Atipamezole as a Reversal Agent in Isoflurane-Anesthetized Cats

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In the Literature

Zatroch KK, Sakai DM, Parry S, Campoy L, Martin-Flores M. Evaluation of atipamezole as a treatment for dexmedetomidine-induced cardiovascular depression in anesthetized cats. *Am J Vet Res*. 2019;80(5):455-460.

FROM THE PAGE ...

The dose-dependent cardiovascular effects of α_2 agonists have been well-characterized in numerous species and include increased systemic vascular resistance resulting in increased blood pressure, baroreceptor-mediated reflex bradycardia, decreased cardiac output, and a centrally mediated decrease in sympathetic tone.[1-3] Although not licensed for use in cats, atipamezole, an α_2-adrenoceptor antagonist, is routinely used to reverse clinical effects of the α_2 agonist dexmedetomidine. Previous research has shown that atipamezole effectively reduces dexmedetomidine-induced bradycardia in nonanesthetized cats.[1]

This randomized crossover study investigated the effects of 2 clinically relevant doses of atipamezole versus saline solution administered to anesthetized cats that received dexmedetomidine. It was hypothesized that atipamezole would increase the pulse rate to values comparable with baseline and decrease mean arterial pressure as compared with 0.9% saline. Six healthy adult cats were anesthetized 3 times with a minimal 1-week washout period. Cats were induced with isoflurane, intubated, mechanically ventilated, and maintained with isoflurane. Standard anesthetic monitoring was performed in addition to continuous pulse rate and direct blood pressure monitoring.

Following a 20-minute acclimation period, dexmedetomidine (5 µg/kg) was given IV over 5 minutes; cardiovascular variables (eg, pulse rate, mean arterial pressure, cardiac output) were measured before and 5 minutes after dexmedetomidine infusion. Either atipamezole at a low (25 µg/kg) or high dose (50 µg/kg) or saline solution was then administered IM. All variables were measured at defined intervals up to 120 minutes.

Results revealed no benefit of IM atipamezole administration following dexmedetomidine in isoflurane-anesthetized cats. Although pulse rate increased significantly over time, there were no differences between groups. A significant decrease in mean arterial pressure with no increase in pulse rate as compared with saline was observed. In addition, treatment with atipamezole resulted in a transient (ie, lasting 15 minutes) but severe hypotension in some cats in both the high- and low-dose groups. The authors proposed that the failure to increase pulse rate and blood pressure was caused by a diminished baroreceptor reflex known to occur with inhalant anesthesia. It is likely atipamezole reversed the analgesia and anesthetic-sparing effects of dexmedetomidine.

… TO YOUR PATIENTS

Key pearls to put into practice:

1. Although atipamezole was ineffective at increasing pulse rate in isoflurane-anesthetized cats following dexmedetomidine administration, the results of this study should not be extrapolated to the reversal of dexmedetomidine in nonisoflurane-anesthetized cats.
2. Administration of atipamezole to isoflurane-anesthetized cats following dexmedetomidine administration shows no clear benefit and may be detrimental, causing transient but severe hypotension with no increase in heart rate.
3. Alternative anesthetic adjuncts should be considered to provide multimodal anesthesia in isoflurane-anesthetized cats, particularly in patients that may not tolerate the hemodynamic effects of α_2 agonists or the consequences of reversal.

References

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