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Long-term postoperative analgesia in two cats using a fentanyl Target Guided Infusion

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OBJECTIVE – Target Guided Infusions (TGI) allow to deliver a drug according to a pharmacokinetic model using a computer simulation. Although fentanyl pharmacokinetic has already been investigated in cats,[1] it has not been validated for long-term infusions. In cats, fentanyl plasma concentrations above 1 ng ml^{-1} have been reported to be analgesic.[2] We report here the use of a fentanyl TGI to provide long-term post-operative analgesia.

ANIMALS – Two domestic short-haired cats, 10-month and 18-year old, weighing 3 and 5 kg, ASA 2 and 3, undergoing surgical debridement of the front limb and mastectomy, respectively.

METHODOLOGY – Surgery was performed under inhalational balanced anaesthesia. After extubation a fentanyl TGI was started using a TCI software implemented with fentanyl pharmacokinetic in cats.[1] Analgesia was assessed at 2 hour intervals using the Mathews Pain Scale (MPS)[3] and the target titrated to a MPS lower than 3. Heart rate, pulse quality, mucous membrane colour, respiratory rate and pattern, chest expansion, presence of nausea, vomiting and sedation were assessed at 1-hour intervals. The infusion was maintained for 60 and 52 hours, respectively.

RESULTS – At extubation body core temperature was 37.8 and 38.1 °C, and the TGI was initially set to achieve 1.5 and 1.2 ng ml^{-1} predicted plasma concentration, respectively. The 1.5 ng ml^{-1} target was decreased to 1.2 six hours after starting the infusion, as the MPS was 1. In the 48 hours following surgery, the cat who had surgical debridement underwent wound management under propofol sedation in 3 occasions. In both cats heart and respiratory rates ranged 148 to 204 and 12 to 28, respectively. No sedation, nausea or vomiting were detected at any time.

CONCLUSIONS – Fentanyl TGI provided up to 62 hours of excellent post-operative analgesia with no clinical signs of drug accumulation.

CLINICAL RELEVANCE – Pharmacokinetic guided infusion may improve fentanyl administration.

References

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