Comparison of Cervical Radiographs and MRI to Assess Vertebral Canal Stenosis in Wobbler Syndrome

Jennifer G. Janes, DVM*; Katherine S. Garrett, DVM; Stephen M. Reed, DVM, MS, Diplomate ACVIM; Neil M. Williams, DVM, PhD, Diplomate ACVP; and James N. MacLeod, VMD, PhD

Magnetic resonance imaging allows assessment of the vertebral canal area, providing an improved prediction of canal stenosis in Wobbler Syndrome. Authors’ addresses: University of Kentucky Gluck Equine Research Center, Department of Veterinary Science, Lexington, KY 40546 (Janes and MacLeod); Rood and Riddle Equine Hospital, PO Box 12070, Lexington, KY 40511 (Garrett and Reed); and University of Kentucky Veterinary Diagnostic Laboratory, Lexington, KY 40511 (Williams); e-mail: Jennifer.Janes@uky.edu. *Corresponding author. © 2011 AAEP.

1. Introduction

Cervical stenotic myelopathy (CSM) is caused by spinal cord compression because of a narrowing of the vertebral canal. This study focuses on comparing magnetic resonance imaging (MRI) with standing cervical radiographs as imaging modalities to assess the cervical vertebral canal.

2. Materials and Methods

Twenty Thoroughbred horses with CSM (18 males and 2 females; age range = 6–50 mo) were compared with nine controls (six males and three females; age range = 9–67 mo). Antemortem, subjects had a neurologic examination and standing cervical radiographs with sagittal ratios calculated from C3 to C7. Intact cervical column MRI scans and histologic examination of the spinal cord were performed postmortem. Morphometric parameters were taken on the vertebral canal, spinal cord, and intervertebral foramen.

3. Results and Discussion

Decreases in sagittal diameter ratios and spinal canal areas were both predictive of stenosis sufficient to cause spinal cord Wallerian degeneration. Although cervical radiography produced several false positives as assessed histologically, canal areas determined using MRI at these same positions appeared normal. MRI allows measurement of the vertebral canal circumferentially and area calculations, providing an improved method to evaluate cervical canal stenosis. Currently, size of the adult...
horse precludes cervical column assessment ante-mortem by MRI. However, when this issue is resolved, the ability to image vertebrae in multiple axes will substantially enhance evaluation of CSM patients.

Financial research support for this project was provided by the Grayson Jockey Club Research Foundation. Financial stipend support for Jennifer Janes was provided by the Morris Animal Foundation.