



# Timing May Influence the Pharmacodynamics of Atropine as Pre-Medication

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Dear Editor,

We have read the article by Nishiyama comparing midazolam and hydroxyzine as a pre-medication before the induction of general anaesthesia with great interest. Providing pre-medication to the patient does not only improve patient experience but can also ease the anaesthesiologist's work in managing patient's haemodynamic parameters.

We worry that the author may have overlooked the pharmacodynamics of atropine in the design of the study. Midazolam and atropine (M+A) were injected 15 min before anaesthesia induction, whereas hydroxyzine and atropine (H+A) were injected 30 min before. As per previous literature and this article, 15 and 30 min are reasonable time scales to observe the adequate onset of action of intramuscular midazolam and hydroxyzine, respectively (1, 2). Atropine, on the contrary, may have a more profound action at 30 min than at 15 min. Intramuscular atropine as an anaesthetic pre-medication is often injected 30–60 min in advance (3).

Although not statistically significant with the number of patients in the study (80), H+A group had higher blood pressures, initial high-frequency component and heart rates than M+A group. This difference can be attributed to midazolam or atropine (or a combination of both). This is difficult to determine with the variable injection time of atropine between the groups, especially when the M+A group had only half the recommended pre-medication time. The lack of inhibition of post-intubation sympathetic activation by hydroxyzine observed in this study may as well be due to the sympathetic-vagal imbalance caused by atropine's greater amount of action.

Nishiyama makes an excellent use of heart rate variability as a marker of autonomic activity to compare these drugs; however, we believe atropine injections should have been at the same time. In short, the pharmacodynamics of atropine may matter in this context.

## References

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