Veterinary
Anaesthesia and Analgesia
Formerly the Journal of Veterinary Anaesthesia

Veterinary Anaesthesia and Analgesia, 2013, **40,** 610–614 doi:10.1111/vaa.12056

SHORT COMMUNICATION

# Acepromazine-dexmedetomidine-ketamine for injectable anaesthesia in captive European brown hares (*Lepus europaeus*)

**Maria Pia Pasolini*, Barbara Lamagna*, Leonardo Meomartino†, Giuseppina Mennonna†, Luigi Auletta*, Luigi Esposito* & Amedeo Cuomo‡**

*Department of Veterinary Medicine and Animal Productions, University of Studies of Napoli Federico II, Napoli, Italy
†Interdepartmental Centre of Veterinary Radiology, University of Studies of Napoli Federico II, Napoli, Italy
‡Department of Veterinary Clinical Sciences, University of Studies of Teramo, Teramo, Italy

**Correspondence:** Luigi Auletta, Department of Veterinary Medicine and Animal Productions, University of Studies of Napoli Federico II, Napoli, Italy. E-mail: luigi.auletta@yahoo.it

## Abstract

**Objective** To evaluate a combination of acepromazine, dexmedetomidine and ketamine (ADK) on induction and recovery from anaesthesia, and on physiological parameters in hares undergoing non-invasive procedures.

**Study design** Prospective clinical study.

**Animals** Sixteen European hares (*Lepus europaeus*), seven males and nine females, aged (mean ± SD) 3.25 ± 0.9 months and weight 2.1 ± 0.6 kg.

**Methods** Acepromazine 1% (A), dexmedetomidine 0.05% (D) and ketamine 5% (K) were mixed and given intramuscularly (IM) at 0.25 mL $kg^{-1}$, representing 10 mg $kg^{-1}$ K, 0.25 mg $kg^{-1}$ A, 12.5 μg $kg^{-1}$ D. If the righting reflex was present after four minutes, a second injection of 0.15 mL $kg^{-1}$ (6 mg $kg^{-1}$ K, 0.15 mg $kg^{-1}$ A, 7.5 μg $kg^{-1}$ D) was administered IM. Surgical anaesthesia was judged as present when righting, palpebral, ear-pinch and pedal withdrawal reflexes were absent. Anaesthetized hares were tagged, and underwent blood sampling and ocular ultrasound examination. Physiological parameters were recorded every ten minutes, and were compared by Kruskal-Wallis tests.

**Results** A single dose induced loss of righting reflex in 11/16 (69%) hares within four minutes; the second dose was effective in the remaining hares. Ten minutes after the loss of the righting reflex, a surgical plane of anaesthesia was present in all hares. Sleep time to regaining righting reflex was 34 ± 11 (range 21–62) minutes and recovery was calm. Although there were some statistical differences over time, cardiovascular parameters remained within an acceptable range but there was respiratory depression and hares were hypoxemic.

**Conclusions and clinical relevance** The ADK mixture produced a smooth and rapid induction of anaesthesia, a low incidence of untoward side effects and full recovery after four hours. Supplementary oxygen might be advisable if a deeper plane of anaesthesia was required. Chemical restraint was adequate to perform non-invasive procedures.

*Keywords* acepromazine, dexmedetomidine, hares, injectable anaesthesia, ketamine.

## Introduction

The European Brown Hare (*Lepus europaeus*) is an indigenous species to Italy. Italian regional administrations have established restocking and capture zones for brown hares, where hunting is forbidden

(Nardoni et al. 2010) and hares for restocking are reared in cages in specialized farms. These hares undergo a number of routine monitoring procedures. As these hares are difficult to handle, they often need chemical restraint to minimise struggling and stress during such procedures despite the fact that lagomorphs are known to be at high risk during anaesthesia (Flecknell et al. 1999).

A number of injectable anaesthetic agents and their combinations have been investigated for use in the rabbit, but the reported reliability and safety in achieving anaesthesia varies and appears to depend on many conditions (Longley 2008). However, there are few reports about chemical restraint and anaesthesia in hares (Caillol et al. 1992; Noszczyk-Nowak et al. 2009; Gerritsmann et al. 2012). In most cases anaesthetic drugs have been administered to hares on the basis of results in the rabbit. However, hares differ from rabbits not only morphologically, but also in temperament and sensibility to stress. Although inhalation anaesthesia is the most feasible approach to control the anaesthetic depth for major surgery, for procedures on the farm, or indeed in animals in the wild, facilities to provide this may well not be available, and injection techniques of anaesthesia are preferred for practical reasons. Recently, medetomidine and S(+)-ketamine or racemic ketamine for field anaesthesia in European brown hares were compared (Gerritsmann et al. 2012), the medetomidine being antagonised with atipamezole. However at the doses used in that study, surgical anaesthesia was not produced reliably, and the quality of recovery was not ideal. Thus there is still a need to evaluate reliable injectable techniques.

The objective of this study was to develop an effective short-term injectable anaesthesia technique for European Hares (*Lepus europaeus*) that could be used in 'the field'. The study evaluated the dose required to induce anaesthesia of an intramuscular (IM) combination of acepromazine, dexmedetomidine and ketamine (ADK) in hares undergoing tagging, blood sampling and ocular ultrasonography. In addition, the cardiorespiratory effects of the drugs, and the speed of recovery were evaluated.

## Materials and methods

All procedures were carried out in accordance with the Guiding Principles in the Care and Use of Animals approved by Italian laws and were approved by the University ethics commission.

The study was conducted on the farm where the animals were individually housed in outdoor cages (180 cm in length, 100 cm in width and 90 cm in height). The animals used were 16 clinically healthy prepubescent European hares (*Lepus europaeus*), seven males and nine females, aged (mean ± SD) 3.3 ± 0.9 months (range 2–5 months), and of 2.1 ± 0.6 kg (range 1.3–3.3 kg) bodyweight. They were not fasted before the experiment. The hares were transferred into smaller individual wooden boxes (70 cm in length, 50 cm in width and 50 cm in height) for the study.

Acepromazine 1% (Prequillan, Fatro Spa, Italy) (A), dexmedetomidine 0.05% (Dexdomitor, Pfizer Italia srl, Italy) (D) and ketamine 5% (Ketavet 100, Intervet Productions srl, Italy, diluted 1:1 in sterile saline solution) (K), were mixed in the volumetric ratio of 1:1:8. Each mL of solution contained 40 mg K, 1 mg A and 50 μg D.

The hare was removed from its box and manually restrained. The ADK mixture was injected into the *Mm quadriceps femoris*, at a dose of 0.25 mL $kg^{-1}$ (10 mg $kg^{-1}$ K, 0.25 mg $kg^{-1}$ A, 12.5 μg $kg^{-1}$ D). The hare then was returned to its wooden box. Two minutes later, and at 30 seconds intervals thereafter, the box was tilted gently by 90° in order to assess the time of righting reflex loss. If the righting reflex was still present after four minutes, a further dose of 0.15 mL $kg^{-1}$ (6 mg $kg^{-1}$ K, 0.15 mg $kg^{-1}$ A, 7.5 μg $kg^{-1}$ D) was injected. Once the righting reflex was absent, the following reflexes were tested: righting, palpebral, ear-pinch (the reaction to clamping the ear margin with a Halstead mosquito forceps), pedal withdrawal (pelvic limb withdrawal on clamping the inter-digital space between third and fourth digits). Surgical anaesthesia was judged present if all the four reflexes were absent. Anaesthetized hares were tagged and an ocular ultrasound examination was performed. Room temperature was 18 °C and no methods for maintaining body temperature were used.

Heart rate (HR), using a paediatric stethoscope, respiratory rate ($f_R$) by counting thoracic movements, and rectal temperature (T°C) by rectal probe, were recorded 5 minutes before the injection (T0). Reflexes and physiological variables were then recorded one minute after the loss of righting reflex and removal from box (T1), and at 10 (T10), 20 (T20) and 30 (T30) minutes thereafter as long as anaesthesia was adequate for these be performed without physical restraint. In addition to HR, $f_R$ and T°C, from T1 onward additional

Download English Version:

https://daneshyari.com/en/article/8919933

Download Persian Version:

https://daneshyari.com/article/8919933

Daneshyari.com