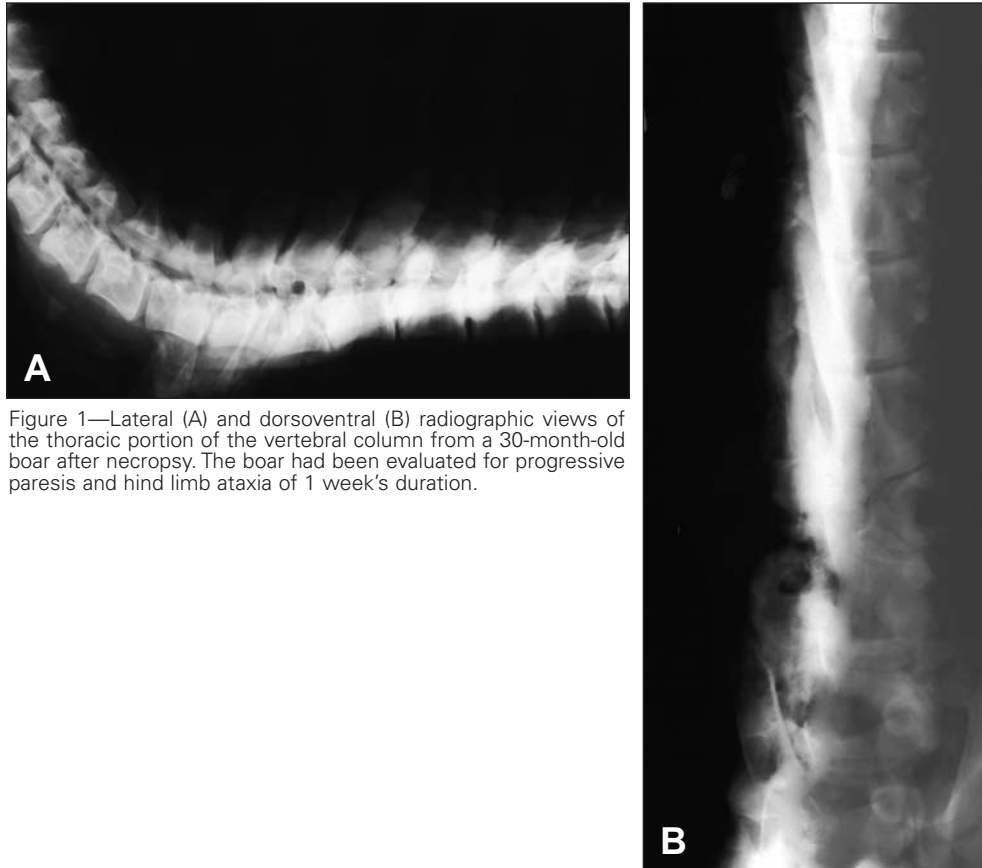


Figure 1—Lateral (A) and dorsoventral (B) radiographic views of the thoracic portion of the vertebral column from a 30-month-old boar after necropsy. The boar had been evaluated for progressive paresis and hind limb ataxia of 1 week's duration.

History

A 30-month-old 204.5-kg (450-lb) boar was evaluated for progressive ataxia of 1 week's duration. Approximately 6 months earlier, similar clinical signs had been observed in a boar of the same genetic lineage and of similar age. In that boar, the clinical progression was rapid and led to paresis, and the boar died within 1 week of the onset of clinical signs. The owners of the commercial swine facility were concerned that the cause of the clinical signs in the 2 boars may have been related and represented a new and growing problem for the herd; therefore, euthanasia of the boar and examination for the cause of the clinical signs were requested.

On examination, the boar had mild proprioceptive deficits in both hind limbs, with a slight deficiency in balance. No other abnormalities were observed. The boar was euthanized, and a necropsy was performed. Radiographs of the thoracic portion of the vertebral column were obtained after necropsy (Figure 1).

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

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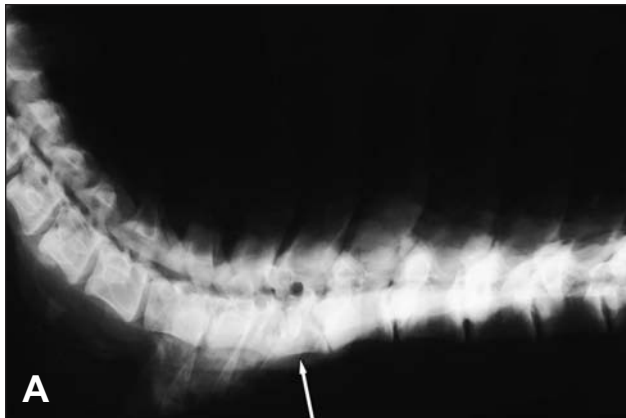


Figure 2—Same radiographic views as in Figure 1. Notice that the third thoracic vertebra is abnormally shaped (arrow) and the adjacent intervertebral disk space is narrow, compatible with a hemivertebra.

Radiographic Findings and Interpretation

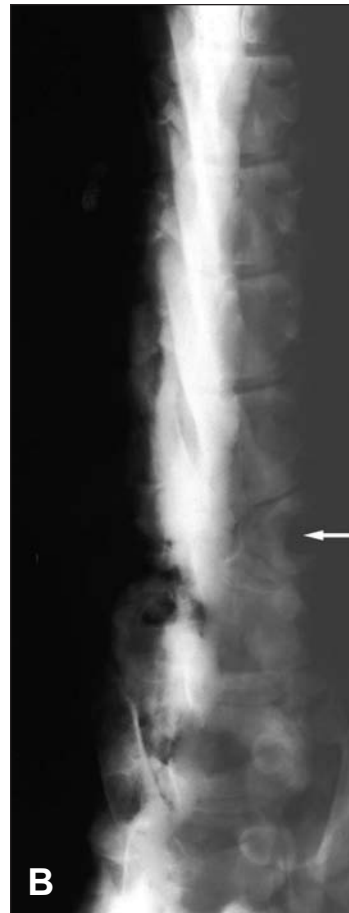
The third thoracic vertebra is abnormally shaped. The bone opacity is radiographically normal, and the margins are smooth (Figure 2). The adjacent intervertebral disk space is narrow. These radiographic findings are compatible with a diagnosis of hemivertebra.

Comments

In the boar reported here, vertebral osteophytes, which are sometimes reported in conjunction with malformed areas of the vertebral column caused by abnormal mechanical forces,¹ were not detected radiographically. The T3 vertebral body malformation was clearly seen at necropsy. Histopathologic examination revealed swollen axons in the thoracolumbar portion of the spinal cord. These lesions were compatible with subacute compression of the spinal cord as a result of the hemivertebra. It was believed that this compression resulted in the hind limb ataxia seen during examination of the boar.

Hemivertebrae are congenital abnormalities that typically result from asymmetric development or failure of fusion of the halves of the vertebral septum. Failure of fusion is most likely caused by lack of ossification or persistence of the notochord.¹⁻³ In the boar reported here, the central zone of the T3 vertebral body appeared to be malformed, resulting in the butterfly shape seen on the dorsoventral radiographic view. Hemivertebrae are most commonly incidental findings, but they can become pathogenic when the abnormal vertebra begins to compress the spinal cord. Chronic compression of the spinal cord may lead to progressive hind limb ataxia.

Little information on hemivertebrae in swine exists.^{4,6} In dogs, neurologic disease attributable to hemivertebrae is clinically characterized by progressive hind limb weakness, scoliosis with kyphosis, and signs of thoracolumbar pain.¹ Cases of hemivertebrae in heifers and goats with hind limb ataxia and signs of thoracolumbar pain have been reported.^{3,7}



The rapid progression and severity of clinical signs in the other boar from this facility did not appear compatible with the mild vertebral lesion detected in the boar of this report. An inciting injury or illness in the other boar may have altered the clinical progression. In the boar reported here, the cause of the clinical signs appeared to have been congenital; however, the heritability of this condition cannot be determined with the information available. A better understanding of the genetic heritability of hemivertebrae is important because boar studs facilitate rapid and widespread genetic distribution.

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