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Infraorbital Nerve Block Within the Pterygopalatine Fossa - EFBI-Technique

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Take Home Message

Regional anesthesia of the infraorbital nerve within the pterygopalatine fossa provides excellent analgesia of maxillary teeth. The extraperiorbital fat body insertion - technique (EFBI-technique) provides sufficient analgesia with a minimized risk of damaging relevant nerves and blood vessels.

Introduction

For extensive oral surgical procedures, e.g. extraction of cheek teeth, chemical sedation, regional anesthesia, and sufficient analgesia of the horse are required. Desensitization of the maxillary cheek teeth is achieved by local blocking of the infraorbital nerve within the pterygopalatinal fossa.1-4 Several complications, such as hematoma, exophthalmos, and blindness have been observed after application of this technique.3 Even fatal neurological deficits due to ascending infections are described.1

In order to eliminate these risks it has been suggested to inject the anesthetic into the extraperiorbital fat body (EFBI-technique).5 Thus, the inserted needle does not reach relevant blood vessels and eye associated structures. Therefore the infiltration of an anesthetic was simulated by injecting a contrast medium in cadaveric heads and living horses under general anesthesia. While the effective spread of the injected contrast medium was demonstrated using computed tomography, sufficient regional anesthesia and analgesia using the EFBI-technique was only assumed in this study.5 Therefore a clinical evaluation of the EFBI-technique has been performed in order to assess effectiveness and risks under clinical conditions. Two parallel studies (referred to as A and B) were conducted. The objectives of study A were to:

- evaluate the practicality of the EFBI-technique in sedated horses under clinical conditions,
- re-examine the risks and side-effects of the EFBI-technique,
- evaluate methods for testing adequate analgesia of teeth and gingiva,

The objective of study B was to:

- evaluate the efficacy of the EFBI-technique using two different volumes of lidocaine under surgical conditions.
Material and Methods

Studies (A and B) were designed as randomized prospective, blinded clinical trials. For this purpose, the horses were sedated and received either 2 or 4 mL/100kg of an anesthetic (2% lidocaine) using the EFBI-technique (either left or right side of the head).

For study A, 20 experiments were performed. Anesthesia was not followed by any surgical intervention. Behavior and clinical parameters of the horses as well as clinical side effects were recorded for a period of 72h.

For study B, 80 horses with a proven indication for the extraction of a maxillary cheek tooth were sedated and regionally anaesthetized (EFBI-technique, either 2 or 4 mL/100kg of 2% lidocaine) followed by oral extraction of a diseased maxillary cheek tooth.

Results

The EFBI-technique appeared to be appropriate for providing a sufficient nerve block with minimal risk of complications.

- The anesthesia within the extraperiorbital fat body was well accepted in all horses.
- Minimal incidents like chewing or marked head movements were observed during the performance of the local nerve block.
- Differences in behavior of the horses during tooth extraction between the two volumes of lidocaine were not significant.
- Immediately following the nerve block, temporary extraperiorbital hematoma and corneal ulceration occurred in three horses (out of 80 horses) which received the higher volume (4 mL/100kg) of the anesthetic.
- Based on the data of Schirmer tear tests there was no significant difference between the lacrimal fluid on the anesthetized head side before and after the local nerve block. The data indicated a decrease of the lacrimation rate after anesthesia, but the results were statistically insignificant.

Conclusion

The suggested EFBI-technique using 2 mL/100kg lidocaine 2% provides safe and effective regional anesthesia while extracting maxillary cheek teeth. A preventive treatment with eye ointment is recommended. Methods for the evaluation of the efficacy of analgesia in maxillary cheek teeth need to be refined and developed in future studies.

References

3. Fletcher B. How to perform effective equine dental nerve blocks. Horse Dentistry & Bitting

Further Reading