Evaluation of an oral transmucosal administration of dexmedetomidine-butorphanol and dexmedetomidine-methadone in dogs

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Abstract

Oral transmucosal (OTM) delivery is a simple and painless method for sedative administration in veterinary medicine and allows a rapid absorption without a first-pass metabolism by the liver (Porters et al., 2014.). OTM is particularly useful in aggressive animals (Santos et al., 2010). The aim of this study is to evaluate the efficacy of the OTM route in dogs for sedative administration in comparison with intramuscular (IM) injection. 24 mixed-breed dogs undergoing soft tissue surgery or diagnostic procedures were randomly divided in 4 groups (n = 6): two groups received OTM administration of dexmedetomidine (10 µg/kg-1) together with butorphanol (0.2 mg/kg-1, BTF-OTM group) or methadone (0.2mg/kg-1, MTD-OTM group); two groups received intramuscular (IM) administration of dexmedetomidine (5 µg/kg-1) together with butorphanol (0.2 m/kg-1, BTF-IM group) or methadone (0.2 mg/kg-1, MTD-IM). Heart rate (HR), respiratory rate (RR), sedation score (Gruney et al., 2009) and side effects were recorded 10 (T10), 20 (T20) and 30 (T30) minutes after premedication. Induction was performed at T30 with titrate-to-effect propofol administration and the dosage required was recorded. At each time point BTF-IM group showed a statistically lower HR compared to BTF-OTM; RR was statistically lower at T10 in MTD-OTM group (21.33 ± 8.64 pm) compared to BTF-OTM (46.16 ± 17.98); Dogs in group MTD-IM reached a higher sedation scores at each time point compared to MTD-OTM. The induction dose of propofol appears comparable among groups. Marked vasoconstriction was observed after OTM administration, as probably related to α2-agonists use. Emesis and sialorrhea occurred in two subjects of MTD-OTM group while only one dog presented sialorrhea in BTF-OTM group. In conclusion, OTM administration appears effective and easy to perform; it takes a longer time to achieve a good sedation score, probably related to a gradual absorption of drugs that also leads to a more gradual hemodynamic effects.
References

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