Diffusion of Contrast Medium After Perineural Injection in the Distal Limb of Horses

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Significant proximal diffusion in the first 10 min can lead to decreased specificity of nerve blocks in the distal limb. Authors’ addresses: Equine Diagnostic Centre, University of Bristol, Langford House, Langford, Bristol, BS40 5DU, United Kingdom (Nagy, Barr); Large Animal Clinic, Faculty of Veterinary Medicine, Szent Istvan University, Ullo, 2225, Hungary (Bodo, Szabo); Centre for Equine Studies, Animal Health Trust, Lanwades Park, Kentford, Newmarket, Suffolk, CB8 7UU, United Kingdom (Dyson); e-mail: Annamaria.nagy@bristol.ac.uk. © 2008 AAEP.

1. Introduction
Distribution and diffusion of contrast medium after perineural injection in the distal limb has not been previously described.

2. Materials and Methods
Radioopaque contrast medium was injected subcutaneously at the base of the proximal sesamoid bones in six sound, mature horses. On days 1 and 2, either the medial or lateral side was injected; on days 3 and 4, both sides were simultaneously injected in the left or right forelimb. Horses were randomly assigned to stand still or walk, and radiographs were taken 0, 10, 15, 20, and 30 min after injection. Four hundred fifty-six radiographs were analyzed subjectively, and measurements were made for statistical analysis. Methylene blue was injected in 10 cadaver limbs to show location of liquid after perineural injection.

3. Results
There was statistically significant proximal and distal diffusion with time. Walking did not influence the diffusion. In 89% of injections, the pattern suggested that the contrast was distributed along the neurovascular bundle, and in 49% of injections, a proximally extending line was observed that was identifiable on sequential radiographs. In the majority of methylene-blue injections, the dye was distributed under the fascia of the neurovascular bundle.

4. Discussion
Decreasing specificity of nerve blocks with time is supported by this study. Significant proximal diffusion can occur along the neurovascular bundle. Distribution outside the fascia of the neurovascular bundle or in lymphatic vessels may explain the delayed or decreased effect of nerve blocks.

Research Abstract

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