A recent advert for the injectable NSAID, robenacoxib (Onsior – Novartis)¹ says the drug gives “superior pain relief”, going on to say that “In a recent study Onsior injection demonstrated superior efficacy to meloxicam in reducing post-operative pain in cats”. The advert gives a web link to more information, including the claim that robenacoxib is “tissue selective” and “persists at the source of inflammation but exits the bloodstream quickly, sparing vulnerable organs from prolonged exposure”.² Here, we look at the evidence behind these claims.

². Onsior-relief.co.uk.
What is robenacoxib?

Robenacoxib is a cyclo-oxygenase (COX)-2 selective NSAID, available in Europe since 2008, in tablet form for treating acute pain in cats and dogs, and as a solution for subcutaneous injection for treating pain and inflammation associated with soft tissue and orthopaedic surgery in cats and dogs. The injection is given around 30 minutes before the start of surgery, for example around the time of induction of general anaesthesia, at a dose of 2 mg/kg body weight.

What is the evidence on comparative pain relief?

The claim that robenacoxib is superior to meloxicam (also a COX-2 selective NSAID) on post-operative pain relief is supported by a reference to a single published randomised controlled trial. The trial involved cats requiring soft tissue or orthopaedic surgery under general anaesthesia. The cats weighed 2.5–12kg and were aged 6 weeks or more. Cats were excluded from the trial if they were in Class IV or V of the American Society of Anaesthesiologists’ classification, were pregnant or lactating, undergoing endoscopic or laparoscopic surgery, had severe concurrent disorders of the cardiovascular, gastrointestinal, hepatic, renal or haematological system, or had been treated with an NSAID or opioid in the previous 24 hours, or a short-acting or local corticosteroid within 30 days, or a long-acting corticosteroid within 60 days.

In all, 96 cats were randomised to one of two groups in a ratio of 2:1 (robenacoxib:meloxicam). They received robenacoxib (2mg/kg) or meloxicam (0.3mg/kg) subcutaneously between the shoulder blades shortly before induction of anaesthesia. Most procedures were soft tissue surgery (91% robenacoxib, 90% meloxicam), mainly ovariectomy (71%); the rest were orthopaedic surgery. Surgery typically lasted 10–30mins. The primary outcome measure was the “sum of scores for posture, behaviour, and pain on palpation” (totaling a maximum of 9 points). Clinical observations were made by a clinician masked to the administered drugs. The primary outcome measure is a subjective scoring system, not validated in cats. The trial was sponsored by Novartis, the company that markets robenacoxib.
The trial results

The sum of scores was significantly lower with robenacoxib at 3 hours (2.55 vs. 3.28 with meloxicam, p=0.011) and at 22 hours (1.43 vs. 2.14, p=0.005) after administration; but at 8 hours after administration there was no significant difference between the two treatments (2.09 vs. 2.45, p=0.069). Overall, the pain scores were low in both groups of cats and so it is reasonable to assume that both drugs were effective. However, on a total score of 9, a difference between the drugs of less than 1 point (at 3 and 22 hours) probably has limited clinical relevance. This appears to be the only published comparison of robenacoxib and meloxicam in peri-operative pain in cats. The document summarising the European authorisation decision (the European Public Assessment Report, in 2008) reports a comparison of the two drugs. The results showed robenacoxib had “equivalent” (non-inferior) efficacy to meloxicam up to 22 hours after extubation; and that pain control appeared to be sufficient, as rescue therapy was only needed for one cat in each group.
Adverse effects

In the published trial, tolerability was gauged by assessing pain during injection, and pain and inflammation at the injection site 22 hours after recovery from anaesthesia (rated “none” to “severe”). Adverse events were monitored by clinicians during hospitalisation, by interview with the owner after discharge, and by physical examination of the cat 10 days after treatment. No adverse events were reported in either group. Tolerability scores were significantly lower for robenacoxib than meloxicam (mean scores 0.13 vs. 0.55, p<0.0001 for pain during injection; 0.00 vs. 0.28, p<0.0001 for pain 22 hours after recovery; and 0.03 vs. 0.28, p=0.0009 for inflammation 22 hours after recovery from anaesthesia). Haematology and clinical chemistry variables were not significantly different between the groups (although the trial report states that the variables measured were not optimal markers of gastrointestinal, hepatic or renal toxicity).

What about tissue selectivity?

In cats, robenacoxib has a short terminal half life (around 1 hour) compared with meloxicam (24 hours). However, in an experimental model of inflammation, robenacoxib was shown to persist in inflammatory exudate for around 24 hours. This is possibly due to the high affinity of robenacoxib for binding to plasma proteins (also true for many other NSAIDs, including meloxicam), which might leak into exudate during inflammation. Whether the shorter half-life of robenacoxib confers any clinical benefit is unclear as the available evidence does not show that robenacoxib is less likely than meloxicam to cause adverse effects.


Conclusion

In one published randomised controlled trial robenacoxib had a greater effect in reducing post-operative pain compared to meloxicam, but whether the small difference between the two drugs is clinically important is doubtful. Robenacoxib has a short half life but this has not been shown to translate into a lower likelihood of adverse effects. Overall, the available evidence is not sufficiently compelling to favour robenacoxib injection over meloxicam injection for post-operative pain relief in cats.

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