

CLINICAL FINDINGS FOLLOWING XYLAZINE-KETAMINE-QUAIFENESIN ANAESTHESIA IN EQUINES*

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The effect of anaesthesia by administering a single drug being not safe, a combination of anaesthetics is chosen for good anaesthesia. In this experiment a combination of xylazine-ketamine-guaifenesin were used for induction and maintenance. This type of combination is necessary as a general anaesthetic where anaesthetic machines are not available for conducting surgery under field conditions. The present study was undertaken to record the clinical changes following anaesthesia.

Materials and methods

Ten horses weighing 60-200 kgs were utilised for the study.

Induction: Xylazine was administered intravenously at the rate of 1.1 mg/kg body weight. After the onset of sedation ketamine was administered intravenously at 2.2 mg/kg body weight.

Maintenance: After the animal attained surgical plane, anaesthesia was maintained for one hour with a mixture of xylazine, ketamine and quaifenesin at the rate of 0.6 drops/kg/min. The mixture comprised of 250 mg xylazine, 500 mg ketamine and 25 gms quaifenesin in 500 ml of 5% dextrose and was administered intravenously.

During the experiment, the time for the onset of anaesthesia, recovery from anaesthesia, clinical parameters viz. temperature, heart rate

and respiratory rate were recorded at 0, 5, 20, 40, 60 min. during anaesthesia and after the termination of anaesthesia at 30 min. and 24h. The ocular and pedal reflexes were also assessed during the course of anaesthesia.

Results and discussion

Onset of sedation was observed in 1.3-2 min., and it was characterised by lowering of head, ataxia and drooping of eyelids. These observations were due to the profound depression of the CNS by xylazine (Mcashin and Gabel, 1975).

After injecting ketamine, onset of anaesthesia was attained in 1.6-2 min. and it was characterised by smooth sinking of the animal on to the ground. Subsequently the animal was positioned to lateral recumbency. Similar observations were recorded by Hall and Taylor (1981). The palpebral reflexes were sluggish, and the eye ball was fixed in the center throughout the period of anaesthesia. Pedal reflex was absent. The muscle relaxation was adequate and this was attributed to the effect of guaifenesin (Davis *et al.*, 1970) and xylazine (Hall and Clarke, 1991).

Recovery from anaesthesia was smooth and the period varied from 27-38 min. after the stoppage of the administration of the mixture. The values of mean temperature, respiratory rate and heart rate are given in the Table 1.

* Part of the M.V.Sc Thesis submitted to the University of Agricultural Science, Bangalore - 560-024, by the first author.

Table 1 Mean values of Temperature, Heart rate and Respiratory rate at different time intervals

Time interval (mins.)	Temperature (degree Celsius)	Heart rate (per minute)	Respiratory rate (per minute)
0	37.19 ± 0.02 ^a	46.7 ± 0.53 ^a	21.5 ± 0.5 ^a
5	37.27 ± 0.03 ^a	38.8 ± 0.27 ^b	15.1 ± 0.35 ^b
20	37.16 ± 0.07 ^a	41.6 ± 0.51 ^b	15.4 ± 0.34 ^b
40	37.39 ± 0.06 ^b	42.4 ± 0.27 ^b	15.9 ± 0.43 ^b
60	37.46 ± 0.03 ^b	43.6 ± 0.49 ^b	15.5 ± 0.17 ^b
90	37.21 ± 0.03 ^a	43.9 ± 0.50 ^b	15.6 ± 0.27 ^b
24 hrs.	37.13 ± 0.03 ^a	46.4 ± 0.49 ^a	18.8 ± 0.33 ^b

Note: Cells with different superscripts indicate significant difference ($P \leq 0.05$) with the base value (0 min.)

The mean temperature showed a significant increase in the 40th min. and continued till the 60* min. This increase could be attributed to the stress during anaesthesia (Muir *et al.*, 1977). Mean respiratory rate and mean heart rate significantly dropped after induction. This was due to the cardiopulmonary depression effect of xylazine (Mc cashin and Gabel, 1975).

Summary

The induction of anaesthesia with zylazine-ketamine combination was smooth and rapid. Maintenance with a mixture composed of xylazine, ketamine and guaifenesin produced good depth of anaesthesia with adequate muscle relaxaton. Recovery from anaesthesia was uneventful without any side effects.

References

- Davis, L.E. and Wolff, W.A. (1970). Pharmacokinetics and metabolism of glyceryl guaiacolate in ponies. *Am. J. Vet. Res.* 31: 469-473
- Hall, L.W. and Taylor, P.M. (1981). Clinical trial of xylazine with ketamine in equine anaesthesia. *Vet. Rec.* 108: 489-493
- Hall, L.W. and Clarke, K.W. (1991). *Veterinary Anaesthesia* 9th Ed. Baillieri Tindall, Philadelphia. pp-61
- Mc cashin, F.B. and Gabel, A.A. (1975). Evaluation of xylazine as a sedative and preanesthetic agent in horses. *Am.J. Vet.Res.* 36: 1421-1428
- Muir, W.W., Skarda, R.T. and Milne, D.W. (1977). Evaluation of xylazine and ketamine hydrochloride for anaesthesia in horses. *Am. J. Vet. Res.* 38: 195-201