
**EVALUATION OF DEXMEDETOMIDINE-BUTORPHANOL-
MIDAZOLAM-KETAMINE (DBMK) BALANCED ANAESTHESIA IN DOGS**

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ABSTRACT

Six adult dogs of different age and breeds, belonging to either sex and categorised as American Society of Anaesthesiologists (ASA) class I or II, which were posted for various surgical procedures, in the Department of Surgery and Radiology, College of Veterinary and Animal Sciences, Pookode, Wayanad, were anaesthetised using a combination of dexmedetomidine-butorphanol-midazolam-ketamine, administered intramuscularly. Induction of anaesthesia, following administration of the drug combination was found to be satisfactory in all six animals, based on the smoothness of sedation and induction. The time taken for induction of anaesthesia ranged from 4 to 13 minutes, with a mean \pm SE value of 7.33 ± 3.72 minutes.

Keywords: Dexmedetomidine, ketamine, anaesthesia, dogs

INTRODUCTION

The basic concept of balanced anaesthesia involves administration of small amounts of multiple drugs, each with specific action, to achieve analgesia, unconsciousness and muscle relaxation, instead of giving large dose(s) of single or a

few agents, to achieve the same. The effort behind this is to maximize the desired effects and minimizes the side effects.

Hence, the present study was conducted to analyse the quality of induction, the time taken for induction and various signs associated with it, in balanced anaesthesia in dogs for various surgical procedures.

MATERIALS AND METHODS

Out of six animals used for the study, three each undergoing soft tissue surgeries and orthopaedic surgeries, were selected. All selected animals were administered meloxicam @ 0.2 mg/kg intramuscularly for pre-emptive analgesia, and prepared for surgery. Thirty minutes later, dexmedetomidine-butorphanol-ketamine-midazolam combination @ 5 μ g/kg, 0.2 mg/kg, 5 mg/kg and 0.2 mg/kg, respectively, were combined in a single sterile syringe and given intramuscular at two sites at divided volumes. The animals were kept undisturbed in a calm environment and monitored for various signs associated with induction along with the quality and time taken for induction and maintenance. Quality of induction was judged based upon

Table. 1 Time taken for induction and associated signs

Character/ Animal no.	Signs preceding induction and their respective time from administration of anaesthetic combination						Time taken for induction (min)
	Salivation (min)	Ptosis (min)	Nodding (min)	Head down (min)	Sternal recumbency (min)	Lateral recumbency (min)	
1	Not exhibited	1	Not exhibited	1	2	3	5
2	2	Not exhibited	2	3	3	4	5
3	2	Not exhibited	3	5	4	12	13
4	Not exhibited	3	2	4	5	5	6
5	Not exhibited	2	1	2	Directly to lateral recumbency	3	4
6	Not exhibited	Not exhibited	5	7	2	9	11
Mean \pm SE							7.33 \pm 3.72

smoothness of the transition from conscious to unconscious state, side effects noticed and ease of intubation

RESULTS AND DISCUSSION

Induction of anaesthesia, following administration of the drug combination was judged as excellent in all animals studied, based on the smoothness of the transition from conscious to unconscious state, side effects noticed and ease of intubation. There was deep sedation and profound relaxation of jaw muscles. Laryngeal reflexes were absent. Intubation was easy. Eye balls appeared ventro-medially in all six animals, at the time of intubation. The results were similar to the results observed by Barletta *et al.* (2011), who found smooth and rapid induction of anaesthesia following dexmedetomidine-ketamine combination with opioids in dogs.

Signs associated with induction, and time taken for induction are detailed in Table 1. The animals showed no pedal reflex after induction, but palpebral, corneal and pupillary light reflexes were sluggish in a few animals.

The results were attributed to the synergistic effect of the drugs, given as a combination. These signs like ptosis, head down and sternal recumbency have been associated with dexmedetomidine (Sahoo *et al.* 2018) and salivation is noted with ketamine (Bergadano *et al.* 2009).

SUMMARY

The present study deals with the signs associated with induction of anaesthesia by intramuscular administration of dexmedetomidine-butorphanol-midazolam-

ketamine combination, the signs associated with it and time taken for induction. The anaesthetic combination provided smooth and safe induction in healthy dogs, which was helpful for various surgical procedures and this combination was associated with minimal risk to animals and the handling personnel.

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