ORIGINAL ARTICLE

PONV-A COMPARATIVE STUDY OF METOCLOPRAMIDE ALONE AND WITH DEXAMETHASONE IN STRABISMUS SURGERY

Dr M Shafique Tahir *, Dr M Yousaf Bandesha **, Dr Aftab Haider *, Dr Muhammad Masood *, Dr Salman Waris ***

ABSTRACT

Objective: To determine the efficacy of intravenous metoclopramide alone and in combination with dexamethasone in preventing postoperative nausea and vomiting (PONV) in patients undergoing strabismus surgery.

Study Design: Single blinded, randomized, interventional study.

Place and Duration of Study: This study was conducted in the department of Anaesthesiology at Nishtar Hospital, Multan from October 2005 to October 2006.

Patients and Methods: After the approval of the hospital's ethical committee, the study was conducted on 60 patients who were randomly divided into two groups, each group containing 30 patients. All of the patients were between 2-14 years of age and were A.S.A-I. Randomization was done by envelope draw method. The patients received either metoclopramide 150 μg/kg or dexamethasone 150 μg/kg with metoclopramide 150 μg/kg combination IV, 30 minutes before the induction of anesthesia. General anesthesia was induced with thiopentone sodium, nalbuphine, succinylcholine and maintained with isoflurane and N₂O + O₂ in both groups. PONV were evaluated postoperatively.

Results: Patients in group II who received metoclopramide plus dexamethasone experienced significantly less PONV during the first 24 h after surgery.

Conclusion: In this study, a single dose of metoclopramide plus dexamethasone (150 μg/kg of each drug) produced better antiemetic effects after strabismus surgery than metoclopramide alone.

KEYWORDS: PONV, dexamethasone, metoclopramide, strabismus surgery.

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INTRODUCTION

Postoperative nausea and vomiting (PONV) is among the most unpleasant experiences associated with anaesthesia and surgery.1,2 Popularly referred to as the “Big Little Problem”, PONV complication ranges from mild discomfort to frank vomiting leading to aspiration of gastric contents and death. Per-
PONV-Competitive Study

Persistent nausea and vomiting can lead to dehydration and nutrition problem. Extremely forceful vomiting may also lead to the wound rupture and rupture of esophagus. There are certain factors that can predispose the patients to PONV. These include young age, female gender, obesity, prolonged fasting, recent food intake, history of previous nausea and vomiting, history of motion sickness, long duration and depth of anesthesia, CO₂ retention, rough handling, and the type of surgical procedure. Patients having strabismus surgery, who are not given prophylaxis, are frequently exposed to increased risk (40-85%) of postoperative nausea and vomiting. The risk factors are intraoperative use of volatile anaesthetic, opioids, and postoperative pain. A number of agents have been tried to decrease the incidence of PONV. Currently, 5HT₁ antagonist such as ondansetron and graniandetron are the most popular. However, their cost becomes one of the drawbacks especially in public sector hospitals. Some cost effective antiemetics like metoclopramide have also been shown to be effective and safe drug for both prevention and treatment of post-operative nausea and vomiting. Although this drug is effective in reducing nausea, and vomiting, it has side effects of its own, including acute dystonia, parkinsonism, malignant neuroleptic syndrome and catatonia in some patients. Therefore it is advisable to find a method for using a smaller dose which would not induce such complications. Dexamethasone has been used as an antiemetic for more than 20 years in patients undergoing chemotherapy with limited side effects. Dexamethasone in a dose of 8-10 mg can prevent PONV after various surgical procedures associated with high incidence of PONV. Further, the antiemetic effect of dexamethasone is reported to be equal to or better than 5HT₁ receptor antagonists. The exact mechanism of preventing PONV by dexamethasone is not known but probably prostaglandin antagonism, serotonin inhibition in gut, release of endorphins and its anti-inflammatory membrane stabilizing effect may be the cause of its antiemetic effect. A single dose of dexamethasone has been considered to be safe. Strabismus corrections are being widely performed at Nishtar Hospital, Multan. However, there is no local study that documents the effectiveness of dexamethasone in prevention of PONV. This study was designed in pediatric patients undergoing strabismus surgery to compare the efficacy of preoperative administration of metoclopramide plus dexamethasone for lowering the incidence and severity of PONV in reduced dosage.

PATIENTS AND METHODS

This study was conducted in the Department of Anaesthesiology, Nishtar Hospital, Multan, from October 2005 to October 2006. It was a prospective, single blinded, randomized, interventional study.

Written informed parental consent was obtained in all cases. 60 children, 2-14 years of age, ASA physical status I, who were scheduled for ambulatory strabismus surgery, were enrolled in the study. Children who received antiemetics, steroids or had a preoperative history of motion sickness were excluded. The patients were divided randomly into two groups to receive metoclopramide 150 μg/kg alone or dexamethasone plus metoclopramide (150 μg/kg of each drug) in a double blind fashion from coded syringes of 3 ml IV, 30 minutes before the induction of anesthesia. After establishing standard monitoring, general anesthesia was induced with nalbuphine 0.1 mg/kg, thiopental Na 6 mg/kg and succinylcholine 2 mg/kg and maintained with 50% N₂O in oxygen and 1 MAC of Isoflurane. Muscle relaxation was obtained using atracurium. No other intraoperative and postoperative drugs were permitted. Patients were visited 1, 2, 4, 6, 12, 18 and 24 hours after operation by one of the investigators blinded for the type of intervention for data collection, any episode of PONV during the preceding period was noted. The data were analyzed by using students’ t-test for parametric data and the Mann Whitney U-test or 2 tests for non-parametric data, with a p value < 0.05 regarded as significant.
RESULTS

There were no significant differences between the two groups with respect to age and gender distribution. (Table 1)

<table>
<thead>
<tr>
<th>Table 1: Demographic data</th>
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<tbody>
<tr>
<td>Group I</td>
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<tr>
<td>Metoclopramide (n = 30)</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>7+2.2 years</td>
</tr>
<tr>
<td>Gender</td>
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<td>18</td>
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</tbody>
</table>

n = No. of patients
PONV = Post operative nausea and vomiting

In the first 6 hours of postoperative observation period, significantly less PONV occurred in the metoclopramide plus dexamethasone group. Only 3 (10%) patients experienced any nausea or vomiting in group II (metoclopramide plus dexamethasone), versus 10 (30%) in metoclopramide group. In next post operative period again the incidence of PONV remained less in metoclopramide plus dexamethasone group in 2 (6.6%) in Group-II vs. 3 (10%) in Group-I (p=0.046). In initial 24 hours post operative period the incidence of PONV was significantly less. Only 7 (23.3%) patients experienced any nausea or vomiting in group II (metoclopramide plus dexamethasone), versus 17 (56.7%) in metoclopramide group. (Table 2)

<table>
<thead>
<tr>
<th>Table 2: Incidence of PONV</th>
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<tbody>
<tr>
<td>Group I</td>
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<tr>
<td>Metoclopramide (n = 30)</td>
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<tr>
<td>P-Value</td>
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<tr>
<td>PONV 0-6 Hours</td>
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<tr>
<td>7-12 Hours</td>
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<td>13-24 Hours</td>
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<td>Total PONV</td>
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DISCUSSION

Patients undergoing ambulatory anesthesia for strabismus surgery are at high risk of developing PONV. To minimize PONV anesthesiologists have focused primarily on anesthetic techniques with minimal emetic potential and on the administration of different antiemetic drugs or combination of these. We did not find any reports about using the combination of metoclopramide and dexamethasone versus dexamethasone or metoclopramide on the incidence of vomiting after strabismus surgery in children. In a prospective, randomized, double-blind study Pappas et al. found that dexamethasone had significantly decreased the incidence of PONV in the 48 hours after discharge in children undergoing adenotonsillectomy. In a similar investigation Liu et al. too, found that dexamethasone was effective in reducing the overall incidence of vomiting from 63.3% to 20% (p<0.01). On the other hand Splinter et al. had reported that low dose ondansetron with dexamethasone more effectively decreased vomiting after strabismus surgery in children than high dose ondansetron alone. Whiles Goedhals et al. reported that granisetron plus dexamethasone did not appear to confer an additional benefit over use of dexamethasone alone in controlling delayed nausea and vomiting following cisplatin chemotherapy. PONV is a multifactorial problem and several anesthetic and non-anesthetic factors must be standardized to examine the antiemetic potential of any specific drug. In the present study, the anesthetic technique, amount of IV hydration, narcotic analgesic dose and antiemetic therapy were standardized. Data from the present study indicate that in children undergoing ambulatory strabismus surgery, a single combination dose of IV dexamethasone plus metoclopramide (150 mg/kg of each drug) 30 minutes before the induction of anesthesia decreased PONV during the first 24 hours period after operation. Complications from corticosteroid therapy are typically related to its long term use and risks of steroid therapy of less than 24 hours duration are negligible.
CONCLUSION

In conclusion, a single dose of metoclopramide plus dexamethasone (150 µg/kg of each drug) produces better antiemetic effects after strabismus surgery than metoclopramide alone and may be used without fear of untoward side effects.

REFERENCES

21. Splinter WM, Rhine EJ. Low dose ondansetron with dexamethasone more effectively decreases vomiting after strabismus surgery in children than high dose


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