Preanesthetic medication using oral midazolam in children undergoing tonsillectomy under general anesthesia

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ABSTRACT

Objective
To assess the effectiveness of oral midazolam in sedation of children undergoing tonsillectomy under general anesthesia.

Methods
Sixty patients between the ages of 1 and 6 years were randomly allocated in two groups in this single blind study. After informed consent had been obtained from the parents, patients were randomly allocated to receive either midazolam 0.5 mg/kg mixed with paracetamol syrup or paracetamol syrup alone. Pulse rate, respiratory rate, arterial blood pressure, oxygen saturation and sedative scale were recorded.

Results
Sedation and anxiolysis were achieved after 20 minutes of oral midazolam administration.

Conclusion

Key words
Oral midazolam, sedation, general anesthesia, tonsillectomy
INTRODUCTION

The preanesthetic management of children is difficult. The use of preoperative sedation in this age group may help to decrease anxiety and minimize psychological trauma to child. Midazolam is a short acting benzodiazepine, which has been shown to have anxiolytic, sedative, hypnotic and amnesic properties when used for preoperative sedation by intramuscular, rectal, and oral routes. Some studies suggest that oral midazolam using intravenous formulation mixed with paracetamol may be worth investigating for rapid premedication in children. The purpose of this study was to assess the efficacy of the intravenous formulation of midazolam, given orally, in sedating children before tonsillectomy.

PATIENTS AND METHODS

Sixty children between 1 and 6 years of age presenting for tonsillectomy with or without adenoidectomy under general anesthesia were included in this study. All were healthy ASA class1 children. Doses of 0.5 mg/kg of midazolam iv formulation (dormicum) mixed with paracetamol syrup to improve the taste of midazolam were used. The study was approved by the local Ethics Committee. An informed consent was obtained from parents and patients were randomly allocated to receive either midazolam 0.5 mg/kg mixed with 20mg/kg paracetamol commercially prepared as 125 mg/5ml (group m, n=30) or same dose of paracetamol alone (group p, n=30). Randomization was performed as follows: Envelopes with letters p and m written on equal size papers was drawn; if letter p was drawn the patient was allocated to group p and if letter m was drawn the patient allocated to group m. The investigators remained unaware of the premeditation type.

Five points sedation scale was devised prior to the study: Agitated, i.e., clinging to parent and / or crying, Alert, i.e., a wake but not clinging to parent, Calm, i.e., sitting or lying comfortably with eyes spontaneously open, Drowsy, i.e., sitting or lying, comfortably with eyes closed but responding to minor stimulation and Asleep, i.e., eyes closed and not responding to minor stimulation.

Sedation scale, heart rate, respiratory rate measurements were recorded immediately before the drug was administered and at 20 and 30 minutes after drug administration. The induction technique was same in both groups. All data were analyzed using chi-square tests and p< 0.05 were considered significant.
RESULTS

Both study groups were comparable in respect to age and weight. Significant changes in sedation occurred in the midazolam group after 20 and 30 minutes of administration (Table 1 and 2).

Table 1. Changes in sedation level following oral midazolam with paracetamol and paracetamol alone at 20 minutes after administration.

<table>
<thead>
<tr>
<th>Group</th>
<th>Agitated</th>
<th>Alert</th>
<th>Calm</th>
<th>Drowsy</th>
<th>Asleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam N=30</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>paracetamol N=30</td>
<td>12</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Heart rate and respiratory rate did not change during the study period in any of the groups.

Table 2. Change at 30 minutes.

<table>
<thead>
<tr>
<th>Group</th>
<th>Agitated</th>
<th>Alert</th>
<th>Calm</th>
<th>Drowsy</th>
<th>Asleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam N=30</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>paracetamol N=30</td>
<td>20</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Percent oxygen saturation remained stable throughout the study period. There was no difference in duration of anesthesia or preoperative or post-operative narcotic administration between the groups. The time which was required to spontaneous eye opening post operatively was 10-15 minutes, and time for discharge from recovery room was 28-50 minutes, which was similar in both groups.

DISCUSSION

This study demonstrated that oral midazolam was an effective sedative and anxiolytic in children. Children, aged 1 to 6 years, were chosen for this study because this age
group is affected mostly by separation from parents and are the most suffered from anxiety and stress. We chose to add paracetamol to midazolam to make use of its analgesic properties.

A significant modification of behavior was evident with drug by 20 minutes during separation from their parents. Several studies have suggested that midazolam is an effective premedication for children when administered either intramuscularly, rectally, intranasal, or orally. Out of all drugs used as premedication, midazolam given orally has gained the most popularity in the children, as it gives smooth reliable sedation and greatly facilitate good anesthetic practice. It is the most commonly used premedication in children in the United States currently.

CONCLUSION

This study has shown that a formulation of midazolam was a satisfactory sedative for premedication in children.

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REFERENCES

6. Shrestha S, Shrestha BR. Oral administration of intravenous solution of midozolam mixed in syrup of paracetamole is an effective way of
premedicating children undergoing surgery under general anesthesia.

7. Roelofse JA, Van der Bij P, Stegmann DH, Hartshorne JF. Preanesthetic
medication with rectal midazolam in children undergoing dental extractions. J.

and behavioral effects of oral and intranasal midazolam in pediatric dental

Perioperative effects of oral midazolam premedication in children undergoing
skin laser treatment. A double-blinded randomized placebo-controlled trial.

presence during induction of anaesthesia versus sedative premedication:
Which intervention is more effective? Anesthesiology 1998;89:1147-56.