External Transcutaneous Ultrasound Technique in the Equine Cricoarytenoideus Dorsalis Muscle: Assessment of Muscle Size and Echogenicity with Resting Endoscopy

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Ultrasound imaging of the equine cricoarytenoideus dorsalis muscle (CAD) can be performed transcutaneously using a simple method. Authors’ addresses: 203 Mitsuishi Higashi-hourai, Hidakagun Shinhidakacho, Hokkaido 059-3105, Japan (Satoh); Hokkaido South Agricultural Mutual Aid Association, Mitsuishi Animal Medical Center, Hokkaido, Japan; 200 Mitsuishi Higashi Horai, Shinhidakacho, Hidakagun, Hokkaido 059-3105, Japan (Higuchi, Miyakoshi, Yoshimura, Kaido, Shimizu); e-mail: satou_masato@minami-hkd-nosai.or.jp. *Corresponding and presenting author. © 2021 AAEP.

1. Introduction
Recent studies have assessed the cricoarytenoideus dorsalis muscle (CAD) using transesophageal ultrasonography in equine recurrent laryngeal neuropathy (RLN). This paper assessed the CAD using the external transcutaneous ultrasound technique, which may constitute an easier method in horses.

2. Materials and Methods
The axial plane thickness, cross-sectional area, and echogenicity of the L (left) CAD and R (right) CAD were measured using transcutaneous ultrasonography in 237 horses. Assessments of LCAD were compared with those of RCAD. The LCAD:RCAD ratios in thickness and area were compared between control horses (resting grades 1 and 2) and horses with resting laryngeal grades 3 and 4 using the Havemeyer 4-point grading system.

3. Results
The LCAD:RCAD ratios for thickness and area were 0.70 and 0.69 in horses with resting grades 3 and 4, respectively, LCAD was more hyperechogenic than RCAD in resting grades 3 and 4. LCAD:RCAD ratios for thickness and area in grades 3 and 4 were significantly lower than those in control...
horses. Thickness and area of the LCAD were negatively correlated with resting laryngeal grade.

4. Discussion

Results of ultrasonographic assessments of the CAD using transcutaneous ultrasonography were similar to those obtained by transesophageal ultrasonography. This technique enables a simple, non-invasive, direct, and easy examination. Assessment of the CAD using transcutaneous ultrasonography may be a useful technique and a potential option for determining whether to perform nerve graft or laryngoplasty.

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Declaration of Ethics

The Authors have adhered to the Principles of Veterinary Medical Ethics of the AVMA.

Conflict of Interest

The Authors have no conflicts of interest.