Evaluation of Regional Limb Perfusion With Amikacin Using the Saphenous, Cephalic, and Palmar Digital Veins

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This study shows that using the proximal veins (cephalic and saphenous) for regional limb perfusion (RLP) is an effective method for reaching high concentrations of amikacin in the distal limb. Authors' addresses: Large Animal Clinical Sciences, University of Tennessee, College of Veterinary Medicine, Knoxville, Tennessee 37996 (Kelmer, Catasus, Elliott); Health Science Center, University of Tennessee, College of Pharmacy, Memphis, Tennessee 38105 (Bell, Meibohm); Comparative Medicine, University of Tennessee, College of Veterinary Medicine, Knoxville, Tennessee 37996 (Martin-Jimenez); and Animal Science, University of Tennessee, College of Agricultural Sciences and Natural Resources, Knoxville, Tennessee, 37996 (Saxton); e-mail: galkelmer@hotmail.com (Kelmer). © 2009 AAEP.

1. Introduction
Previous studies have shown that regional limb perfusion (RLP) using the palmar digital (PD) vein will deliver therapeutic concentration of amikacin to the distal limb. Our hypothesis was that using the cephalic and saphenous veins for RLP will enable delivery of therapeutic concentrations of amikacin to the distal limb.

2. Materials and Methods
Nineteen healthy research horses participated in the study. One randomly selected thoracic or pelvic limb from each horse was used for RLP. The cephalic, saphenous, or PD vein was used to perfuse the limb with amikacin. Two grams of amikacin were used for RLP through the saphenous and cephalic veins, and 1 g was used in the PD vein. Synovial samples were collected from the metacarpo/metatarso-phalangeal (MCP/MTP) joint, and serum samples were collected from the jugular vein.

3. Results
Maximum concentration (Cmax) of amikacin in the MCP/MTP joint using the cephalic and saphenous veins were 277 and 363 mg/l, respectively.

4. Discussion
The results indicate that using the saphenous and cephalic veins for RLP consistently yields therapeutic concentrations of amikacin in the MCP/MTP joint. This study shows that use of the proximal veins for RLP to treat distal limb infections is a viable alternative to using the PD or plantar digital vein.

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Footnote

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