Gentamicin-Induced Auditory Loss in Healthy Adult Horses

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Gentamicin is an antimicrobial used for the treatment of Gram-negative infections. However, clinicians must be aware of hearing loss as a possible risk in some horses. Authors’ address: University of California-Davis, School of Veterinary Medicine, Department of Medicine and Epidemiology, Tupper Hall 2108, One Shields Avenue, Davis, CA 95616; e-mail: mraleman@ucdavis.edu. *Corresponding and presenting author. © 2021 AAEP.

1. Introduction

Gentamicin is a widely used antimicrobial in equine medicine for the treatment of Gram-negative infections. Gentamicin toxicity has included renal and ototoxic effects. Ototoxicity has been suspected in the horse, but such association has not been investigated at currently routine dosages. Therefore, the objective of this study was to investigate auditory and vestibular function in healthy adult horses administered gentamicin.

2. Materials and Methods

Ten healthy young adult horses were included in the study. Gentamicin sulfate was administered at 6.6 mg/kg in the jugular vein, alternating sides for 7 consecutive days. Vestibular and auditory function were evaluated through neurological examination and brainstem auditory evoked responses (BAER), respectively. Horses were sedated with IV detomidine hydrochloride to perform BAER studies. A BAER was done at the beginning of the study (day 1: baseline), at the end of the study (day 7), and 30 days after (day 37). Bone conduction was performed to rule out a conduction disorder.

3. Results

Seven horses developed auditory loss: complete bilateral (N = 1), complete unilateral (N = 2), and partial unilateral (N = 4). Absent bone conduction ruled out a conduction disorder and further supported sensorineural auditory loss in horses. Dysfunction was reversible in 4 of 7 horses. Vestibular dysfunction was not observed.

4. Discussion

Gentamicin might pose a risk for the development of auditory loss in horses, which might be irreversible.
Acknowledgments

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.