Introduction

- Anxiety associated with pediatric surgical procedures can be stressful for patients and parents/guardians.
- Oral midazolam is the most investigated, commonly used, and well-accepted premedication in the pediatric patient.
- However, oral midazolam may not always be effective:
  - Paradoxical reactions to midazolam premedication can be associated with agitation rather than sedation.²
  - Zolpidem is a short-acting nonbenzodiazepine hypnotic drug of the imidazopyridine class that potentiates GABA by binding to the same receptors as benzodiazepines.
  - Good oral availability
  - Quick onset of action (~15 minutes)
  - 2-3 hours duration²

We sought to compare zolpidem to midazolam for pediatric premedication.

Methods

- Departmentally funded, prospective randomized double-blinded clinical trial (NCT02096900), designed to compare the effectiveness of oral midazolam and zolpidem for premedication.
- ASA class I-II pediatric patients between 2 and 9 years old scheduled for surgery of at least 2 hours duration and at least 23 hours postoperative admission were included in the study.
- Exclusion criteria:
  - Any contraindication to preoperative sedation
  - Known allergy or sensitivity to the study medications
  - Lack of legal representative consent
  - Weight >95th percentile or <5th percentile, according to the current CDC growth chart.
- Randomization was done on a 1:1 basis, with 0.5mg/kg midazolam (based on prior investigations in children for premedication)² or 0.25mg/kg zolpidem (based on prior investigations in children for sleep)³ administered orally to the child.
- Sample size was calculated to require 80 participants total.
- The primary outcome measured was the between group difference in patient anxiety at the time of separation using the Modified Yale Preoperative Anxiety Scale (mYPAS).⁴
- Evaluators were trained and inter-observer agreement verified prior to study initiation.
- mYPAS1 is baseline and mYPAS2 is score at separation.
- Secondary outcomes included mYPAS change, Pediatric anesthesia emergence delirium scale (PAED), and mask acceptance at induction.

Results

- There were no significant demographic differences between the groups (Table 1).
- There was no significant between group differences in mYPAS scores at separation (p=0.073), (Table 2).
- When separated into two groups, non-anxious (mYPAS1 <30) and anxious (mYPAS1 >30), there was a significant increase in mYPAS2 in the zolpidem group as compared to midazolam in the anxious group (p=0.027).
- This was not seen in the non-anxious zolpidem and midazolam groups (p=0.175).
- Mask acceptance score were significantly improved in the midazolam treatment arm (p=0.031).
- There was no significant difference between PAED scores among the groups (p=0.437).

Conclusions

- Non-parametric analysis showed no statistical difference in mYPAS scores.
- Further post-hoc analysis delineated a difference in mYPAS scores in those with elevated baseline mYPAS score in the zolpidem treatment arm.
- Our results suggest that patients with elevated initial mYPAS scores (>30) zolpidem was less effective in reducing anxiety compared to midazolam.
- Midazolam acted as expected in both subgroups without a significant increase in mYPAS.

References


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