Diagnosis of Laryngeal Dysplasia in Seven Horses Using Magnetic Resonance Imaging and Ultrasonography

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Magnetic resonance imaging and ultrasonography permit characterization of laryngeal dysplasia on an antemortem and pre-operative basis. Authors’ addresses: Rood and Riddle Equine Hospital, PO Box 12070, Lexington, Kentucky 40580 (Garrett, Woodie, Embertson); and Department of Large Animal Clinical Sciences, College of Veterinary Medicine, Michigan State University, East Lansing, Michigan 48824 (Pease); e-mail: kgarrett@roodandriddle.com. © 2009 AAEP.

1. Introduction
Laryngeal dysplasia caused by suspected malformation of the fourth branchial arch has been reported previously in the horse and has been associated with rostral displacement of the palatopharyngeal arch and/or right laryngeal dysfunction. These studies all described the endoscopic and/or anatomical post-mortem identification of the disease, but ultrasonography or magnetic resonance imaging (MRI) of this disease have not been described. We hypothesized that MRI and ultrasound findings would accurately reflect the anatomic features of presumptive fourth branchial arch abnormality and therefore, allow accurate antemortem diagnosis of this condition and appropriate management.

2. Materials and Methods
Between February 2008 and April 2009, all horses examined at Rood and Riddle Equine Hospital in Lexington, Kentucky that were diagnosed with rostral displacement of the palatopharyngeal arch and/or right laryngeal dysfunction using upper airway endoscopy underwent ultrasonography and MRI of the laryngeal region.

3. Results
Seven horses meeting the inclusion criteria were identified, and all underwent laryngeal MRI and ultrasound examinations. Features consistent with laryngeal dysplasia, including lack of the cricothyroid articulation, dorsal extension of the thyroid cartilage lamina, and absence or hypoplasia of the cricopharyngeus muscle, were seen in all cases using both types on imaging.

4. Discussion
MRI and ultrasonography permit definitive pre-mortem diagnosis of laryngeal dysplasia. Upper airway abnormalities identified using endoscopy can be more fully characterized using MRI and ultrasonography, which allows more appropriate recommendations to be made. Pre-operative imaging may also prevent inappropriate surgical intervention.