

HOW TO USE A 'TRIPLE DRIP' IN HORSES

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Field anaesthesia in horses is mostly done for relatively short procedures (< 20 min) so after proper premedication, a single bolus of a dissociative anaesthetic or barbiturate is often used for the induction of anaesthesia. Anaesthesia can be prolonged by topping up of drugs.

However, the accumulation of drugs can be accompanied by prolonged, poor quality recoveries or even death. Volatile anaesthetics require anaesthetic equipment which is mostly not feasible in the field.

Total intravenous anaesthesia (TIVA) can be used for longer interventions whereby a mixture of drugs is infused intravenously. According to the Confidential Enquiry into Perioperative Equine Fatalities (CEPEF), TIVA was estimated to be relatively safer compared to inhalants (Johnston et al. 2002), since less cardiovascular depression was reported using this technique (Young et al. 1993, Luna et al. 1996, Taylor et al. 1998, McMurphy et al. 2002). In contrast, the assessment of anaesthetic depth is more difficult while the anaesthetic risk markedly increased when duration of anaesthesia was prolonged (mortality rates >3% for procedures >90 min).

Several TIVA protocols have been described. The 'triple drip' is a popular combination including an α_2 -agonist, a dissociative anaesthetic and a muscle relaxant (guaiphenesin or a benzodiazepine). After sedation (α_2 -agonist \pm opioid e.g. morphine, butorphanol or methadone) and induction (ketamine 2.2 mg/kg IV and midazolam or diazepam 0.06 mg/kg IV), a mixture of 500 mL guaiphenesin 5%, 2 g ketamine and 25 mg romifidine can be infused to effect (1 mL/kg/h). Alternatively, a mixture of ketamine (2.2 mg/kg), midazolam (0.06 mg/kg) and romifidine (80 μ g/kg) in 500 mL NaCl 0.9% (12 mL/min, irrespective of body weight) can be

used. During a surgical plane of anaesthesia, a brisk palpebral reflex together with a minor nystagmus can be present. Respiration is regular but usually slow. Signs of excessive anaesthetic depth are absence of palpebral or cornea reflexes, a central positioned or dorsocaudally rotated eye, severe bradypnea or apnea, etc. On the other hand, the anaesthesia becomes superficial when the horse sighs, breathes in an irregular fast pattern, swallows or even moves. Correct position of the body including a sufficient padding remain crucial, even in the field. Locoregional anaesthetic techniques are justified to assure per- and postoperative analgesia and to reduce anaesthetic requirements. Finally, administration of oxygen is highly recommended.

References

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