A PRELIMINARY STUDY OF THE CHEMICAL RESTRAINT OF SELECTED SQUAMATE REPTILES WITH ALFAXALONE

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ABSTRACT

Thirty-nine reptiles comprising a variety of squamate species were used to examine the effects of administration of intravenous alfaxalone. Alfaxalone at a dose of 9 mg/kg was injected into the ventral coccygeal vein of each animal and physiologic data and their response to noxious stimuli was recorded. Intravenous alfaxalone at a dose of 9 mg/kg was a safe and effective induction agent in all species examined except blotched bluetongue lizards (*Tiliqua nigrolutea*). Further research is required for its use in this species.

Introduction

Captive reptiles frequently require chemical restraint to facilitate clinical examination and surgery. Several chemical agents are commonly used but often produce undesirable effects such as prolonged recovery and respiratory depression. A relatively new anaesthetic agent, alfaxalone, has been used in small animal medicine in Australia and New Zealand for a number of years. It is the induction agent of choice for many clinicians due to its rapid clearance and metabolism independent of organ function, smooth and rapid recovery and minimal suppression of the cardiovascular system. Anecdotally, its use in reptiles has resulted in favourable results; however, there are no controlled studies examining its use in this taxon.

Alfaxalone (3-α-hydroxy-5-α-pregnane-11,20-dione) is a neuroactive steroid molecule with the properties of a general anaesthetic. Its mechanism of action is by modulation of neuronal cell membrane ion transport, induced by binding of alfaxalone to GABA$_A$ cell surface receptors. In small animal medicine alfaxalone can be either administered intravenously or intramuscularly.

Materials and Methods

Healesville Sanctuary collection snakes and lizards were used in this preliminary study and this research was approved by the Zoos Victoria Animal Ethics Committee. Only animals deemed to be healthy with no history of chronic disease or current illness were used. Thirty-nine animals, comprised of 11 species were used during this study and included; eastern bluetongue lizard...
(Tiliqua scincoides), blotched bluetongue lizard (Tiliqua nigrolutea), coastal bearded dragon (Pogona barbata), inland bearded dragon (Pogona vitticeps), Gippsland water dragon (Physignathus lesueurii howittii), red-bellied black snake (Pseudechis porphyriacus), lowland copperhead (Austrelaps superbus), eastern tiger snake (Notechis scutatus), coastal carpet python (Morelia spilota mcdowelli), diamond python (Morelia spilota spilota) and black-headed python (Aspidites melanocephalus).

As reptiles are ectothermic and environmental temperature can affect metabolic rate and response to anesthetic agents all reptiles were placed into an intensive care unit at 30 - 35°C (85 - 95°F) for 1 hr prior to induction of anesthesia. After 1 hr each individual was manually restrained and injected intravenously into the coccygeal vein with 9 mg/kg alfaxalone (Alfaxan®-CD RTU 10 mg/ml, Jurox Pty. Ltd. Rutherford, NSW, Australia). Following injection, all animals were maintained on a warm air blanket kept at 38°C (100°F) for the duration of the study. Reactions were recorded on a standard anesthetic chart. Induction time was defined as the time from injection to the loss of the righting reflex. Once induced all animals were intubated and maintained on room air. Heart rate (using Doppler unit), respiratory rate and temperature were measured every 5 min. Depth of anesthesia was assessed at 5-min intervals using righting reflex, response to noxious stimuli (pinching the vent and tongue withdrawal reflex in snakes and toe pinch in lizards). No response to pinching the vent or toes was considered indicative of a plane of surgical anesthesia. Animals were judged to have recovered from anesthesia once spontaneous movement and righting reflex had returned.

Results

Intravenous administration of alfaxalone only resulted in mild sedation in blotched bluetongue lizards and did not permit intubation due to persistent jaw tone. However, in all other species examined, intravenous alfaxalone resulted in immediate induction. Average duration of anesthesia in agamids was 22.0 (± 6.54) min, in eastern bluetongue lizards 6.20 (± 4.53) min, in pythons 23.30 (± 13.21) min, and in elapids 12.10 (± 18.13) min. Intubation was possible in all of these species. A surgical plane of anesthesia was not achieved in any species (withdrawal reflexes persisted) but spontaneous respiration was maintained in all animals examined.

Discussion and Conclusion

Intravenous alfaxalone at a dose of 9 mg/kg appears to be a safe and effective induction agent in a variety of squamate reptiles. Further research is required for its use in blotched bluetongue lizards.

LITERATURE CITED