Original Research Article

Comparative study on pre-operative ondansetron versus metoclopramide for prevention of postoperative nausea and vomiting

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Abstract

Post-operative nausea and vomiting are common complications. The present study was conducted to compare the efficacy of pre-operative ondansetron versus Metoclopramide for its prevention. It was found that the incidence of nausea and vomiting at 0,3,12 and 24 hours was less in those receiving ondansetron as compared to those receiving metoclopramide. Ondansetron is more effective and safer than metoclopramide in preventing PONV in patients undergoing laparoscopic cholecystectomy.

Key Word: Comparative study, Metoclopramide, Ondansetron, PONV.

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INTRODUCTION

Nausea and vomiting are common post-operative complications. Nausea is seen in 50% and vomiting in 30% of post-operative cases S[1]. If not managed properly, it can lead to increase in recovery time and hence, post-operative nausea and vomiting (PONV) prophylaxis is aimed at preventing PONV, reduced discomfort to the patient and decrease in hospital costs[2]. The causation of PONV is multi-factorial. Higher rates of PONV are seen in patients with history of motion sickness, among females and in children. Middle ear surgery, abdominal procedures and orthopaedic surgeries have higher rates of PONV[3]. Many drugs have been tried for preventing PONV. They are usually antiemetic drugs of antihistaminic and anticholinergic class. Newer Selective Serotonin Reuptake Inhibitor (SSRA) drug- Ondansetron is also used frequently. It binds to 5HT3 receptor and is effective in preventing PONV. Dopamine receptor antagonist- Metoclopramide is also useful but causes troublesome extra-pyramidal side effects[4]. Different authors have compared drugs and have shared their findings. But, consensus is still lacking regarding the ideal drug for preventing PONV[5]. Hence, this study compared ondansetron with metoclopramide for preventing PONV. *Aims and objectives*- The present study was conducted to compare the efficacy of pre-operative ondansetron versus Metoclopramide for prevention of Postoperative nausea and vomiting.

MATERIAL AND METHODS

The study design was interventional in nature. 60 patients in the age group of 18-55 years undergoing laparoscopic cholecystectomy under general anaesthesia were included in this study. They were randomly divided among Group

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I (ondansetron) and group II (Metoclopramide). All the anaesthetic techniques were standardized and were followed uniformly to the extent possible. So, the groups differed in administration of pre-operative drug used to prevent nausea / vomiting only. Inclusion criteria were age group of 18-55 years, belonging to American Society of Anesthesiologist (ASA) grade I and grade II, laparoscopic cholecystectomy and use of general anaesthesia. Exclusion criteria were use of other medications with anti-emetic properties, allergy to ondansetron/ metoclopramide, other systemic illnesses including cardiovascular, pulmonary, renal and hepatic conditions. A total of 60 patients were included and both groups I and II included 30 patients each. Detailed history was taken from patients and clinical examination was done. Thorough preoperative anaesthetic check up was done. Data was collected regarding age, weight, pulse rate, blood pressure, duration of anaesthesia and duration of surgery. Premedication with Fentanyl (2μg/kg), Glycopyrrolate (0.2mg), and Midazolam (0.03mg/kg) was done. Anaesthesia was induced using Thiopentone sodium (5mg/kg) and endotracheal intubation was done using Vecuronium bromide (0.1mg/kg). Anaesthesia was maintained with Nitrous Oxide and Oxygen (5:3) and muscle relaxation was achieved with Vercuronium bromide. Ventilation was controlled manually. At the end of surgery, neuromuscular blockade was reversed using Neostigmine (0.05mg/kg) and Atropine (0.02mg/kg) intravenously. After complete recovery, the patients were extubated. Selected patients were allocated randomly to one of the intervention groups. Blinding was done in terms of patient as well as statistician not knowing the drug being given to prevent nausea / vomiting. Intravenous Ondansetron was given in the dose of 0.08 mg/kg (Group-I) while IV Metoclopramide was given in the dose of 0.15 mg/kg (Group-II). After the surgery, the patients were followed up for 24 hours. Nausea, retching and emesis were recorded at 0-1 hour, 3 hour, 12 hour and 24 hours respectively. The number and severity of vomiting was also noted. Complete control was defined when there was no emesis, nearly complete control in 1-2 episodes, partial control in 3-5 episodes and failure in >5 episodes. Repeated vomiting within 1-2 minute was counted as single episode. In failure cases, they were excluded and rescue therapy was initiated using IV ondansetron and fluids. Data was entered in Microsoft Excel and was analyzed using SPSS version 16.0. Chi-Square test was done to find the statistical significant between groups. P value less than 0.05 was considered to be statistically significant. Informed consent was taken from all the subjects and they were free to quit. Confidentiality of data was maintained.

RESULTS AND DISCUSSION

This study included 30 patients each in ondansetron and metoclopramide groups. Table-1 shows the baseline characteristics of these groups. Mean age of the study subjects was 43.3 ± 6.1 years. The age distribution in the two intervention groups did not vary significantly (p=0.09). Mean weight of the study subjects was 63.1 ± 4.9 Kgs. Mean BMI was 24.9 ± 2.8. Most of the patients belonged to ASA grade I (81.7%). Average duration of surgery was 65.6 ± 7.9 min. and mean duration of anaesthesia was 85.8 ± 8.7 min. The difference between the two study groups was not significant statistically with reference to age (p=0.09), weight (p=0.3), BMI (p=0.6), ASA grade (p=0.74), duration of surgery (p=0.06) and duration of anaesthesia (p=0.5).

Table 1: Showing baseline characteristics

Characteristics	Ondansetron group (n=30)	Metoclopramide group (n=30)	Significance
Age (in years)	44.6 ± 6.3	41.9 ± 5.8	t = -1.7, p = 0.09
Weight (in Kg)	62.4 ± 4.2	63.7 ± 5.4	t = 1.3, p = 0.3
BMI	24.7 ± 2.5	25.1 ± 3.4	t = 0.4 , p = 0.6
ASA Grade			
- I	25	24	$\chi^2 = 0.11, p = 0.74$
- II	5	6	
Duration of surgery (min)	67.6 ± 8.3	63.6 ± 7.5	t = -4, p = 0.06
Duration on anaesthesia (min)	84.9 ± 9.3	86.6 ± 8.2	t =1.7 , p = 0.5

Table 2 shows the incidence of post-operative nausea and vomiting. The incidence of nausea was less in those receiving ondansetron at 0,3,12 and 24 hours as compared to those receiving metoclopramide. It is also seen that the incidence of vomiting was less in the ondansetron at all the follow-up periods. However, this difference was not significant statistically (p>0.05). This may be due to small sample size studied.

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Table 2: showing occurrence of post-operative nausea/ vomiting

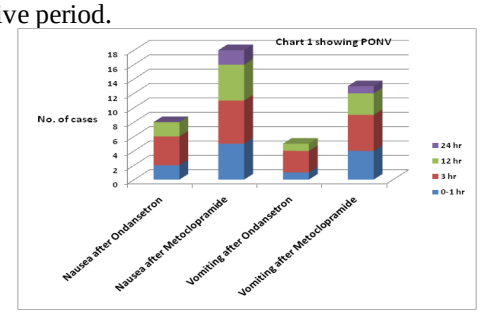
PONV	Drug used	0-1 hr	3 hr	12 hr	24 hr	Significance
Nausea	Ondansetron	2	4	2	0	$\chi^2 = 1.32$, $p = 0.7$
	Metoclopramide	5	6	5	2	
Vomiting	Ondansetron	1	3	1	0	$\chi^2 = 0.93$, $p = 0.8$
	Metoclopramide	4	5	3	1	

Table 3 shows the side effects of drugs used to prevent post-operative nausea and vomiting. It is seen that the common side effects with ondansetron were headache while metoclopramide caused dizziness and sedation more frequently.

Table 3: showing side-effects of drugs used to prevent nausea / vomiting

Drug used	Headache	Dizziness	Sedation
Ondansetron	1	0	0
Metoclopramide	0	2	1

Nausea and vomiting are important post-operative complications. Apart from financial and psychological concerns, it can lead to dehydration and electrolyte derangements[6]. Use of drugs for preventing PONV has been found to be effective. But, very few studies have compared the usefulness among these drugs. The present study found that the incidence of nausea and vomiting is less with ondansetron as compared to metoclopramide and this effect was sustained till 24 hours. Side-effects were also lesser with ondansetron and consisted of headache only. Vasantha *et al*[5] observed that the mean episodes of emesis, nausea and retching at different postoperative duration were significantly decreased in Ondansetron group when compared to metoclopramide group as postoperative time progresses. Farhat *et al*[7] commented that the frequency of nausea and vomiting was clinically and statistically lower in ordansetron group (p=0.035) in comparison to metoclopramide group. They showed that prophylactic use of ondansetron is more effective with fewer side effects than metoclopramide in the prevention of PONV during laparoscopic cholecystectomy in adult females. Dandona *et al*[8] also found that ondansetron is more effective in controlling the incidence of vomiting in first 24 hours of post-operative period.



CONCLUSION

The findings of this study are similar to that of other researchers. It is evident that ondansetron is more effective and safer than metoclopramide in preventing PONV in patients undergoing laparoscopic cholecystectomy.

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