Research Article

CURRENT PRACTICES OF NEPALESE VETERINARIANS FOR THE CLINICAL MANAGEMENT OF PAIN IN ANIMALS

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ABSTRACT

The retrospective study was performed to know the trend of recent clinical practices for managing the post-surgical and non-surgical pain in animals. The study included government hospitals, private clinics, organizations working on animal birth control program of Chitwan, Kathmandu, Lalitpur, and Kaski districts of Nepal. Overall, 1,177 and 1,084 animals received analgesics in 2017 and 2018, respectively. Categorically, 81% of cases underwent for soft tissue surgeries, and analgesics were prescribed variably for 1–5 days. However, 5% and 1% were orthopedic and ophthalmic cases that were treated with analgesics for 1–8 days. Remaining, 13% cases that were grouped into miscellaneous type received analgesics for 1–7 days For analgesia, meloxicam was the most preferred non-steroidal anti-inflammatory drug (98%) followed by tramadol (9%), and lignocaine-HCl (8%). Tramadol (9%) and lignocaine-HCl (8%) were prescribed particularly in severely traumatized cases whereas ketorolac (5%) were used in orthopedic cases. Only 18% veterinary patients received preemptive analgesics. Most of the hospitals, clinics and organizations did not perform pain scoring. Proper pain assessment and their scoring are imperative for prescribing the right analgesic for the effective treatment of pain in animals.

Key words: Analgesic, assessment, surgery, animal birth control

INTRODUCTION

Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage (IASP, 1979). It is usually evoked by external or internal noxious stimuli. Simply, pain consists of perception and reaction component and the use of analgesic gives pain relief by acting on either one or both components (Sandhu, 2013). Pain provoked from injury or surgery renders detrimental effects if left untreated (Vedpathak et al., 2009). The release of catecholamine in response to a painful stimulus results in tachycardia, hypertension and increased oxygen demand by myocardium of the heart. If prolonged, it can lead to left ventricular dysfunction, ischemia and infarction. As a consequence, there are increased cortisol and glucagon concentrations resulting in stress which lead to coagulopathy disorder, and immune suppression (Londhey, 2015). As compared to acute pain, the chronic pain is very difficult to treat because of its complex pathophysiology. In chronic pain, rapid and long-term changes occur in the central nervous system. Wind-up occurs when repeated, prolonged, noxious stimulation causes the dorsal horn neurons to transmit pain impulses progressively. Hence, the patient feels intense pain in response to an innocuous stimulus (Hellyer, 2007). Nociceptors, or pain receptors, are free nerve endings that respond to painful stimuli and are found peripherally to transmit information to the brain (Helms & Barone, 2008). Nerve impulse is conducted to the dorsal horn of spinal cord and provoke for the release neurotransmitters such as aspartate, glutamate, γ-amino butyric acid, neuropeptides. Some of them are excitatory that continuously send the signal to spinal cord and brain whereas others inhibit the further travelling of the signal particularly during the inflammation (Sandhu, 2013).

The assessment of animal pain is more complex because it comprises the manifestation of both behavioral and physiological responses (Bufalari et al., 2007). The establishment of pain scores and evaluation of physiological parameters before and after treatment is needed to have pain management. Currently, the several pain scales are being used for the assessment of pain in animals. The pain score is very useful for determining the choice of analgesics, dosage levels, route of administration, and treatment interval. The perioperative use of planned protocol of drug(s) constituting two or three of the main types of analgesic drugs are helpful for the management of postoperative pain (Shah & Gurung, 2013). Ingwersen et al. (2012) reported that the injection of preoperative analgesic resulted in less pain scores than the patients that received analgesics postoperatively. Alleviating pain is not only a professional obligation but also a key contributor to successful case outcomes and enhancement of veterinary client-patients relationship. Therefore, this study was done to know the knowledge of veterinary professionals regarding the use of analgesics, recent concept of preemptive and multimodal analgesic therapy and the trend of Nepalese veterinary professional for the management of post-surgical and non-surgical pain in animals.

MATERIAL AND METHODS

The Veterinary Teaching Hospital, AFU, Rampur, Mobile Vet Clinic, Jawalakhel, Valley Animal Clinic, Koteshwor, Animal Nepal, Chobhar and HART of Pokhara were included in this study. Data for the use of analgesics with their courses for the management of different surgical and non-surgical pain were obtained on request from aforementioned hospitals and organizations. Questionnaires were asked to clinicians and simultaneously the analgesics used records were obtained for the years 2017-2018. All the cases that received analgesics for last two years were recorded. Thereafter, the cases were categorized into soft tissue surgeries, orthopedic, ophthalmic and miscellaneous types. Data were analyzed using Microsoft excel and the results are expressed in tabular and chart forms.

RESULTS

As shown in Figure (1), total numbers of animal patients treated with analgesics were 1177 in 2017 and 1084 in 2018. Categorically, 81% of cases were operated for soft tissue surgeries followed by 5% orthopedic, 1% ophthalmic and remaining 13% was considered as miscellaneous cases (Figure 2). The level of knowledge was varied among the clinicians regarding the courses of analgesic in their patients. Meloxicam was used abundantly whereas tramadol, flunixin followed by local analgesics were prescribed in severe cases. Pain scoring was performed only at VTH, Rampur and Animal Nepal but the others indicated analgesics for few days without scoring. The clinicians mostly used meloxicam as a preemptive analgesia and also for postoperative and nonsurgical pain. Tramadol and lignocaine were used in VTH, Rampur and Kathmandu. The multimodal pain therapy consisting of opioids and NSAIDs with local analgesic was used especially in severe cases. The course of analgesic was used longer in cases where preemptive analgesics were not used in animals.

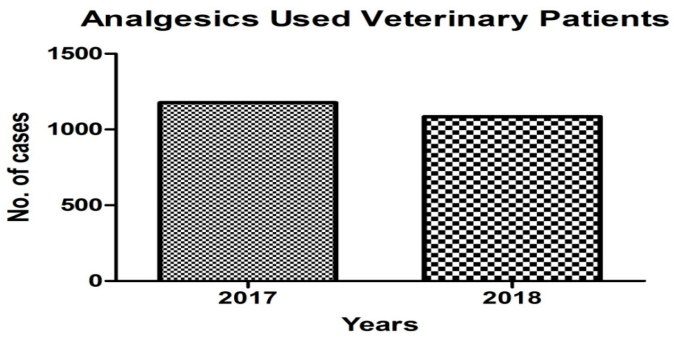

Figure 1. Case outflows where analgesic used in two year, 2017-18

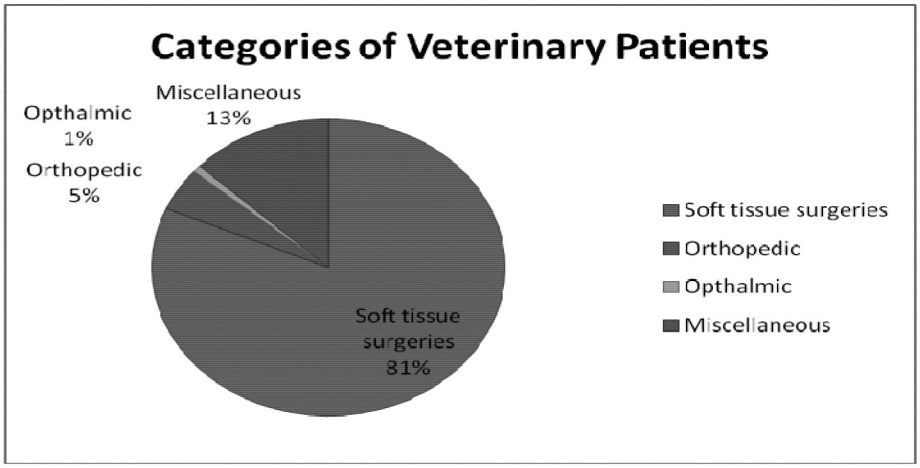

Figure 2. Case outflow of different surgical and non-surgical cases

In soft tissue surgeries, meloxicam in combination with tramadol and lognocaine were used in 7.3% and 5%, respectively as a multimodal analgesia. Likewise, a total of 106 orthopedic cases received meloxicam in different part of Nepal. Five percent of the orthopedic patients also injected with Ketorolac. A combination of meloxicam, tramadol and lignocaine were prescribed in VTH, Rampur and Kathmandu. Meloxicam in combination

with tramadol and lignocaine were recommended in 76% and 33% of orthopedic surgeries, respectively. Only 18 animals underwent for ophthalmic surgeries during the study period. Meloxicam was used as analgesic in the study area. However, meloxicam along with lignocaine was used in 33.3% of the ophthalmic cases particularly VTH, Rampur and Kathmandu.

In present study, miscellaneous cases included mastitis, wound, abscess, pyrexia, maggot- and mange-infestations. Out of the 294 cases, 89%, 10% and 1% were treated with meloxicam, tolfenamic and flunixin, respectively. Meloxicam plus lignocaine were used as multimodal therapy in 19% of the miscellaneous cases. As shown in Figure (3)**,** the courses of analgesics used for the management of postoperative pain due to soft tissue surgeries were ranged from 1 to 5 days. Among the patients of soft tissue surgeries, 2.2% and 0.2% of patient received analgesic only for 1 day and 2 days, respectively. However, 91% cases were treated for pain for 3 days. The 6.4% and 0.75% cases received analgesic for a period of 4 and 5 days, respectively.

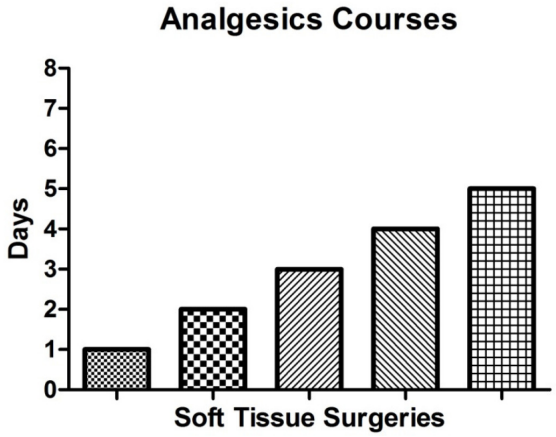

Figure 3. Course of analgesics indicated after soft tissue surgeries

The orthopedic patients were treated with analgesics for 1 to 8 days. Out of 106 cases, 17%, 1.8%, 18.8%, 14.1%, 8.4%, 25% and 15.09% of the orthopedic patients were administered with for a period of 1, 2, 3, 4, 5, 7, and 8 days were, respectively (Figure 4).

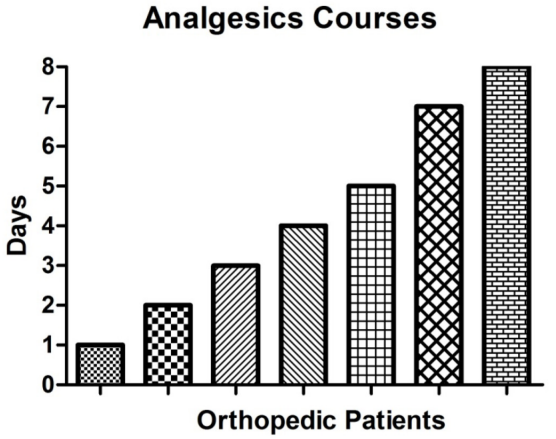

Figure 4. Course of analgesics indicated in orthopedic cases

As illustrated in Figure (5), the animals underwent ophthalmic surgeries received analgesics for 1, 3, 4, 7 and 8 days. An equal number of ophthalmic patients i.e. 11.11% each were treated with analgesics for a period of 1, 3 and 7 days. A large number of ophthalmic patients (33.33%) received analgesics for 4 days. However, 5.5 % cases received analgesic for a longer duration i.e. for 8 days.

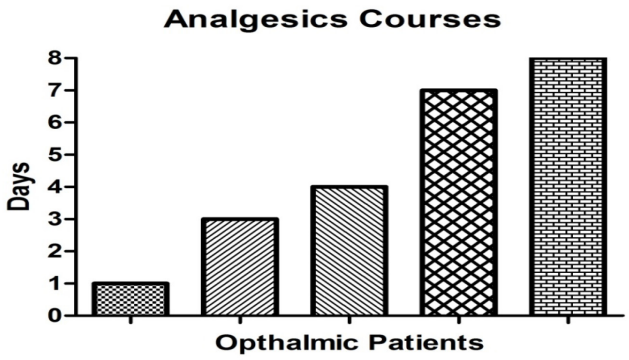

Figure 5 Course of analgesics indicated in ophthalmic cases

Over the study period, the minor surgical and non-surgical cases that were included under miscellaneous types were treated with analgesics for 1 to 7 days. In this study, mastitis, pyrexia, wound, etc were considered as miscellaneous cases. The 84.35% 2.72%, 12.58%, 2.04%, 1.36 %, and 2.72% of miscellaneous cases received analgesics for 1, 2, 3, 4 , 5 and 7 days, respectively (Figure 6).

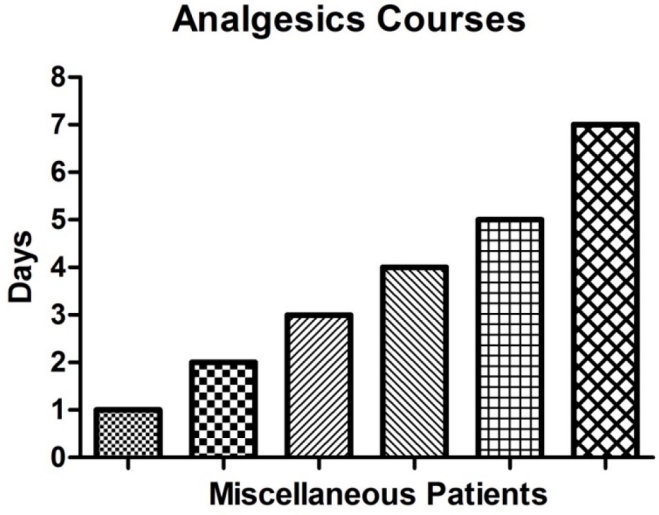

Figure 6. Course of analgesics indicated in miscellaneous case

DISCUSSION

The surgical case flow was found to be increased continuously with advancement of practices in Nepal. The use of analgesics both in surgical as well as non-surgical cases and courses varied for 1-8 days accordingly with their categories. Meloxicam was the most preferred choice as an analgesic because it was indicated almost in all cases throughout the study area. Very few cases were treated with flunixin and tolfenamic acid for the management of pain. However, tramadol alone or in combination with lignocaine was used for the management of the postsurgical pain in animals. In earlier study, researchers used narcotic analgesics i.e. pethidine and buprenorphine in dogs and cats, while the NSAIDs i.e. flunixin and dipyrone in dogs and ketoprofen in cats (Pearson, 1996). A study of Lorena et al. (2014) reported the commonly used opioids were tramadol (79%) and morphine (51%). NSAIDs of choice were meloxicam (81%) and ketoprofen (70%). The low-dose use of NSAIDs and COX-2 inhibitors does not appear to have a detrimental effect following soft tissue injury (Chen & Dragoo, 2013). In Nepal, the NSAIDs prescribed for1–5 days for soft tissue surgeries. However, the opioids such as buprenorphine and methadone are mostly used in dogs and cats in the UK. Local anesthetics are the best choice for pain relief because they block nerves which conduct the pain signal to the brain. Use of several types of drugs much better pain relief can be gained than using just one drug alone. NSAID blocks the pain at the surgical site (Gurney, 2017). The NSAID seems as the treatment of choice in Nepal followed by opioids. The concept of preemptive analgesia has the potential to be more effective than a similar analgesic treatment initiated after surgery. Consequently, immediate postoperative pain may be reduced and the development of chronic pain may be prevented (Dahl & Moiniche, 2004). The analgesic agents

most commonly used were morphine (opioids) and carprofen (a non-steroidal anti-inflammatory drug; NSAID). Use of peri-operative pain relief ranged from 50% for castration of cats to 91% for fracture repair in dogs (Williams et al., 2005). Very few cases were treated with preemptive analgesia by practitioners of Nepal. It is necessary to consider all medical and environmental factors and carefully monitoring the patients are also essential in preventing and early detecting adverse drug reactions (Cazacu et al., 2015). Pain scoring is the important part of identification of degree of pain. Patients should not be given under treatment or overtreatment. There is a need to identify the degree of pain, their types and detrimental effects of analgesics to patients.

The sound surgery practices, proper nursing of patients and balanced nutrition to patients promote the healing. Pain and inflammation cause increase in basal metabolic requirements, hence a high level of nutrition will be required to promote healing. Moreover, acupuncture may be used to treat both acute and chronic pain because it stimulates the inhibitory interneurons in the spinal cord, as well as endogenous release of encephalin, endorphins and opiates (Lai et al., 2019). Likewise, the pulsed electromagnetic field also mediates acute post-surgical pain relief as well as enhanced wound healing in dogs (Scardino et al., 1998).

CONCLUSION

In order to implement the more effective policies for the pain management, a better understanding of current practices is needed. Drug-drug interactions can be sometimes responsible for the adverse effects. Inadequate pain assessment can also mislead to the choice of analgesics. The courses of analgesic should be based on proper scoring of pain. Side effects of analgesics should be taken into account before prescribing analgesic for longer duration because not any analgesics are fully safe to the animal. Preemptive and a multimodal approach should be implemented for pain management in animal patients with proper nursing care.

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