Title : Antiemetic Effectiveness of Intraoperatively Administered Droperidol in Pediatric Strabismic Outpatient Surgery

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All types of surgical procedures are occasionally followed by nausea and vomiting; however the frequency of emesis seem to be particularly high after ophthalmic surgery[1]. Vomiting in the postoperative period is dangerous because of the risk of aspiration, dehydration, electrolyte imbalance, and ophthalmic wound contamination. Persistent vomiting may also delay discharge from the hospital of the surgical outpatient. In studies of adult and pediatric surgical patients droperidol has been shown to be an effective antiemetic, when administered in usual(0.1mg/kg) and low(0.01-0.05mg/kg)doses; however, its use in short stay patients has been questioned because of the potential undesirable effect of prolonged drowsiness[2]. A controlled, double blind study was designed to evaluate the effectiveness of low dose droperidol in preventing vomiting in pediatric short stay patients undergoing strabismus surgery.

Methods. Fifty ASA Class I patients between the ages of 2 and 18 years were studied. Twenty-five patients were assigned randomly to one of the two study groups. One group received 0.05mg/kg droperidol intravenously from a coded ampule one half hour prior to termination of anesthesia; the other,saline. Informed consent was obtained. Patients fasted appropriately for their age. No patient received atropine or any other preoperative medication. All patients had anesthesia induced and maintained with nitrous oxide, oxygen, and halothane. Tracheal intubation was performed under deep anesthesia without muscle relaxants. All patients had phenylephrine 2% drops instilled in the eye immediately prior to surgery. Some received antibiotic eye ointment at the conclusion of surgery. Dextrose 5% and $1/3$ normal saline was given intravenously during and after surgery until oral fluids could be retained. Gastric contents were aspirated after intubation and prior to extubation. Tracheal extubation was performed under deep anesthesia. Postoperative observations were made in a blind manner by 2 trained nurse practitioners. At the conclusion of surgery, patients were admitted to a post anesthesia recovery room(PARR)until the Aldrete[3] score of 10 was obtained. They were then transferred to a hospital room where observations continued and data were collected at half hour intervals for a maximum of 8 hours of elapsed time from entry into the PARR. Patients were sent home when discharge criteria were met. The criteria included evaluation of motor activity, state of consciousness, stability of vital signs, and ability to tolerate oral fluids. Severity of vomiting was calculated by noting its presence or absence during each observation period. The total number of intervals in which vomiting occured was divided by the number of observation periods. This was used to calculate the Emesis Severity Index(ESI).

Results. An Aldrete score of 10 was attained in all patients in the PARR within 1 hour. All except 1 patient met discharge criteria and were sent home within 7 hours after termination of anesthesia. The single exception was a patient in the placebo group who was the first study patient, had a scleral perforation,received cryosurgery, had protracted vomiting, and was kept in the hospital overnight. Two patients in the placebo group had severe vomiting in the hospital room and were treated with intravenous droperidol 0.05mg/kg. No other patients received the drug postoperatively. The overall prevalence of vomiting in the placebo group was 20 of 25 patients(80%). In the droperidol group it was 14 of 25 patients(56%). The difference was not statistically significant. The frequency and severity of vomiting was similar for both groups in the PARR. The placebo group had more severe vomiting in the period after discharge from the recovery room than the treatment group. A p value of .13 was determined when the ESI in the hospital room for the 2 groups was compared by Student's t Test. It must be emphasized that 2 patients, both in the placebo group, had such severe vomiting that according to the prospective protocol, required therapeutic administration of droperidol. Both required treatment 135 minutes after anesthesia was terminated. Vomiting ceased at 15 minutes in one and 45 minutes in the other. Then, both patients tolerated oral fluids and were discharged from the hospital within 105 minutes of treatment. Patients in the droperidol group were discharged 38 minutes earlier than the placebo group: ((average post anesthesia recovery time-treatment group, 3.2 hrs; placebo group, 3.9 h ($p > 0.05$)). Age, sex, and prior muscle surgery did not correlate with the occurence of emesis. Postoperative pain, sedation, excitement, and anxiety did not differ significantly between groups. No side effects of the drug were noted in the treatment group.

Discussion. Droperidol was not shown to be an entirely satisfactory antiemetic drug when used in a dose of 0.05mg/kg prior to termination of anesthesia. Better results may have been produced if a higher dose had been used. In the short stay patient the finding that there was no drug induced somnolence which might have prolonged hospitalization is an important observation. In fact, the treatment group recovered more rapidly. This study group has proven to be ideal for the investigation of vomiting and its prevention. By using one operative procedure, one anesthetic technique, no premedication, and one antiemetic agent in a limited aged population, we have controlled a large number of variables. Clinical experiments are planned to investigate the effects of a higher droperidol dose. Ideally, a further reduction in the severity and frequency of vomiting will be achieved without an increase in somnolence.

References.

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