COMPARISON OF EFFICACY OF MELOXICAM, KETOPROFEN AND CARPROFEN AS POSTOPERATIVE PAIN MANAGEMENT AGENTS IN CLINICAL CANINE ORTHOPAEDIC SURGERY

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ABSTRACT

The present clinical study was carried out on 18 dogs presented to Veterinary College Hospital with various orthopaedic conditions. They were randomly divided into three groups each of 6 animals to compare analgesic efficacy of meloxicam, ketoprofen and carprofen in post-operative orthopaedic pain management. Dogs of group I, received meloxicam @ 0.2 mg/kg b.wt. i/m once followed by oral dose 24 hourly, group II ketoprofen @ 1.5 mg/kg b.wt. i/m once daily and group III carprofen @ 4 mg/kg b.wt. orally 12 hourly, as analgesics for 5 days. Result revealed that in canine orthopaedic cases meloxicam was the best followed by ketoprofen and carprofen.

KEY WORDS: Canine orthopaedic, Ketoprofen, Carprofen, Meloxicam, Pain management.

INTRODUCTION

Orthopaedic surgery is always accompanied with severe pain, peri- and post-operatively. During the past decade, importance of pain management is being realized and various therapeutic agents and methods have been employed in veterinary patients. Non-steroidal anti-inflammatory analgesics (NSAIAs) have been used for centuries, but they are associated with severe gastrointestinal (GI) and renal problems. Newer injectable NSAIAs have very good to excellent potential for alleviation of postoperative pain, especially orthopaedic, and in some cases, are superior to opioids. Alleviation of postoperative pain is an important aspect of surgical care, as otherwise it may increase postoperative complications like delay in wound healing and chronic pain (Macre, 2001). Assessment of pain is not that easy as in humans but it is necessary to assess the level of pain, manage it, reassess patient's condition periodically and adjust the treatment accordingly (Hansen, 2003; Hewson *et al.,* 2006). The study was conducted on dogs to compare analgesic efficacy of meloxicam, ketoprofen and carprofen as postoperative pain management agents in clinical orthopaedic cases.

MATERIALS AND METHODS

Eighteen dogs presented to the Department of Surgery and Radiology at Veterinary College, Anand with different orthopaedic disorders were randomly divided into three groups each consisting of six animals of either sex, aged between 3 months and 12 years. After orthopaedic surgery postoperative pain management was achieved by three different analgesics. Dogs of group I were given meloxicam @ 0.2 mg/kg b.wt. IM at recovery from anaesthesia and follow up with oral dose every 24 hrs. Group II animals received ketoprofen @ 1.5 mg/kg b.wt. IM once daily. Group III received carprofen at 4 mg/kg b.wt. orally every 12 hrs. Administration of analgesic was continued for 5 days in each group. Postoperative pain was assessed using "The University of Melbourne Pain Scale" (UMPS) at 0, 1, 3 and 5 day (Firth and Haldane, 1999).

RESULTS AND DISCUSSION

The mean values of the UMPS in dogs of different analgesic protocols have been shown in Table. The values of UMPS decreased gradually and regularly in all the groups from day 0 to day 5. The score values were lower than the base value on the 5th day of observation.

Table : Pain scores of different groups of analgesics in dogs at 0, 1, 3 and 5 days interval postoperatively (Within group comparison).

Post-operative days	Groups of Analgesic		
	Meloxicam	Ketoprofen	Carprofen
0 day	5.67±0.31[a]	5.17±0.40[a]	6.50±0.57[a]
1 day	3.00±0.45[b]	4.17±0.48[a]	7.00±0.63[a]
3 day	1.17±0.40[c]	2.00±0.52[b]	4.17±0.30[b]
5 day	0.83±0.40[c]	1.17±0.31[b]	2.67±0.21[c]

Column means bearing uncommon superscripts differ significantly between days (P<0.05)

Group I (Meloxicam @ 0.2 mg/kg)

The mean value of pain score at 0 day was 5.67 ± 0.31. Values declined subsequently at 1st through 3rd and reached the lowest on 5th postoperative day. The physiological parameters indicating pain in animals like heart rate, respiratory rate and rectal temperature returned to normal after 2nd day of meloxicam administration. Meloxicam provided an optimal postoperative analgesia in all the six cases which was in accordance with the study of Aymeric *et al.* (2004), Lafuente *et al.* (2005) and Kavechiya (2010).

Group II (Ketoprofen @ 1.5 mg/kg)

The mean value of pain score at 0 day was 5.17±0.40. Values declined gradually from 1st through 3rd day reaching lowest on 5th postoperative day. In this group physiological parameters started getting normalized on 1st postoperative day as compared to 2nd day in group I. Narita *et al.* (2005) observed few side effects after long term use of ketoprofen, hence administration of ketoprofen after 5th postoperative day was stopped.

Group III (Carprofen @ 4 mg/kg)

The mean value of pain score at 0 day in carprofen group was 6.50±0.57. Values declined subsequently like in other groups from 1st through 3rd day reaching lowest on 5th postoperative day. Physiological parameters were observed above normal range even on 5st postoperative day as compared to 1st and 2nd day in dogs of group II and group I, respectively. Increased heart and respiratory rates were observed up to 5th and 3rd postoperative day, respectively, with carprofen administration. Similar results were also documented by Reese *et al.* (2000). Vocalization up to 2nd postoperative day in few cases was also observed.

Based on observations, it is concluded that in canine orthopaedic pain management, meloxicam is the best followed by ketoprofen and carprofen in the given dose-route schedule.

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