Short Article

COMPARISON OF METOCLOPRAMIDE, DEXAMETHASONE AND THEIR COMBINATION FOR PREVENTION OF POSTOPERATIVE NAUSEA AND VOMITING IN STRABISMUS SURGERY

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SUMMARY: The effect of a single preoperative intravenous (iv) administration of metoclopramide, dexamethasone, metoclopramide plus dexamethasone or placebo on the reduction of postoperative nausea and vomiting (PONV) after strabismus surgery was evaluated in 132 patients, 2-14 years of age, ASA (American Society of Anesthesiologists) physical status 1, undergoing strabismus surgery using a randomized, double blind, placebo controlled protocol.

The patients received either metoclopramide 150 μg/kg, dexamethasone 150 μg/kg, combination of them or the same volume of isotonic sodium chloride solution IV, 30 minutes before the induction of anesthesia. General anesthesia was performed with thiopental of Na, fentanyl, succinylcholine and maintained with halothane and N_2O in all groups.

PONV were evaluated postoperatively. Patients in group III who received metoclopramide plus dexamethasone experienced significantly less PONV during the first 24 h after surgery.

In conclusion, a single dose of metoclopramide plus dexamethasone (150 μg/kg of each drug) seemed to produce better antiemetic effects after strabismus surgery than metoclopramide or dexamethasone alone.

Key Words: PONV, dexamethasone, metoclopramide, strabismus surgery.

INTRODUCTION

Postoperative nausea and vomiting (PONV) are the most common complications observed in patients who may also experience discomfort, and rarely pulmonary aspiration syndrome, are often multifactorial in origin causing prolonged stay in the Post Anesthesia Care Unite (PACU). The type of surgical procedure has an important influence on the occurrence of these complications.

Patients having strabismus surgery, who are not given prophylaxis, are frequently exposed to increased risk (40-85%) of postoperative nausea and vomiting (1). Several antiemetic drugs are being used pre- or postoperatively. Metoclopramide has also been shown to be an effective and safe drug for both, prevention and treatment of postoperative nausea and vomiting (2). Although this drug is effective in reducing nausea, and vomiting, it can produce other side effects including acute dystonia, parkinsonism, malignant neuroleptic syndrome and catatonia in some

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Table 1: Demographic characteristics of patients in their respective group.

Groups	Sex*		Age*
	M	F	Mean ± SD
G1 (Metoclopramide) N= 33	15	18	6.9 ± 1.9
G2 (Dexamethasone) N= 33	12	21	7.3 ± 2.1
G3 (Metoclopramide + Dexamethasone) N= 33	13	20	7.6 ± 2.4
G4 Placebo (NaCl 0.9%) N= 33	14	19	7.1 ± 2.3

*There were no statistically significant differences between these variables among the study groups (p>0.05).

patients (3). Therefore it is advisable to find a method using a smaller dose which would not induce such dire complications. On the other hand several investigators have shown that glucocorticoids are effective as antiemetic drugs after surgical procedures (4-8,11,12).

Meanwhile we did not find any controlled clinical study performed to compare the efficacy of preoperative administration of metoclopramide plus dexamethasone for lowering the incidence and severity of PONV so this study was designed in pediatric patients undergoing strabismus surgery to compare this efficacy.

MATERIALS AND METHODS

This study was approved by our regional ethics committee and written informed parental consent was obtained in all cases.

132 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 gave a preoperative history of motion sickness were excluded.

The patients were divided randomly into four groups to receive either metoclopramide 150 μg/kg, dexamethasone 150 μg/kg, dexamethasone plus metoclopramide (150 μg/kg of each drug) and placebo in a double blind fashion from coded ampules, of 3 ml IV, 30 minutes before the induction of anesthesia.

After establishing standard monitoring general anesthesia was induced with Fentanyl 2 μg/kg, Thiopental of Na 6 mg/kg and Succinylcholine 2 mg/kg and maintained with 50% N_2O in Oxygen and 1 MAC of Halothane (0.78% of Halothane).

Muscle relaxation was obtained using Atracurium. No other intraoperative and postoperative drugs were permitted.

Patients were visited 6, 12, 18 and 24 hours after operation by one of the investigators blinded for the type of intervension for data collection, any episode of PONV during the preceding hour was noted. We conducted a non-blind pilot study with the result that after preoperative administration of metoclopramide plus dexamethasone the incidence and severity of PONV decreased.

With regard to this study after power analysis, a sample size of 33 patients per groups was considered to be necessary to detect a significant difference in the incidence and severity of PONV after strabismus surgery.

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. All data presented as mean ± SD or count (%).

RESULTS

132 patients (33 per group) were included in the study. There were no significant differences between the four groups with respect to age, gender distribution and duration of anesthesia (Table 1).

In the 6 to 24 hours postoperative observation period, significantly less PONV occurred in the metoclopramide plus dexamethasone group. Only 2 (6.1%) patients experienced any nausea or vomiting in group 3 (metoclopramide plus dexamethasone), versus 6 (18.2%) in metoclopramide group, 9 (27.3%) in dexamethasone group and 10 (31.2%) in placebo group, and also there was a significant difference between placebo and metoclopramide (p<0.05), but we did not find any significant differences between placebo and dexamethasone groups (p>0.05).

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 administrations of different antiemetic drugs or combination of them (8-16).

On the other hand 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. (11) found that dexamethasone had significantly decreased the incidence of PONV in the 24 hours

after discharge in children undergoing adenotonsillectomy. In a similar investigation Liu *et al.* (7) also 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.* (5) had reported that low dose ondansetron with dexamethasone more effectively decreased vomiting after strabismus surgery in children than high dose ondansetron.

Whiles Goedhals *et al.* (15) had 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 risk of steroid therapy of less than 24 hours duration are negligible (5).

Further controlled studies, however, are necessary to verify this study.

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