In Vivo Diffusion Characteristics After Perineural Injection of the Deep Branch of the Lateral Plantar Nerve With Mepivacaine or Iohexol in Horses

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1. Introduction
Proximal suspensory ligament (PSL) desmitis is a common injury in sport horses. Accurate diagnosis of the condition can be difficult, partly because diagnostic analgesia of this region lacks specificity. Perineural analgesia of the deep branch of the lateral plantar nerve (DBLPN) to diagnose PSL desmitis has been described but not evaluated in-vivo.

2. Materials and Methods
The DBLPN was injected perineurally with 3 mL of either mepivacaine (n = 8) or contrast media (n = 8) in live horses. Contrast-injected limbs were radiographed 5, 15, and 30 minutes after injection, and diffusion characteristics were described. In mepivacaine-injected limbs, synovial fluid from the tarsometatarsal joint was obtained 10 and 20 minutes after injection, and mepivacaine concentrations were analyzed.

3. Results
At 5, 15, and 30 minutes after injection, the contrast media extended, on average, 19.6, 20.6, and 21.0 mm proximal and 38.0, 43.5, and 51.9 mm distal to the injection site, respectively. Three of eight (37.5%) limbs had evidence of contrast media in the tarsal sheath. Two of eight (25%) limbs had tarsometatarsal joint mepivacaine concentrations sufficient to produce analgesia (>300 mg/L) at 10 minutes after injection.

4. Discussion
Analgesia of the DBLPN is commonly used to diagnose PSL desmitis; however, this technique can result in inadvertent involvement of the tarsal sheath and/or tarsometatarsal joint. This is important to consider when evaluating the response to analgesia of the DBLPN and reiterates that subtarsal analgesia is not specific to the PSL.