EVAULATION OF VARIOUS PREANAESTHETIC COMBINATIONS FOR PROPOFOL – ISOFLURANE ANAESTHESIA IN DOGS: A HAEMATOBIOCHEMICAL STUDY

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The present study was conducted to evaluate and compare four different balanced anaesthetic protocols in clinical cases of dogs undergoing various surgical procedures. In all groups glycopyrrolate was administerd followed by xylazine and pentazocinein subgroups X1 and X2, and diazepam and fentanyl citrate in subgroups D1 and D2 intravenously after 15 min. Anaesthesia was induced with propofol and maintained with isoflurane. Changes in different haematobiochemical parameters were comparable and did not cause any serious impact and are approved for routine surgical procedures lasting about 60 min in dogs.

Keywords: Anaesthesia, Dogs, Haematobiochemical, Isoflurane, Preanaesthetics, Propofol.

In a clinical setting, general anaesthesia is routinely achieved by administration of intravenous or inhalant anaesthetics or combination of both. Induction of general anaesthesia with intravenous agents and maintenance by inhalant anaesthetics is the most preferred method (Birdane *et al*., 2018). Glycopyrrolate reduces general anaesthesia induced bradycardia along with reduction of gastro-intestinal tract motility and respiratory secretions (Potliya *et al*., 2015). Diazepam, a muscle relaxant, sedative, hypnotic and anticonvulsant reduces the dose of propofol for induction (Robinson and Weir, 2013), and has dose sparing effect on propofol (Tyagi *et al*., 2020). Xylazine produces sedation, anxiolysis, analgesia, prevention of autonomic reflex response, reduced anaesthetic requirements, improved intraoperative stability and facilitation of induction of anaesthesia. Both fentanyl citrate and pentazocine are synthetic opioids and have excellent analgesic properties and also helpful in reduction of propofol dose (Anandmay *et al*., 2016). Propofol induces rapid central nervous system depression facilitating anaesthetic induction with in 20–30 sec after intravenous administration (Robinson and Weir, 2013). The present study evaluated and compared glycopyrrolate– diazepam – fentanyl and glycopyrrolate – xylazine – pentazocine in different dose rates for propofol – isoflurane anaesthesia in dogs by haemato-biochemical parameters.

Materials and Methods

Sixteen client-owned dogs of different breeds, sex and age groups suffering from various surgical affections were divided into four groups, viz., X1, X2, D1, and D2 (Table 1). Fifteen minutes after intramuscular administration of glycopyrrolate (0.005 mg/kg), other preanesthetics were injected. Anesthesia was induced with intravenous propofol (2- 6 mg/kg) “till effect” and maintained with isoflurane 1-3% depending on the requirement. And maintained for 60 minutes, or until the surgical procedure was complete.

Table 1: Different drug-dose combinations used for general anaesthesia in different groups.

S.N.	Groups	Preanaesthetics	Inductionagent	Maintenance agent
1	X1 (n=4)	Glycopyrrolate (0.005mg/kg, I/M) +Xylazine (0.5 mg/kg, I/M) + Pentazocine (2mg/kg, I/M)	Propofol(2-6mg/kg) "till effect"	Isoflurane (1-3%)
2	X2 (n=4)	Glycopyrrolate (0.005mg/kg, I/M) +Xylazine (1mg/kg, I/M) + Pentazocine (1mg/kg, I/M)	Propofol(2-6mg/kg) "till effect"	Isoflurane (1-3%)
3	D1 (n=4)	Glycopyrrolate (0.005mg/kg, I/M)+Diazepam (0.5 mg/kg, I/V) + Fentanyl (10 µg/kg, I/V)	Propofol(2-6mg/kg) "till effect"	Isoflurane (1-3%)
4	D2 (n=4)	Glycopyrrolate (0.005mg/kg, I/M) + Diazepam (1mg/kg, I/M) + Fentanyl (5 µg/kg, I/M)	Propofol(2-6mg/kg) "till effect"	Isoflurane (1-3%)

Observations

Two ml of venous blood was collected in EDTA for the estimation of haemoglobin (g/dl), packed cell volume (%), total leukocyte count ($x10^9$/L), and differential leukocyte count (%) and serum was used for creatinine (mg/dl) (Jaffe's method), plasma urea nitrogen (mg/dl) (ureasemethod) and glucose (mg/dl) by glucometer estimatation before administration of any drug (0minute) and then after 15,30,45, 60 min or till the end ofthe observation period.

Statisticalanalysis:

Analysis of variance was applied for finding significant difference among four subgroups. Post hoc test (Duncan multiple new range test DnMRT) was applied to evaluate pair wise differences. The results were considered significant at $P \leq 0.05$ and highly significant at $P \leq 0.01$.

Results and Discussion

The effect of various anaesthetic combinations used in the animals of subgroups X1, X2, D1, and D2 on various haemato-biochemical parameters recorded in this study are described as follows.

Haemoglobin, packed cell volume, TLC and DLC did not show any significant changes within and between groups. The result of the present study is not in agreement with Zlateva and Marino, 2015, who observed dissimilar trends. While the seresults corroborate the findings reported by Hauptman *et al*., 2000 and Kim *et al.* 2000. Blood creatinine and urea nitrogen did not show any significant change within and between groups and fluctuated non significantly through out the observation period. Similar findings were recorded by Mohammed *et al*., 2019.

Blood glucose increased non significantly ($P>0.05$) up to 45 min and thereafter, significantly ($P<0.01$) at 60 min in all the groups. The results of the present study are in accordance with Sharma *et al*., 2014. The reason of hyperglycaemia might be attributed by alpha-2agonists, which can cause an increase in plasma glucose concentration due to their action on alpha-2 receptors in ß cells of pancreas and inhibit the release of insulin and/or increase glucagon release from the α cells.

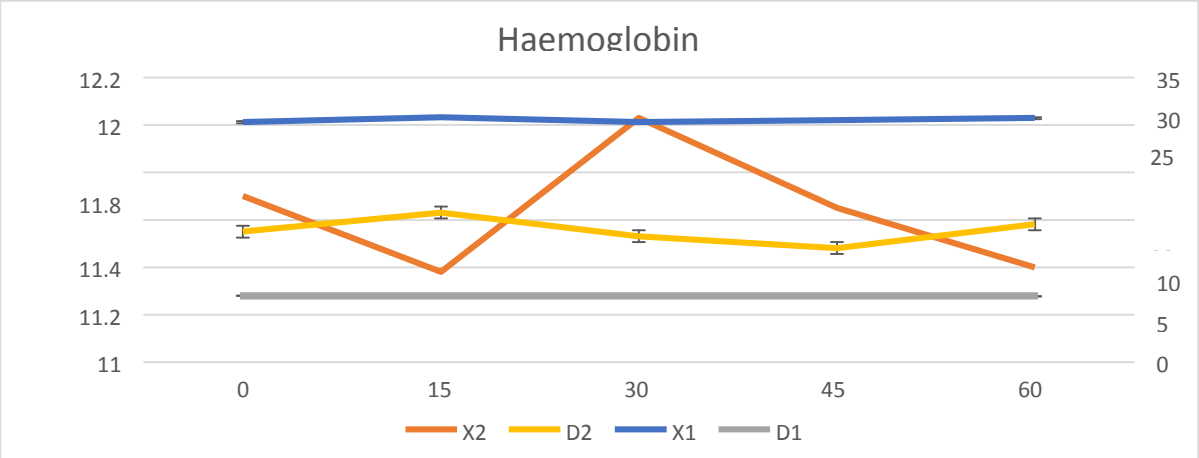

Fig. 1: Mean±SE values of the haemoglobin (%) at different time intervals in the animals of different subgroups.

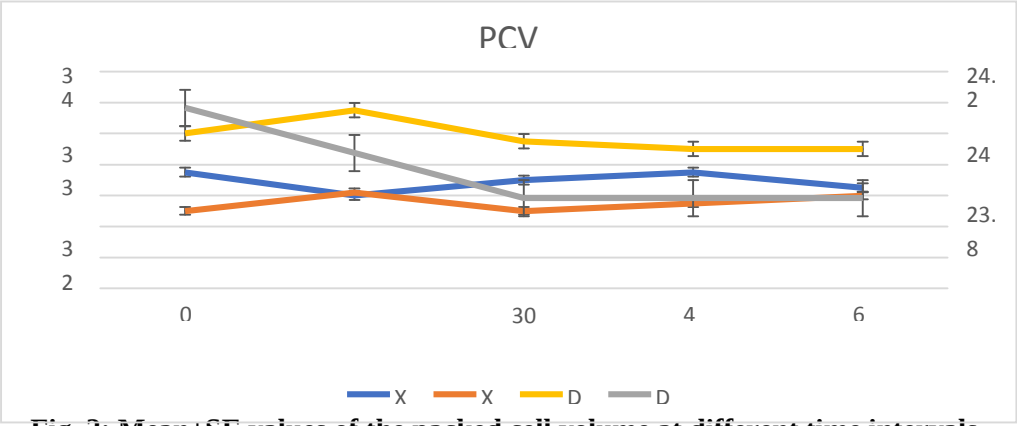

Fig. 2: Mean±SE values of the packed cell volume at different time intervals in the animals of different subgroups.

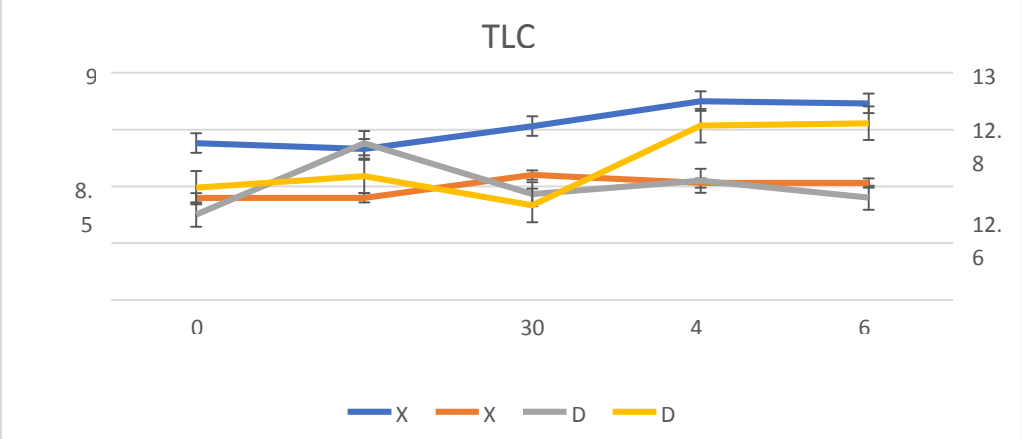

Fig. 3: Mean±SE values of the total leukocyte count (x10^3/µL) at different time intervals in the animals of different subgroups.

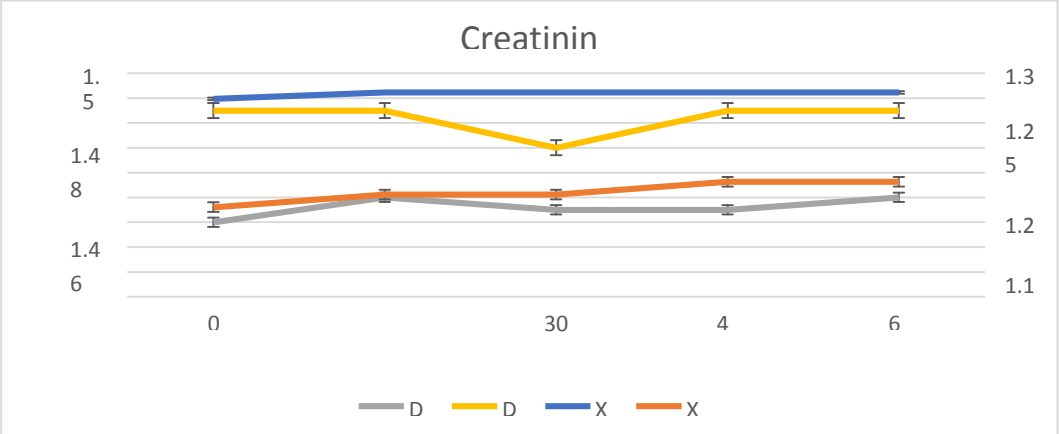

Fig. 4: Mean±SE values of the blood creatinine at different time intervals in the animals of different subgroups.

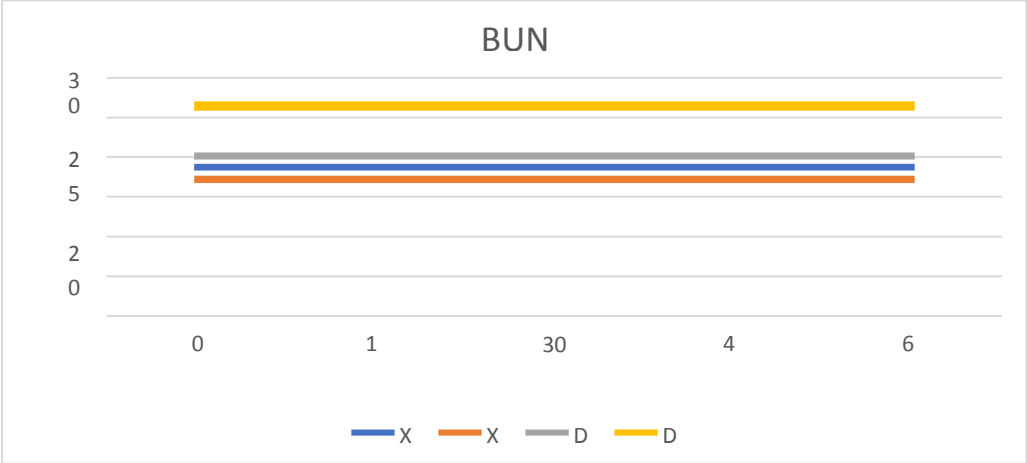

Fig. 5: Mean±SE values of the BUN at different time intervals in the animals of different subgroups

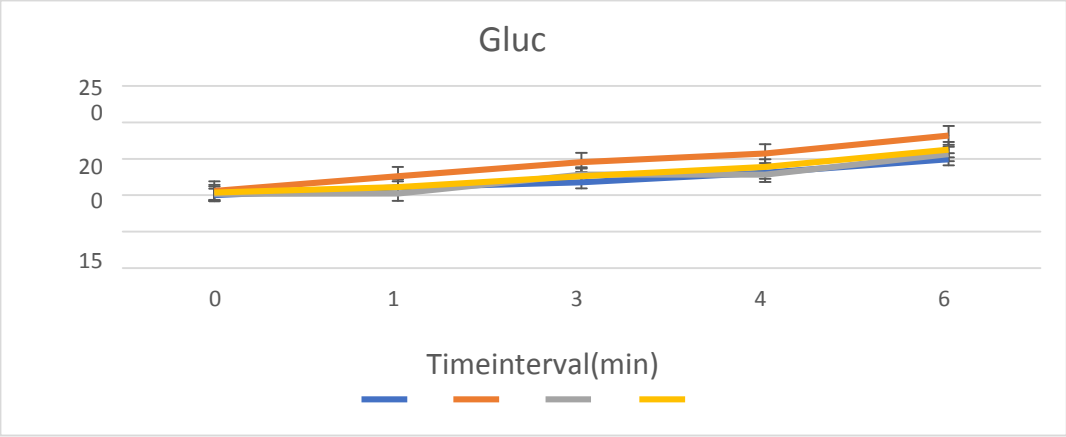

Fig. 6: Mean±SE values of the blood glucose at different time intervals in the animals of different subgroups.

Conclusions

The haematobiochemical effects of four preanaesthetic combinations were comparable and did not cause any serious impact and are recommended for routine surgical procedures in dogs.

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