Effects of Analgesia of the Digital Flexor Tendon Sheath on Pain in the Equine Foot Using Experimentally Induced Lameness Models

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Local anesthetic solution injected into the digital flexor tendon sheath (DFTS) has little effect on pain originating in the sole, distal interphalangeal joint (DIPJ), and navicular bursa (NB) of the horse. Therefore, improvement of lameness in horses after intrasynovial analgesia of the DFTS is likely caused by attenuation of pain within the structures contained in the DFTS or adjacent structures. Authors’ addresses: Department of Clinical Sciences, J. T. Vaughan Teaching Hospital, College of Veterinary Medicine, Auburn University, AL 36849-5522 (Harper, John Schumacher); Large Animal Surgery, North Carolina State University, College of Veterinary Medicine, 4700 Hillsborough Street, Raleigh, NC 27606 (Schramme); Department of Veterinary Preventive Medicine, College of Veterinary Medicine, The Ohio State University, 1920 Coffey Road, Columbus, OH 43210 (Degraves); and Department of Large Animal Clinical Sciences, College of Veterinary Medicine, University of Tennessee, Knoxville, TN 37996-4545 (Jim Schumacher); e-mail: harpeja@auburn.edu (Harper). © 2007 AAEP.

1. Introduction
The purpose of this study was to determine if analgesia of the digital flexor tendon sheath (DFTS) results in anesthesia of other portions of the foot, such as the sole, distal interphalangeal joint (DIPJ), or navicular bursa (NB).

2. Materials and Methods
Lameness caused by pain in the dorsal margin or heel region of the sole of six horses was induced using set-screws to create solar pressure (trial 1); lameness caused by pain in the DIPJ of six other horses (trial 2); and the NB of yet another seven horses (trial 3) was induced by administering endotoxin intrasynovially. The gait of each horse was evaluated by examining videotape recorded before and after creation of lameness and after administration of 1 ml/50 kg of 2% mepivacaine HCl into the DFTS. The University’s Instructional Animal Care and Use Committee approved all procedures.

3. Results
Median lameness scores in trial 1 at 10 min after injection of the DFTS were not significantly different from those before administration of local anesthetic solution into the DFTS (p ≥ 0.05), but median lameness scores were significantly reduced at 20 min (p ≤ 0.05). In trials 2 and 3, median lameness scores were not significantly different at observations made at 10 and 20 min after injection of the DFTS.
4. Discussion
Analgesia of the DFTS through the palmar axial sesamoidean approach does not interfere with pain originating from the sole, DIPJ, or NB if evaluated within 20 min. If lameness does resolve after administration of anesthetic solution, the source of pain is most likely coming from structures within the DFTS, including, but not limited to, the digital portion of the deep digital flexor tendon.