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OPEN CHOLECYSTECTOMY;

MANAGEMENT OF PONV: COMPARISON OF SUB HYPNOTIC DOSE OF PROPOFOL vs METOCLOPRAMIDE

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ABSTRACT... Background: Postoperative nausea and vomiting (PONV) are most common and distressing complications after anaesthesia and surgery, leading to various problems. Metoclopramide, a benzamide, used as an anti-emetic, has got various side-effects. Propofol, a short acting induction agent, possesses anti-emetic properties in sub hypnotic doses, without having unwanted side- effects in this low dose. **Objectives:** To compare the frequency of PONV in patients treated with propofol and metoclopramide. **Study Design:** Experimental study. **Setting:** Department of anaesthesia and intensive care, Combined Military Hospital Rawalpindi. **Duration:** 06 months (01st July to 31st December 2004). **Materials and Methods:** 182 female patients scheduled for open cholecystectomy were selected for this study. All of them received general anaesthesia without any prophylactic antiemetic. Out of them, 60 patients who complained of PONV in post anaesthesia care unit (PACU) were selected by non probability convenience sampling and were equally divided into two groups. Group 'A' received propofol (0.5 mg/kg) while group 'B' received metoclopramide (0.2 mg/kg). Recurrence of PONV was recorded 60 min after administration of the study drug. Patients still complaining of PONV 30 min after administration of the study drug received a rescue medication i.e. I/V ondansetron (4mg). **Results:** In group "A",18 patients responded to intervention (60%) whereas 26 (86.66%) patients gave a positive response in group "B" (p 0.020). More patients who received propofol needed the rescue medication (40%) than those who received metoclopramide (13.33%) (p 0.020). **Conclusion:** Metoclopramide is a better option for managing PONV than propofol.

Key words: PONV, Propofol, Metoclopramide.

INTRODUCTION

Post operative nausea and vomiting (PONV) is among the commonest and most unpleasant experiences for patients during anaesthesia and surgery[1,2,3]. It not only leads to poor patient satisfaction, but can also cause tension on suture lines, bleeding, wound dehiscence, subcutaneous emphysema, bilateral pneumothoracis, venous hypertension, esophageal tears and rupture, rib fractures, gastric herniation, and muscular fatigue. PONV can also increase the risk of pulmonary aspiration of vomitus and can result in dehydration and electrolyte imbalances, particularly in pediatric patients. It is a major contributing factor to increased costs for both the hospital and patient[4,5,6].

Causes of PONV include pharyngeal stimulation, abdominal surgery, gastrointestinal distension, anaesthetic agents, vestibular disturbances,

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pain, opioids, hypoxia, hypotension, psychological factors etc.

Risk factors of PONV include childhood, female sex, obesity, recent food intake, history of previous nausea and vomiting, motion sickness, type of surgical procedure, long duration of anaesthesia, N_2O administration, CO_2 retention, rough handling etc[8,9].

Many pharmacological agents are available for management of PONV which fall under various classes. Metoclopramide is a dopamine (D_2) antagonist having antiemetic properties and has been used successfully for prevention and treatment of various types of vomiting including PONV. Like all other antiemetics, metoclopramide also has certain adverse effects, which include extrapyramidal reactions (oculogyric crisis, opisthotonus, trismus, torticollis),abdominal cramping, sedation, dizziness and cardiac dysrhythmias[9,10]. Tachycardia, weakness, subcutaneous emphysema, epistaxis, hypotension, eye disturbances, pruritis, itching, delirium emergens, dry mouth and taste or smell disturbances are some of the other side effects that have been reported[11].

Propofol is a rapid onset and short acting induction agent associated with low incidence of early PONV[12]. Most probably, propofol has significant direct antiemetic properties[13] and it may involve dopamine D_2 receptor blockade at the chemoreceptor trigger zone[14]. In 1997, Borgeat demonstrated that propofol at subhypnotic doses does not interact with the dopaminergic system[15]. Barann et al studied the influence of intravenous anaesthetics at the 5- hydroxytryptamine ($5\text{-}HT_3$) receptor and found that among the general anaesthetics examined, propofol was the most potent non competitive inhibitor of this receptor[16]. Further studies are obviously needed to explain the mechanism of propofol's antiemetic actions[15].

MATERIALS AND METHODS

This study was undertaken in post anaesthesia care unit (PACU) in the Department of Anaesthesia and Intensive Care, Combined Military Hospital Rawalpindi after approval from hospital ethics committee. 182 patients scheduled for open cholecystectomy were selected according to the following inclusion criteria:

- Patients aged between 30 and 45 years.
- Female sex.
- ASA grade I and II.

Following were the exclusion criteria:

- Patients with history of allergy to propofol or metoclopramide.
- Patients with history of motion sickness.
- Patients receiving any anti-emetic medication within 24 hours before surgery.
- Operations lasting for more than two hours.

All the patients were anaesthetized by intravenous thiopentone (5 mg/kg). Myorelaxation was provided by pancuronium bromide (0.08 mg/kg). Anaesthesia was maintained with 0.6-1 % halothane and 50-60% N_2O in O_2, administered via bain circuit and intravenous pethidine (1mg/kg) was used for analgesia. No prophylactic anti-emetic was given.

Post operatively in the recovery room patients were assessed by the PACU nurse, who was double blinded to the study. Patients complaining of nausea retching or vomiting within first one hour after the surgery were divided into two groups. Each group was given one of the study drugs. Recurrence of symptoms was recorded 60 minutes after administration of study drugs. Patients still complaining of post operative nausea, retching or vomiting 30 minutes after administering the drugs were given rescue medication i.e. I/V ondansetron.

This was prospective study of six months duration. A proforma was filled for every patient. Data was entered into SPSS version 10. Frequency (percentage) was calculated for symptomatic response to administration of study drugs and was compared using chi square test.

RESULTS

Out of the 182 patients, those 60 patients who complained of PONV in PACU were divided evenly into two groups, namely "A" and "B". Group "A" was treated with propofol and Group "B" was treated with metoclopramide. No patient was dropped out at any stage of the study. Following were the results. Mean and standard deviation of age of patients in both groups was calculated and then compared using independent sample T-test. Results were, t = 0.106, and p 0.91, which was statistically insignificant (Table-I). So the age difference between two groups was statistically insignificant and could not have a significant impact on the results of the study.

Table-I. Comparison of mean age between group 'A' and 'B'

Group	Age (mean ± SD)
A (n = 30)	37.93 ± 5.17
B (n = 30)	37.80 ± 4.83 *
** t = 0.106, p 0.91 (non-significant)*	

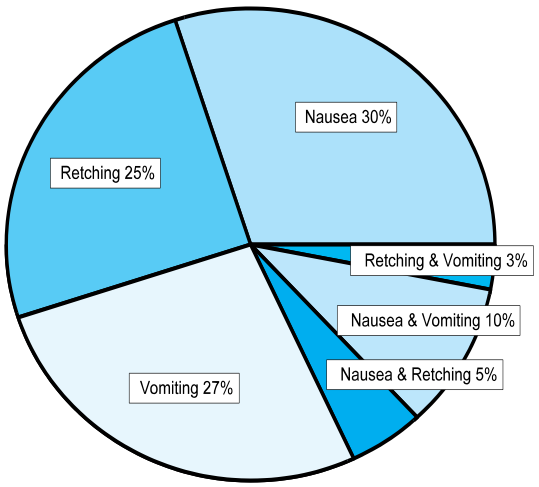
Out of the 60 patients, 18 had nausea, 15 retching, 16 vomiting, 3 both nausea and retching, 6 nausea and vomiting and 2 had retching and vomiting (Table-II & Figure-1).

Table-II. Number of symptomatic cases occurring in Recovery Room (Used to Include the Patients in the study).

Symptoms	No. of cases
Nausea	18
Retching	15
Vomiting	16
Nausea+Retching	03
Nausea+Vomiting	06
Retching+Vomiting	02

In group "A" only 18 patients responded whereas 26 patients in group "B" gave positive response to intervention (Table-III).

Fig-1. Percentage of symptoms of patients in recovery room.



Success rate was 86.66% in group "B" whereas it was only 60% in group "A", so need of rescue medication was found to be higher i.e. 12 patients (40%) in group "A" than in group "B" i.e. 4 patients (13.33%) (p 0.020) (Table-IV).

Table-III. Comparison of groups "A" & "B" regarding persistence/ non persistence of symptoms after drug administration.

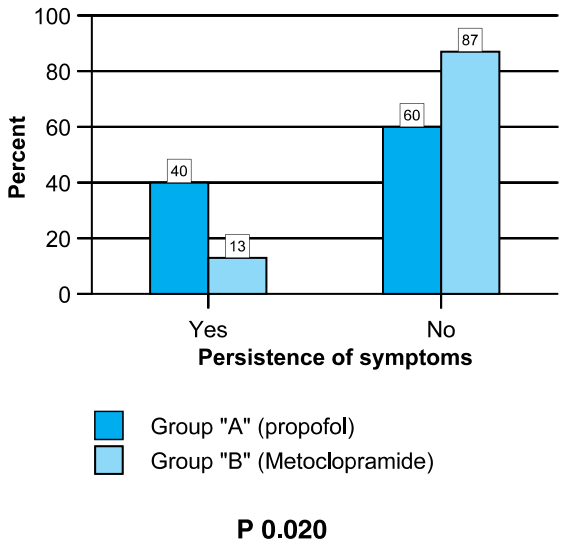
Groups	Total No. of Pts.	No. of Pts. Symptoms	No. of Pts. without persistent symptoms
Group "A"	30	12	18*
Group "B"	30	04	26
**Chi-square = 5.455 df = 1 P 0.020*			

DISCUSSION

Post operative nausea vomiting comprises of three signs and symptoms, which include nausea, a subjectively unpleasant sensation associated with the feeling of the urge to vomit, vomiting, the actual forceful expulsion of gastric contents from the mouth, and retching, which is laboured, spasmodic, rhythmic contraction of the respiratory muscles without expulsion of gastric contents.

Table-IV. Comparison of patients in groups "A" and "B" receiving / not receiving rescue mediation		
Rescue Medication	**Group 'A'**	**Group 'B'**
Given	12	04*
Not Given	18	26
** Chi-Square = 5.455 df = 1 P 0.020*		

Fig-2. Comparison of percentage of patients having persistent symptoms between group "A" (Propofol) and "B" (Metoclopramide).



All these signs and symptoms may or may not be seen in a single episode of PONV and can last from minutes to hours or even days.

A large number of treatment options are available which have been compared a number of times, but results have been affected by confounding factors. These factors include inadequate sample sizes, heterogeneous patient populations, inconsistent doses and timing of administration of antiemetics, incomplete assessment of nausea, vomiting, and retching[17].

General anaesthesia with propofol has been found to be associated with less incidence of PONV when compared with other anaesthetics or anaesthetic techniques. Borgeat et al, in 1992, demonstrated that propofol possesses direct antiemetic properties at subhypnotic doses. Ewalenko in 1996 compared the antiemetic efficacy of subhypnotic doses of propofol with intralipid as placebo. They found that propofol at subhypnotic doses effectively reduces the incidence of PONV without undesired sedative or cardiovascular effects. Gan in 1999 concluded that propofol is effective in managing post operative nausea vomiting with shorter PACU stay and great degree of patient satisfaction. Numazaki, in 2000, concluded that propofol is effective for nausea and vomiting in patients undergoing caesarean section under spinal anaesthesia. Although the antiemetic properties of propofol have been demonstrated but studies were needed to compare the efficacy of propofol with other established antiemetics like metoclopramide, droperidol and ondansetron for management of PONV. We therefore compared the efficacy of sub-hypnotic dose of propofol as antiemetic, with metoclopramide.

Our study included female patients scheduled for open cholecystectomy under general anaesthesia. Those patients were selected who complained of nausea, vomiting or retching in immediate post-operative period. This study found that frequency of PONV was more in patients managed with propofol than in those treated with metoclopramide. Among those patients who were given propofol, 40% had persistence of their symptoms as compared to only 13.33% of those who were administered metoclopramide. Comparing the two groups using chi square test, p-value was found to be statistically significant (p 0.020), suggesting that metoclopramide is a better antiemetic than propofol. Our this finding is consistent with Lacroix et al (1996), who concluded that a subhypnotic dose of propofol is less effective than metoclopramide for the treatment of PONV in the recovery room. Our results were in contradiction with those of Fujii (2001) and Nakano (2003) who concluded that small dose of propofol is more effective than metoclopramide for the prevention of PONV.

Our findings suggested that there was reduced

frequency of post operative nausea vomiting with metoclopramide than with propofol (p 0.020) in this population. Our findings also suggested that less patients treated with metoclopramide required rescue medication than those treated with propofol(p 0.020). However the study was limited by it's small sample size and also by the factor that patients only of ASA class I and II were included. Weight of the patients and stage of their menstrual cycle were also not considered. Further studies are required to compare the efficacy of propofol with metoclopramide with control of other factors like weight of the patients and stage of their menstrual cycle. Along with these two factors, ASA classes III and IV patients should also be studied upon.

CONCLUSION

Metoclopramide is a better option for management of PONV. Further large multicentre studies are required to evaluate the efficacy of propofol as antiemetic.

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PREVIOUS RELATED STUDIES

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However beautiful the strategy, you should occasionally look at the results.

Sir Winston Churchill