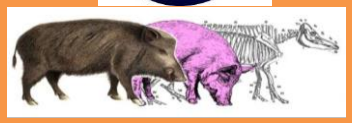
SAFETY OF AZAPERONE FOR REPEATED ANESTHESIA ON WILD BOAR (*Sus scrofa scrofa*)

Barbara Blanc, DVM[1] bblanc@mnhn.fr ; Katia Ortiz, DVM[1, 2] ortiz@mnhn.fr, Yann Locatelli, PhD[1] yloca@mnhn.fr and Thomas Cucchi, PhD[3] cucchi@mnhn.fr.

[1] Réserve zoologique de la Haute Touche, Muséum National d'Histoire Naturelle, Obterre France ; [2] UMR 7205 CNRS/ Muséum National d'Histoire Naturelle, Paris France; [3] UMR 7209 CNRS/Muséum National d'Histoire Naturelle, Paris, France.



Introduction

As part of an experimental study for a zooarcheological project, in accordance to an ethics committee, 24 (12.12) wild boars (*Sus scrofa scrofa*) were anesthetized 6 times from the age of 6 months up to 2 years for CT and MRI imaging. A safe handling of this species is delicate.[1,3,4]

The challenge was to anesthetize 6 animals in the same half day of experiment with a rapid recovery. These repeated anesthetic events enabled us to document an azaperone-based protocol adapted to wild boars.

Materials & Methods

Réserve zoologique de la Haute Touche
- Loading of **6 animals** in individual crates with restraint system
- IM injection of **azaperone (0.5-2mg/kg)**[3]

1h45 → Transport → 1h45 ←

Imaging center: CIRE/INRA
Serial anesthesia of **6 animals**:
- IM injection **[medetomidine (50-60 µg/kg) + ketamine (5-6 mg/kg)**[2,3]**+/- azaperone (1-2mg/kg)]**
- IV catheter & endotracheal tube
- Sampling (hair, blood, triceps muscle biopsy, rectal swab)
- Medical treatment (NSAI, deworming, Se/E vit supplement)
- Maintenance: 1% isoflurane
- CT +/- RMI
- Recovery (IM injection **atipamézole (300µg/kg)**

Typical day of experimentation

Anesthesia monitoring: heart rate (clinical exam) + body temperature with transrectal thermometer (hypothermia and malignant hyperthermia prevention)[4], IV addition of ketamine (1mg/kg) for intubation if necessary.

Results

	Average duration of anesthesia in minutes	Average body temperature difference in °C	Average heart rate in bpm
Short procedure (CT only) N= 132	**65** [40-100]	Beginning: **37.0** [35.3-39.0] End: **36.6** [34.8-38.5] Difference: **0.4** [-2.7-1.6]	**69** [44-144]
Long procedure (CT+MRI) N= 12	**153** [110-194]	Beginning: **36.6** [35.9-37.8] End: **36.6** [35.0-38.0] Difference: **-0.13** [-2.3- 1.0]	**84** [80-88]

Physiological changes depending on the duration of anesthesia

Range of weight	Premedication Azaperone (A)	Induction Medetomidine (M)/ Ketamine (K) +/- Azaperone(A)	Number of times of ketamine supplementation for induction
15-30 Kg	**A = 0.5mg/kg**	M = 50µg/kg K = 5mg/kg	5/12 inductions
30- 40 Kg	**A = 2mg/kg**	M = 60µg/kg K = 6mg/kg	26/61 inductions
40-100 Kg	**A = 2mg/kg**	M = 60µg/kg K = 6mg/kg **+ A = 1mg/kg**	27/43 inductions
		M = 60µg/kg K= 6mg/kg **+ A = 2mg/kg**	9/28 inductions

Anesthesia protocol adaptation according to the animal weight

Endotracheal tube diameter (mm) relative to range of weight:
* 15 to 20 kg: 4 – 5.5 mm
* 20 to 40 kg: 6 – 7mm
* 40 to 60 kg: 7.5 – 9 mm
* 60 to 100 kg: 9.5 – 12 mm

No incident per- or post-anesthetia (N= 144)

Discussion

Anesthesia challenge with many critical points:
- The management of long transport duration
- Serial anesthesia
- The regulation of body temperature
- Anesthesia protocol adapted to the animal weight
- Quality of IM injections (volume)
- The common addition of ketamine for induction without increasing doses of medetomidine

Conclusion

On a total of 144 anesthesia, adding azaperone in the induction protocol provided safety and efficiency for the boars as well as for the veterinary team handling these dangerous animals. Moreover, it avoided the increase of dosage of alpha2-agonist and its potential adverse effects on animals that weigh up to 100 kg.

References
1.Barasona JA, López-Olvera JR, Beltrán-Beck B, Gortázar C, Vicente J. Trap-effectiveness and response to tiletamine-zolazepam and medetomidine anaesthesia in Eurasian wild boar captured with cage and corral traps. BMC Vet Res. 2013; 9:107.
2.Dotson T, Winand CJ. Immobilization of European wild hogs with azaperone and ketamine: an alternative. Proc. Annu. Cont. Southeast. Assoc. Fish and Wildl. Agencies. 1991; 45:175-177.
3.Padilla LR, Jeff CH. Non-domestic suids. In: West G, Heard D, Caulkett N (eds.). Zoo animal and wildlife immobilization and anesthesia. Ames (IA): Blackwell Publishing. 2007; 49:567-577.
4.Thurmon JC, Smith GW. Swine. In: Tranquilli WJ, Thurmon JC, Grimm KA (eds.). Lumb & Jones' Veterinary Anesthesia and Analgesia. Fourth edition. Ames (IA): Blackwell Publishing. 2007; 29:747-763.

Acknowlegments: We thank the team of zookeepers of the Réserve zoologique de la Haute Touche and the team of CIRE platform at INRA Nouzilly for their assistance in the care of wild boars and manipulations.