Fracture of a thoracic vertebral body in a Thoroughbred racehorse

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Introduction

A 2-year-old Thoroughbred filly presented for thoracolumbar pain 3 weeks after falling during a gallop. The clinical signs were bilateral hind limb lameness (short-strided behind at the trot in a straight line and Grade 1/5 lame on the inside limb on a circle in either direction), mild epaxial muscle atrophy and sensitivity to thoracolumbar (T14 – L2) palpation. As there were no obvious regions of heat, swelling or positive flexion tests and focal back pain was easily repeatable a decision was made to undertake a scintigraphic examination.

Diagnosis and Treatment

Given the above findings a diagnosis of an incomplete fracture of the vertebral body of T15 was made. The authors recommended 8 weeks of box confinement followed by reexamination and repeat digital radiography, and advised that treatment for DSP impingement should be considered based on clinical signs only after the vertebral fracture has been adequately managed.

2-Month Follow-Up Radiography

On follow-up examination two months after diagnosis the horse was subtly short-strided behind only in a circle and thoracolumbar palpation was unremarkable. Repeat radiographs showed active healing of the vertebral body fracture (Fig. 4). The DSPs were not significantly changed.

4-Month Follow-Up Radiography

Radiographs confirmed healing of the T15 vertebral body fracture (Fig. 6). There was no obvious change in the radiographic appearance of the DSPs of T15-T18.

Clinical Outcome

Given that the vertebral body fracture had healed and the DSP impingement was unlikely to be clinically significant a controlled exercise program was initiated. This consisted of initially a walking program utilizing a water walker and later emphasizing canter work instead of trot work to minimise flexion/extension cycles in the vertebral column. The horse had its first race start 11 months after diagnosis and has raced 4 times for 2 wins.

Relevance to Equine Practice

A clinical case report of a vertebral body fracture in a horse does not exist to the authors’ knowledge. In post-mortem studies1-4 of equine thoracolumbar disease vertebral body fractures are rare. A history of trauma and back pain are not uncommon indicators of a back injury necessitating use of advanced imaging techniques. Radiography lacks the sensitivity of nuclear scintigraphy but is more specific, however diagnosis of thoracolumbar injuries may be challenging for general practitioners with analog or older computed radiography systems. Digital imaging with a cadmium iodide (CSI) plate allows for superior image quality as CSI is more sensitive to x-rays and allows lower exposure settings to achieve adequate spatial resolution which is of particular importance in larger anatomical areas.

Due to the paucity of literature describing vertebral body fractures in horses, the ability to predict prognosis becomes very difficult, however practitioners generally accept that once any vertebral fracture resulting in lameness becomes chronic it can result in poor performance. In the present case the fracture was complicated by the presence of scintigraphically and radiographically obvious DSP impingement. However the clinical significance of DSP impingement cannot be gauged by imaging findings alone and is a common finding in Thoroughbred racehorses without clinical signs of thoracolumbar pain. In the present case by 4 months the horse was sound and thereafter raced successfully, confirming the fracture as the source of lameness. Therefore the prognosis for successful racing following an incomplete minimally displaced vertebral body fracture of the caudal thoracic spine may be good after an adequate period of rest and a gradual return to exercise.

References


Nuclear Scintigraphy

Nuclear scintigraphy revealed intense focal increased radiopharmaceutical uptake (IRU) between the dorsal spinous processes (DSPs) of T15-T18 suggestive of DSP impingement (Fig. 1).

Radiography

Digital radiography revealed an incomplete minimally displaced fracture of the vertebral body of T15 (Fig. 2). There was also impingement of DSPs at T15-T16 and T17-T18 and sclerotic margins of the T16 and T17 DSPs (Fig. 3).

4-Month Follow-Up Scintigraphy

At four months from diagnosis the horse was sound at the trot in a straight line and on a circle in either direction. Focal scintigraphy showed no significant IRU at the vertebral body of T15 (Fig. 5). As a result the uptake pattern between the DSPs of T15-T18 was more intense than on previous examination and was indicative of ongoing DSP pathology.

Fig. 1. Left-sided nuclear scintigraphic horizontal 35º dorsal-ventral view of the thoracic vertebrae revealing intense focal IRU of the T15 vertebral body (large red arrow) and mild-moderate IRU between the DSPs of T15-T18 suggestive of impingement (small blue arrows).

Fig. 2. Horizontal 20º ventral-dorsal oblique radiograph revealing fracture of the T15 vertebral body (red arrowheads).

Fig. 3. Horizontal 20º ventral-dorsal oblique radiograph revealing DSP impingement at T15-T16 and T17-T18 (blue arrows) and sclerotic margins of the T16-T17 DSPs (white arrowheads). The T15 vertebral body fracture is less visible due to superimposition of the ribs.

Fig. 4. Horizontal 20º ventral-dorsal oblique radiograph at 2 months from diagnosis revealing healing of the T15 vertebral body fracture. The fracture line is minimally visible (red arrowheads). DSP impingement of T15-T16 is still evident (blue arrow) along with sclerotic changes at the margins of the T16-T17 DSPs (white arrowheads).

Fig. 5. Left-sided nuclear scintigraphic horizontal 35º dorsal-ventral oblique view of the thoracic vertebrae at 4 months from diagnosis revealing no significant IRU of the T15 vertebral body. There is moderate focal IRU at the junction of the T15-T16 DSPs (red arrow) and mild-moderate IRU between the DSPs of T16-T18 (red arrowheads). Due to the lack of focal IRU at the T15 vertebral body in this image, the T15-T18 DSP region now exhibits more intense IRU than on the previous examination.

1. Medical Imaging Electronics (MIE) Detector and Solution Desktop
2. Albersbeek HF/105/30 and Rayence Medical Image Processing Unit