Clinical Evaluation of Triflupromazine hcl and Diazepam Premedication for Propofol Anesthesia in Dogs

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Since the introduction of barbiturates, intravenous barbiturate anaesthesia has become more popular in small animal surgery due to its rapid onset, smooth induction and pleasant anaesthetic action. It is commonly associated with undesirable side effects like cardiac and respiratory depression, cumulative effect, excitable and prolonged recovery phases, tissue irritation on accidental perivascular injection, transplacental transfer leading to foetal depression even foetal death (Dundee, 1985). Though inhalation anesthetic could be other alternative but costly anaesthetic equipments are required and hence not economical.

Propofol is a unique non-barbiturate, non-steroid, short-acting general intravenous anaesthetic agent (Hofmeister et al., 2008). It is associated with a rapid smooth induction and a rapid recovery (VanNatta and Rex, 2006). Anaesthesia with propofol alone was not associated with either complete pain relief or muscle relaxation, therefore it requires a supplemental drug, which potentiates the action and reduces the dose of anaesthetic as well missing. However, studies on their combination with other anaesthetic drugs are scanty. Hence the present study was undertaken to evaluate the suitability of Triflupromazine Hcl and Diazepam premedication for propofol anaesthesia in clinical cases of dogs.

Materials and Methods
The study was carried out in 16 clinical cases of dogs undergoing different surgical interventions irrespective of age, sex and breed presented to the Department of Surgery, Veterinary college Hospital, Bangalore. Solid food was withheld 12 hr and water for at least 6 hr, prior to surgery. These animals were randomly allocated to two groups viz., 1 and 2 consisting eight dogs each.

Atropine sulphate was injected @ 0.04 mg/kg i/m to all the dogs irrespective of the group, 30 min prior to administration of sedatives. In group 1, Triflupromazine Hcl was given i/v @ 1 mg/kg. Diazepam was injected i/v @ 1 mg/kg as sedative in group 2. Fifteen minutes later Propofol (1%) was administered @ 5 mg/kg i/v till the loss of pedal reflex in both the groups. Further, incremental doses of Propofol were given for maintenance of anesthesia till the completion of surgery. All the animals from both the groups were clinically evaluated. Blood and serum samples were collected for haematobiochemistry. Site of operation was prepared aseptically and surgery was performed. The temperature, respiratory rate and heart rate were recorded at 0 and 15 min interval before and 15, 30, 45 and 60 min intervals after induction of anesthesia.

The mean and standard error for all the parameters were compared and the data were analysed by two way ANOVA the comparison between means of groups within and between groups were compared by LSD test missing.

Results and Discussion
In the present study quicker onset of sedation in group 1 could be attributed to profound CNS depressant action of Triflupromazine HCL (Jones et al., 1981) whereas low depressant effect of diazepam in group 2. The induction dose of Propofol required to produce surgical anesthesia was in accordance with David (1993) and Sharma et al., (2001) @ 5.02 mg/kg & 3.88 ± 0.59 mg/kg respectively. There was an insignificant increase in duration of anesthesia in group 1, which could be due to prolonged and intensi-
fied action of triflupromazine as an adjunct to anesthesia. The average maintenance dose was slightly less in group 1 than 2 which again could be due to more prolonged and intensified depressant action of Triflupromazine. In general, the short duration of surgical anesthesia after induction was found in both the groups which may be attributed to rapid distribution of propofol from brain to other tissues and high plasma clearance by metabolism (Thurmon et al., 1996; Reid and Nolan, 1993).

As far as the recovery was concerned the average time for gaining pedal reflex (min), head right reflex (min) and Ambulatory reflex (min) were 6.03 ± 0.20, 14.06 ± 0.65 & 30.56 ± 1.83 in group 1. The respective values in group 2 were 7.60 ± 0.34, 19.43 ± 1.14 and 38.25 ± 1.76. The Morgan and Legge (1989) who reported recovery time as 33.13 ± 19.21 in unpremedicated & 33.38 ± 17.22 in premedicated dogs. Both Triflupromazine and Diazepam provided optimal recovery time with rapid, smooth and excitement free recovery and did not delay the recovery as in case of a- adrenergic premedication (Cullen and Renoldson, 1993). In comparison, group 2 animals took more time to recover which could be due to dose dependent recovery character of propofol.

The rectal temperature decreased in both the groups as it decreased to 37.31 ± 0.11°C at 60 min from control value of 38.77 ± 0.12°C in group 1 and to 37.00 ± 0.05°C at 60 min from control value of 38.00 ± 0.09°C in group 2, which could be attributed to reduced activity of reticular activating system and depression of thermoregulatory center along with decreased metabolic rate and reduced skeletal muscle activity during sedation and anesthesia (Goodman and Gilman, 1980). Significant decrease in respiratory rate was observed in both the groups through the period of observation.

Significant increase in heart rate was observed at 15 min after premedication and 15 min after induction of anesthesia. Thereafter it did not vary significantly till 60 min of observation. The increase in heart rate in the beginning of experiment could either be due to reflex tachycardia, vagolytic action of atropine or due to general CNS awakening or excitement effect of the drug. The minimal variation in heart rate at later stages of anesthesia could be due to the absence of reflex tachycardia as the propofol did not change the baroreflex sensitivity; rather it appears to induce marked resetting of the heart rate baroreflex set point to allow slower heart rate despite decreased arterial pressure (Puttick et al., 1992).

Summary

The present study was undertaken to compare the effects of Triflupromazine Hcl- Propofol and Diazepam- Propofol combination as an anesthetic in clinical cases of dogs. Even though, both the anaesthetic combinations were found to be safe and effective with smooth and stress free recovery in the study, Triflupromazine- Hcl premedication for propofol anesthesia was proved to be more effective with quicker sedative effect, longed duration of anaesthesia, less induction dose of Propofol and shorter recovery time.

References


