Trends in Antimicrobial Susceptibility Patterns of Bacterial Isolates from Horses with Ulcerative Keratitis in Tennessee

Braidee C. Foote, DVM*; Diane Van Horn Hendrix, DVM, MS, DACVO; Dan Ward, DVM, PhD, DACVO; Sree Rajeev, BVSc, PhD, DACVM, DACVP; and Joe S. Smith, DVM, MPS, PhD, DACVIM, DACVCP

In horses with an infected corneal ulcer, use of two antibiotic classes targeting both gram-positive and negative bacteria led to a higher likelihood of in vitro susceptibility for the isolated organisms but no improvement in clinical outcomes was seen in this population. Authors’ addresses: Department of Small Animal Clinical Sciences (Foote, Hendrix, Ward), Department of Biomedical and Diagnostic Sciences (Rajeev); Department of Large Animal Clinical Sciences (Smith), College of Veterinary Medicine, University of Tennessee, Knoxville TN 37996; e-mail: bfoote@utk.edu. *Corresponding and presenting author. © 2021 AAEP.

1. Introduction
The objectives of this study were to document aerobic bacterial isolates from horses with ulcerative keratitis, characterize the antimicrobial susceptibility patterns, evaluate clinical outcomes, compare resistance patterns to previously reported data from the same hospital, and compare monotherapy versus combination therapy.

2. Materials and Methods
Medical records from horses with positive bacterial cultures from corneal ulcers treated at the University of Tennessee between March 2011 and December 2020 were compared to previously published data from January 1993 through May 2004. Data including bacteria isolated, history, cytology results, susceptibilities to selected antimicrobials, and case outcomes were collected.

3. Results
Thirty-one bacterial isolates were cultured from 27 samples (26 horses). The most common bacterial genera were Streptococcus (35%), Staphylococcus (29%), and Pseudomonas (13%). Use of topical corticosteroids prior to culture was significantly associated with Staphylococcus infections (p = 0.04). Compared to the earlier study period, there was a significant number of Streptococcus isolates reported with reduced sensitivity to gentamicin (p = 0.01) in the current data. Staphylococcus spp. and P. aeruginosa isolates had no significant changes in susceptibilities.
over time. Antimicrobial susceptibility patterns suggest that combination therapy will cover ≥89% of all isolates, compared to ≤85% with monotherapy. Seventeen eyes (77%) healed by last follow-up [surgery (n = 2); medical (n = 15)]; whereas 5 were enucleated, and 4 were lost to follow up.

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.