HALOTHANE ANAESTHESIA WITH PREMEDICATION IN DOGS

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Summary: The effect of induction with thiopentone sodium and of premedication with triflupromazine and oxymorphone given individually or together on the dose and blood concentrations of halothane during and after halothane anaesthesia have been investigated in dogs. The dose of halothane and its blood concentration were appreciably reduced with all types of premedication. The maximum decrease was observed in oxymorphone premedicated dogs. B.S.P. retention which was increased by halothane was not reduced in any of the group. Also, the liver effect was at 72 hr as compared to that at 24 hr of anaesthesia.

Key Words. halothane anaesthesia in dogs of oxymorphone and triflupromazine

Halothane has been comparatively recently introduced as an inhalant anaesthesia and a number of workers have reported its safe and efficient use in veterinary practice (6,8). However, detailed information on several of its anaesthetic parameters is still lacking. In this study, the effects of some drugs and procedures were investigated on the blood level of halothane in different stages of anaesthesia. The influence of thiopentone on the dose of holothane needed for anaesthesia and on liver function was also examined.

MATERIALS AND METHODS

A total of 30 apparently healthy dogs, 9 to 12 months old, weighing 7 to 9 kg, divided into 5 groups with 6 animals in each group were used. Group 1 was maintained with halothane in oxygen alone and served as control. Group 2 was maintained with halothane vaporised in oxygen nitrous oxide mixture. Group 3 received oxymorphone hydrochloride at a dose of 0.2 *mg/kg* (sc) and anaesthesia was maintained with halothane in oxygen-nitrous oxide mixture. Group 4 received triflupromazine (Siquil-veterinary: Squibb) at a dose of 2.2 *mg/kg* (im) and anaesthesia was maintained with halothane in oxygen-nitrous oxide mixture. Group 5 received triflupromazine (1.1 *mg/kg* im) and oxymorphone hydrochloride (0.1 *mg/kg* sc) and anaesthesia was maintained with halothane in oxygen-nitrous oxide mixture. The oxygen-nitrous oxide mixture was used in 1 : 2 ratio.

The animals were fasted for 12 hr before anaesthesia was induced by the rapid intravenous injection of (5 per cent) thiopentone sodium (Intraval sodium; May & Bakar) in quantity just sufficient for endotracheal intubation. The absence of usual reflexes indicated complete anaesthasia which was maintained for 1 hr with halothane in all the groups.

The laboratory investigations made included the concentration of halothane in blood (4), and estimation of blood clotting time, erythrocytic sedimentation rate, haematocrit percentage and bromsulphalein (B.S.P.) retention (5).

RESULTS AND DISCUSSION

The doses of thiopentone sodium and blood halothane concentrations in groups 1 to 5 are presented in Table I. Table I shows that the quantity of thiopentone sodium needed for induction was maximum in the unpremedicated groups. In the premedicated groups, the quantity of thiopentone sodium was appreciably reduced, with the maximum decrease occurring in group 5 as comparad to groups 1 and 2, indicating the synergistic depressant action of oxymorphone and trifluprομazine. The total quantity of halothane required to maintain anaesthesia for 1 hr less in all the groups than the corresponding groups under chloroform anaesthesia as reported in literature (3). In almost all the groups, the blood concentrations of halothane immediately following the induction of anaesthesia and during recovery were higher than blood chloroform concentrations at corresponding intervals; however, the concentrations at 1 hr of maintenance of anaesthesthesia were slightly lower than the chloroform concentrations (3) at this time. The quantity of halothane required for the maintenance of anaesthesia for 1 hr was maximum in group 1 but was reduced in all the remaining groups and the reduction was more appreciable in groups 3, 4 and 5 (28.41, 11.20 and 26.95 per cent reduction respectively). The blood concentration of halothane at 1 hr of maintenance and at the return of reflexes was considerably decreased in groups 2, 3, 4 and 5; the decrease was relatively more marked in group 3. The blood concentrations of halothane for dogs obtained in the present study were lower than those reported by Chenoweth *et al.* (2) for the arterial blood of human beings without premedication and those reported by Tevick *et al.* (9) for the horse blood. The lower concentration of halothane observed in the present study may be due to species characteristics or due to differences in arterial and venous blood concentrations or induction with thiopentone sodium and the use of premedication may be the major determinant of decrease. These findings are in agreement with the observations of Zurganell (12) in human beings.

There was no effect of halothane anaesthesia on the haematological parameters studied.

In normal dogs, the average B.S.P. retention was 6.53 ± 0.77 *mg*/100 *ml* of blood (3) but increased considerably 24 hr after halothane anaesthesia (79.93, 56.95, 49.31, 49.92 and 41.65 per cent rise in groups 1, 2, 3, 4 and 5 respectively). A further increase in dye retention was observed 72 hr after anaesthesia indicating progressive liver injury due to halothane anaesthesia. Similar findings were reported by Hull and Reilly (7) for sheep, by Brohult (1) and Trey *et al* (10) for human beings and by Wolf *et al* (11) for horses. The increase in B.S.P. retention observed in the present study did not differ much from that reported for chloroform anaesthesia (3). Wolf *et al* (11) too observed no difference in hepatotoxic effects of chloroform and halothane in horses.

TABLE. I: Effect of different drugs and procedures on the anaesthetic doses and blood concentration of halothane in dogs.

Group	Mean anaesthetic dose of thiopentone sod. (mg/kg ± S.E.) for induction.	Mean anaesthetic dose of halothane (mg/kg ± S.E.) for maintenance.	Mean blood concentration of halothane (mg/100 ml. ± S.E) at onset of anaesthesia	at 1 hr of anaesthesia	at the return of reflexes
1. Halothane in Oxygen	19.3±0.17	0.705±0.07	2.29±0.17	4.29±0.17	1.46±0.11
2. Halothane in oxygen-nitrous oxide mixture	20.0±0.0*	0.675±0.01*	1.75±0.21*	3.18±0.08**	0.937±0.06**
3. Same as group 2 but given oxymorphone premedication	14.0±0.25**	0.505±0.01**	1.66±0.15**	2.93±0.17**	1.00±0.09**
4. Same as group 2 but given triflupromazine premedication	15.17±0.70**	0.626±0.03**	1.70±0.17*	3.13±0.24**	0.917±0.13**
5. Same as group 2 but given oxymorphone and triflupromazine premedication	12.83±0.54**	0.515±0.02**	1.92±0.16*	3.08±0.17**	1.34±0.15*

* ($P<0.05$)
** ($P<0.01$)

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