A MODIFIED RETROBULBAR BLOCK FOR MICROPHTHALMIA USING ULTRASOUND GUIDANCE IN A CAT

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A 5-month old Domestic Short-Hair cat weighing 1.6 kg was admitted to our hospital owing to a mucopurulent secretion from the eyes and chemosis. The ophthalmic examination revealed microphthalmia and corneal perforation of both eyes. The cat was scheduled for bilateral enucleation. The preanaesthetic evaluation, based on complete physical examination, haemogram, biochemistry, electrolytes and chest radiographs was unremarkable.

The cat was premedicated with intramuscular dexmedetomidine at 10 μg kg^{-1} (Dexdomitor, Ecuphar, Spain) and buprenorphine at 10 μg kg^{-1} (Bupaq, Richter Pharma AG, Austria) before placing an intravenous (IV) catheter. Alfaxalone (Alfaxan, Dechra, Ireland) at a total dose of 2 mg kg^{-1} was administered IV for the induction of anaesthesia and the cat was intubated. Sevoflurane (SevoFlo, Zoetis, Belgium) in a 50:50 oxygen:medical air mixture was used for maintenance of anaesthesia. The animal was monitored during surgery using a multiparametric anaesthesia monitor (5S Datex-Ohmeda, Finland) with electrocardiogram, pulse oximetry, capnography, temperature, end-tidal sevoflurane (FE´Sevo) and expired oxygen fraction. Non-invasive oscillometric blood pressure was used (SunTech Vet30, NC, USA).

As part of a multimodal analgesia protocol, a retrobulbar block was planned.. The animal was placed in sternal recumbency, and the surgical area was clipped and aseptically prepared. A 5 - 8 MHz micro-convex ultrasound probe, attached to an ultrasound machine (M-turbo, Sonosite, WA, USA) was positioned using a sterile gel over the cornea. The ultrasound image showed microphthalmia and the retrobulbar space was 1.5 cm deep. Given the size of the animal, size of the eye, surgical requirements and the experience of the anaesthetist, a modified retrobulbar block was performed. The ultrasound probe was placed rostral to the cornea, using it as a window, and inserting the needle in an oblique-in plane technique from the subzygomatic area. The spinal needle (Spinocan Quincke 22 gauge, BBraun, Spain) was inserted just ventral to the zygomatic arch, in a dorso-caudal direction (Martinez-Taboada 2016). Ultrasonography allowed us

to visualize and guide the needle into the retrobulbar space, avoiding the globe and optic nerve and confirming the correct intraconal injection. Aspiration of the syringe was negative, and 0.2 mL kg^{-1} of 0.3% bupivacaine (Bupivacaine, BBraun, Spain) was injected. The same technique was used in the other eye.

During surgery, FE´Sevo was maintained at 1.5%. No alterations were noticed in the monitored variables during surgical stimulation and no anaesthetic complications occurred. Recovery was smooth, and the Glasgow Feline Composite Measure Pain Scale scores during the first day were between 0 and 1. The cat was not given any other analgesic during postoperative hospitalization.

The retrobulbar and peribulbar blocks provide anaesthesia for intra- and extraocular surgical procedures. Several techniques have been described in the veterinary literature (Shilo-Benjamini, 2019). Some of them approach the retrobulbar space from the rostral area, with the needle passing close to the globe. However, alternative techniques approach the retrobulbar space from the temporal or maxillary area. Some techniques utilize anatomical landmarks. while, others employ ultrasonography. The ultrasound probe can be placed over the cornea or caudal to the orbital ligament (Viscasillas et al. 2019). Therefore, many technical variations are described, however, little information indicates whether one of them is superior to the others. Furthermore, adverse side effects, such as brainstem anaesthesia, have been described in cats after the retrobulbar block was performed (Oliver & Bradbrook 2013).

In this case, a rostral approach was precluded owing to the risk of contamination of the retrobulbar area. The micro-ophthalmia meant that blind techniques were inappropriate since anatomical landmarks were abnormal. Placing the ultrasound probe caudal to the orbital ligament and using in-plane techniques was impossible owing to the small size of the cat. However, the subzygomatic approach allowed us to introduce the needle through healthy tissue, avoiding the potentially infected area.

Reflecting on this case - we realise that comprehensive anatomical knowledge is paramount when locoregional anaesthesia techniques are used. Understanding both the techniques and the anatomy may help us to devise alternative approaches where anatomical abnormalities exist or where a standard approach is unfeasible. Furthermore, we would like topose some questions; is an approach a fixed rule, or is it merely an ideal method to perform a locoregional anaesthesia technique? Should we standardize the techniques and avoid them in animals with altered anatomy? Is one approach better than another or does it depend on the animal, the anaesthetist's experience, or the availability

of equipment, etc.? We believe the approaches that are described provide a method for learning locoregional techniques. However, we would like to emphasize the importance of the anaesthetist's experience and knowledge in the provision of locoregional analgesia when we confront a challenging case. Nevertheless, other analgesic options such as parenteral drugs, must be considered if an anaesthetist is not confident with a locoregional technique.

References

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