TITLE: METOCLOPRAMIDE REDUCES THE INCIDENCE OF VOMITING FOLLOWING STRABISMUS SURGERY IN CHILDREN

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Nausea and vomiting are common following general anesthesia and surgery. There is an increased incidence of postoperative vomiting in pediatric patients undergoing strabismus surgery regardless of the anesthetic techniques utilized. Vomiting during the immediate postoperative period is dangerous because of increased risks of aspiration, dehydration and electrolyte imbalance. Furthermore, when nausea and vomiting persist postoperatively, discharge from the ambulatory surgical unit may be significantly delayed. The purpose of this study was to evaluate the efficacy of metoclopramide administered prophylactically as an antiemetic agent in pediatric ambulatory patients undergoing strabismus surgery.

METHODS: Permission to conduct this randomized double blind study was obtained from the institutional review board. Informed consent was obtained from the parents of 86 ASA PS I and II children ages 2 to 18 years who were having elective strabismus surgery performed on an ambulatory basis. Patients predisposed to nausea and vomiting secondary to gastrointestinal reflux, gastroparesis, motion sickness, inner ear and central nervous system disorders were excluded. None of the children received any preoperative medication. Following the induction of general anesthesia with either intravenous thiamylal or mask halothane, N_2O and O_2, all children received prophylactic intravenous atropine 0.02 mg/kg (maximum dose 1.0 mg). Anesthesia was maintained with endotracheal N_2O, O_2 and halothane. Neither intraoperative narcotics nor droperidol were given to any patient. An intravenous bolus of lactated ringers with 5% dextrose corresponding to 4 hours of maintenance fluids was infused during each case. The stomach was decompressed prior to extubation. Upon arrival in the post anesthesia recovery room (PARR), and after it had been determined that the patient was stable, 0.1 ml/kg. of either metoclopramide 1.5 mg/ml or normal saline obtained from a coded vial were administered intravenously over a 1 minute period.

In PARR and the short stay recovery unit (SSRU) a research associate who was independent the nursing team monitored the children for the incidence of vomiting from the time of admission to PARR until discharge from SSRU. Vomiting was defined as the expulsion of 15 ml or more of gastric contents. The incidence of vomiting as well as the time required for them to meet the standard discharge criteria was noted for each child.

The efficacy of metoclopramide to significantly reduce vomiting was determined by sequential testing; sequential untied patient pairs, one receiving metoclopramide and the other placebo, were compared for vomiting vs. no vomiting. In addition, the Wilcoxon's test was used to determine differences between discharge time for the metoclopramide and placebo groups as well as for children vomiting or not vomiting regardless of their treatment modality.

RESULTS: Forty-three sequentially untied patient pairs were studied (n = 86). The incidence of postoperative vomiting in the metoclopramide group was 41% vs. 60% in the placebo group. This difference in the incidence of vomiting is statistically significant ($p < 0.05$). The time required for metoclopramide children to meet standard discharge criteria was 212.5 $\pm$ 10.8 min (range 100-425) while that for controls was 247.3 $\pm$ 11.7 min (range 135-480). The difference in the time required to meet discharge criteria is statistically significant ($p < 0.02$). There were no adverse reactions to either metoclopramide or placebo. More importantly, none of the children who received metoclopramide appeared to be drowsy or sedated. Finally, of the treatment modality, children who vomited required 275.9 $\pm$ 11.5 min to meet SSRU discharge criteria, while nonvomiters only required 185 $\pm$ 6.4 min ($p < 0.0001$).

DISCUSSION: We have shown that metoclopramide with its unique effects upon gastric motility and resting lower esophageal sphincter tone as well as its central anti-emetic properties, significantly reduces the incidence of postoperative vomiting in children undergoing ambulatory strabismus surgery. Although droperidol has been shown in previous studies to be effective in preventing vomiting, the dose required (75 mcg/kg) caused marked postoperative sedation.[1] Metoclopramide (0.15 mg/kg) did not produce drowsiness or any other adverse side effect. The time required to meet standard discharge criteria was significantly shorter in the group receiving metoclopramide when compared with matched controls. Metoclopramide appears to be the anti-emetic agent of choice for pediatric ambulatory strabismus surgery.

REFERENCES:

1. Abramowitz MD, Oh TH, Epstein BS et al: The antiemetic effect of droperidol following outpatient strabismus surgery in children. Anesthesiology 59:579-583, 1983.