

EFFECT OF XYLAZINE ON TILETAMINE ZOLAZEPAM ANAESTHESIA IN DOGS*

Mini Bharathan; A.M. Chandrasekharan Nair; Jacob V. Cheeran;
K.N. Muraleedharan Nair and M.K. Rajagopalan
Department of Pharmacology and Toxicology
College of Veterinary and Animal Sciences,
Mannuthy, Thrissur-680 651.

Tiletamine-Zolazepam, an anaesthetic combination, has been advocated for anaesthesia in most species of domestic animals. Though the combination was reported to be satisfactory in low dose levels in a number of diagnostic and surgical procedures in dogs muscle relaxation and analgesia was reported to be inadequate. Tiletamine Zolazepam combination along with Xylazine has been used satisfactorily in pigs (Thurmon *et al.*, 1988), horse (Hubbel *et al.*, 1989) and calves (Thurmon *et al.*, 1989). The present study was conducted to evaluate the effect of xylazine when used with tiletamine zolazepam for anaesthesia in dogs.

Materials and Methods

The study was conducted in 18, apparently healthy adult mongrel dogs of either sex, randomly assigned to 3 treatment groups of six animals each. In the animals of Group I, atropine sulphate was administered at the rate of 0.05 mg/kg body weight s/c and 15 mts. later Zoletil** was administered at the dose of 5 mg/kg i/v. In animals of Group II and III, atropine sulphate at the dose of 0.05 mg/kg body weight was administered s/c and xylazine at the rate of 0.5 mg and 1.0 mg/kg respectively i/m. Fifteen mts. later Zoletil was administered i/v at the dose of 2.5 mg and 1.25 mg/kg respectively.

Two nociceptive stimuli as described below were used to test the depth of analgesia viz., (i) Skin clamping: A fold of skin and subcutis posterior to the mid point of lat rib was clamped using an allis forceps and the response was studied, (ii) Tail clamping: A segment of tail including vertebra was clamped using an allis forceps.

The stimuli was applied at 3 min. intervals. When the animal became recumbent ear-twitch reflex and pedal reflex were also tested at 3 min. intervals. Time of onset of recumbency, disappearance of response to skin clamp and tail clamp, pedal reflex, ear-twitch reflex and time for regaining of sternal recumbency were recorded. The time of reappearance of reflexes, standing and walking were also recorded.

The pulse rate, respiration rate and rectal temperature were recorded before administration and at 5, 10, 20, 30, 45, 60, 90 and 120 min. after administration of Zoletil. Blood samples were collected before, at the middle (8 min. after the disappearance of skin clamp reflex) and after recovery from anaesthesia for haematological examination. The data were analysed statistically using one way analysis of variance.

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** Zoletil (Tiletamine-Zolazepam) Virbac Pharmaceuticals, France

Results and Discussion

The data are presented in Table. The time of recumbancy in Group I & II were 13.3 ± 3.8 , 15.8 ± 3.8 sec. respectively after the administration of Zoletil. The animals in the third group became recumbent before the administration of Zoletil probably because of

premedication with higher dose of xylazine. Disappearance of skin clamp reflex was noticed by 8.8 ± 0.8 , 8.7 ± 0.8 and 7.5 ± 0.8 min. respectively in the three groups but the difference was not significant suggesting that xylazine at the given dose level did not significantly alter the onset of anaesthesia.

Table 1 Effects of Tiletamine-Zolazepam alone and with xylazine in dogs

n = 6

Group	Time of recumbency (sec.)	Disappearance of Tail Clamp reflex (min.)	Disappearance of Skin Clamp reflex (min.)	Duration of absence of response to Skin Clamp (min.)	Duration of absence of response to Tail Clamp (min.)	Time of regain of sternal recumbancy (min.)	Time for standing (min.)	Time for walking (min.)
I	13.3±3.8	4.5±0.5	8.8±0.8	20.5±1.5	19.0±1.5	42.8±2.0	73.3±3.9	78.2±4.4
II	15.8±3.8	5.2±0.6	8.7±0.8	14.3±2.0	14.7±1.0	33.2±2.0	48.0±3.9	50.8±4.4
III	0.0±0.0	4.0±0.6	7.5±0.8	15.2±2.0	14.7±1.0	43.3±2.0	47.5±3.9	48.3±4.4

I Tiletamine-Zolazepam (Zoletil) 5 mg/kg

II Tiletamine-Zolazepam (Zoletil) 2.5 mg/kg + Xylazine 0.5 mg/kg

III Tiletamine-Zolazepam (Zoletil) 1.25 mg/kg + Xylazine 1 mg/kg

The duration of absence of response to skin clamp was 20.5 ± 1.46 , 14.3 ± 1.38 and 15.2 ± 1.95 min. in the three groups respectively. The duration of absence of response to tail clamp was 19.0 ± 1.47 , 14.7 ± 1.06 and 14.7 ± 1.10 min. respectively. The difference was significant ($p < 0.05$) in both the parameters between control and treated groups.

The duration of absence of response to tail clamp and skin clamp was less in animals treated with low dose of Zoletil along with xylazine than the animals treated with Zoletil alone. This suggests that the duration of anaesthesia was determined more by Zoletil than by xylazine,

probably because of longer half life of Zoletil ($T_{1/2}$: 60 min.) than of xylazine ($T_{1/2}$: 2.8-5.4 min.).

The mean time required for regaining sternal recumbancy, time for walking and standing also showed the same trend suggesting that xylazine has no significant effect on duration of Zoletil anaesthesia.

The ear-twitch reflex disappeared immediately after the administration of Zoletil and reappeared after a mean time of 30.8 ± 1.55 , 23.4 ± 0.67 and 29.8 ± 3.03 min. respectively in the 3 groups of animals.

All the animals in Group I and four animals in Group II showed active pedal reflex throughout the period of anaesthesia. Rest of the animals in Group II and all the animals in Group III regained the pedal reflex at an average time of 21.5 and 28.5 min. respectively. This is in agreement with the observation of Short (1987) who found that the protective reflex like coughing reflex, swallowing reflex, corneal and pedal reflex are maintained in Tiletamine Zolazepam anaesthesia. The administration of xylazine might have contributed to the disappearance of the pedal and ear-twitch reflex in Group II and III.

Recovery in Group I was characterised by progressive increase in motor activity observed as rhythmic head and neck rocking which continued until the dogs attained sternal recumbency. This was not noticed in Group II & III. The increased muscular activity may be due to the variation in the plasma half life of zolazepam ($T_{1/2}$ less than 1 hour) and tiletamine ($T_{1/2}$: 1.2 hour) (Donaldson *et al.*, 1989).

The rectal temperature and pulse rate showed no significant variation between groups. The total WBC count, ESR, PCV, Hb and DC values in different groups before during and after anaesthesia did not reveal any significant difference.

Summary

The experiment was conducted to evaluate the effects of xylazine on Tiletamine-Zolazepam anaesthesia in dogs. The study was conducted in 18 dogs divided into 3 groups. The first group was treated with Zoletil 5 mg/kg/i/v and second and third groups were given xylazine 0.5 mg/kg and 1 mg/kg i/m and 15 min. later Zoletil 2.5 mg/kg and 1.25 mg/kg respectively i/v. The

results indicated that xylazine had no synergistic effect on Tiletamine-Zolazepam anaesthesia but the side effects were less and muscle relaxation and analgesia was increased.

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