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Original Research Article

The Safety, Efficacy and Antiemetic Effect of Pre-Operative Intravenous Ondansetron and Metaclopramide for Prevention of Post-Operative Nausea and Vomiting in Patients Undergoing LSCS under Spinal Anaesthesia

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Conflict of interest: Nil

Abstract:

Background: Nausea and vomiting following Regional Anaesthesia in pregnant women undergoing Caesarean section is a major clinical problem. The present study was undertaken to compare the safety, efficacy and anti-emetic effect of Ondansetron and Metoclopramide in prevention of Post operative Nausea and Vomiting in LSCS under Spinal Anaesthesia.

Material and Methods: After obtaining the approval of institutional ethical committee permission, a prospective randomized observational study was conducted on 50 women patients aged above 18 years of ASA I or II Grade undergoing elective LSCS under Spinal anaesthesia. They were assigned randomly into two groups of 25 each. Group-O received Inj. Ondansetron 4mg I.V. and Group- M received Inj. Metaclopramide 10 mg I.V. ten minutes before Spinal Anaesthesia. Anaesthetic management was standardized. Incidence of post operative vomiting and retching as number of episodes was studied, Nausea was graded depending on the severity and need of rescue anti-emetic was recorded in all patients for 24 hours post operatively and the safety, efficacy and anti-emetic effect of Ondansetron to Metaclopramide in the prevention of post operative nausea and vomiting was evaluated.

Results: The mean age, weight and ASA grading was not significantly different when compared Group- O parturiants with Group M. Number of episodes of Nausea ,Retching and Vomiting were recorded at time intervals of 0 hour, 1 hour,2 hour,4 hour,6 hour,8 hour,12 hour and 12 hour for all the patients in both groups .Incidence of Nausea was more in Group- M than Group- O at 0 hour, 1 hour and 2 hour, but was statistically significant ($p<0.05$) at 2 hour only. Incidence of Retching was more in the 0 hour, 1 hour and 2 hours in Group- M and incidence of retching was reduced significantly in Group -O patients at 2 hours. Incidence of Vomiting was decreased in Group -O than Group- M, but was not statistically significant. It was found that Inj. Ondansetron was more efficient than Inj. Metaclopramide in preventing Post-operative Nausea and Vomiting in patients undergoing LSCS under Spinal Anaesthesia.

Conclusion: The study concluded that the safety, efficacy and anti-emetic effect of Injection Ondansetron is more than Injection Metaclopramide in the prevention of Post-operative Nausea and Vomiting in Patients undergoing LSCS under Spinal Anaesthesia.

Keywords: PONV (Post-operative Nausea and Vomiting), Ondansetron, Metaclopramide, LSCS, Spinal Anaesthesia

Introduction

The most common distressing symptom in the post-operative period are Nausea and Vomiting. Increased patient acceptability, improved foetal condition at birth and greater maternal safety has made caesarean delivery under regional anaesthesia, increasingly popular [1,2]. Post operative Nausea and Vomiting have received less attention.

Though there are extensive literature, the data are frequently difficult to interpret and compare. It is one of theoperative Nauseat in females posted for LSCS under Spinal Anaesthesia.

Nausea and vomiting have been associated for many years with the use of general anaesthetics for surgical procedures. One of the first extensive descriptions of nausea and vomiting was given by John Snow, published in 1848 within one and half years of introduction of chloroform in Anaesthesia in Britain.

The incidence of post operative nausea and vomiting (PONV) in early studies [3] reported as high as 75-80%. But however, the incidence in second half of this century has been decreased by almost 50% for various reasons. The etiology of Post operative Nausea and Vomiting is complicated and multifactorial.[4]

Approximately 30% of all patients suffer from nausea and vomiting in post anaesthetic period with no prior prophylaxis, whereby the highest incidence can be found in the first 6 hours after surgery.[5]

Nausea and Vomiting is described as “the big little problem” inspite of using less emetic anaesthetic agents, improved pre and post-operative techniques and identification of patient predictive factors and still occur with unacceptable frequency in relation with surgery and anaesthesia.

Post-operative Nausea and Vomiting can result in wound dehiscence, pulmonary aspiration of gastric contents, bleeding, dehydration, electrolyte disturbance, delay hospital discharge, increase hospital cost [4], unexpected hospital admission and decreased patient satisfaction. There are many different modes of intervention to prevent PONV. Anti-emetic drugs play an important role in therapy of PONV. Though many drugs have been tried as prophylaxis and treatment of PONV, no drug has been proved significantly effective and a search for better drug continues.

Ondansetron has been demonstrated to be well-tolerated and an effective drug for the prevention and treatment of postoperative nausea and vomiting.[5] Its use in surgical procedures accompanied by frequent postoperative nausea and vomiting seems reasonable.[6]

Since many years, Metaclopramide is in use as an anti-emetic. Ondansetron is being used recently. A comparative safety, efficacy and anti-emetic effect of these two drugs in reducing and preventing incidence of post-operative nausea and vomiting in patients undergoing LSCS under Spinal Anaesthesia has been evaluated in this study.

Aim

To compare the safety, efficacy and anti-emetic effect of intravenous Ondansetron (4mg) and Metoclopramide (lOmg) in preventing or reducing the incidence of Post operative Nausea and Vomiting (PONV), in patients undergoing LSCS under Spinal Anaesthesia.

Objectives

1. To compare the duration of antiemetic effect of Ondansetron and Metoclopramide
2. To compare the anti-emetic safety and efficacy of Ondansetron and Metaclopramide
3. To assess the adverse effects, if any of Ondansetron and Metaclopramide.

Materials & Methodology

After having obtained informed consent and ethical committee clearance, 50 patients (n=50) belonging to ASA (American Society of Anaesthesiologists) grade I and II, more than 18 years, pregnant patients undergoing elective LSCS under Spinal Anaesthesia were included in the study.

All the patients participated in the study were explained clearly about the purpose and nature of the study in the language they can understand. They were included in the study only after obtaining a written informed consent.

Patient received either Inj. Ondansetron 4 mg IV or Inj. Metaclopramide 10 mg IV and followed up to assess the efficacy and safety in prevention of post-operative nausea and vomiting.

Patients were given drugs according to clinical indications.

Patients who received Inj Ondansetron 4 mg I.V. were considered in Group O and patients who received Inj Metaclopramide 10 mg I.V. were considered in Group M.

Study population were randomly divided into two equal groups by chit method with 25 patients in each group and informed consent was taken.

Study Duration: The study was initiated after obtaining the permission from institutional ethics committee till the achievement of the sample size or 10 months whichever is earlier.

Study Design: Randomized, Prospective, Observational Study

Sample Size: 50 (n=25 per group)

Sample Size: was calculated using formula

Formula:

$$n_A = \kappa n_B \text{ and } n_B = \left(\frac{p_A(1-p_A)}{\kappa} + p_B(1-p_B)\right)\left(\frac{z_{1-\alpha/2} + z_{1-\beta}}{p_A - p_B}\right)^2$$

$$1-\beta = \Phi\left(z - z_{1-\alpha/2}\right) + \Phi\left(-z - z_{1-\alpha/2}\right) \quad , \quad z = \frac{p_A - p_B}{\sqrt{\frac{p_A(1-p_A)}{n_A} + \frac{p_B(1-p_B)}{n_B}}}$$

where

$\kappa = n_A/n_B$ is the matching ratio

Φ is the standard Normal distribution function

Φ^{-1} is the standard Normal quantile function

α is Type I error

β is Type II error, meaning $1-\beta$ is power

Selection Criteria

Inclusion Criteria

- ASA I & ASA II patients undergoing LSCS.
- All women patients undergoing LSCS under subarachnoid block & aged above 18 years.
- No known history of allergy, sensitivity or other form of reaction to local anesthetics of the amide type.
- Patient willing to sign informed consent.

Exclusion Criteria

- Patient refusal.
- Patients allergic to any drugs.
- Known allergy to trial drug.
- Patients with renal, hepatic, cardiovascular and respiratory diseases.
- Patients with neurological disorders, endocrinal abnormalities and neuropathies or receiving medications known to influence neuromuscular junction.
- Patients with history of PONV in previous surgery
- Patients with history of motion sickness
- Patients with history of vomiting and /or Ryle's tube in situ in the last 24 hours.
- ASA III, IV, V Patients.

Patients fulfilling the above said inclusion criteria was subjected to the study.

Pre-Operative Management

Detailed pre-anaesthetic check-up and routine investigations of all the patients who were included in the study undergoing Spinal Anaesthesia was done a day prior to surgery to decide the fitness eligibility of the patients to undergo the said study.

All selected patients were kept nil by mouth for 8 hrs.

Informed written consent was taken.

1. Pre-OP Preparation:

The procedure of spinal anaesthesia was explained to the patients and written consent obtained.

- All patients were kept NBM for atleast 8 hours.
- Baseline vitals were recorded – Pulse, B.P, R.R, SpO_2.
- 18-gauge IV line was secured, preloading with 10ml/kg of ringer lactate was done.

Anesthetic Technique:

On arrival of patient in the operating room standard monitors were attached; Echocardiography (ECG), non-invasive blood pressure, pulse rate and arterial oxygen saturation (SpO_2) were monitored and recorded.

Patients were pre-medicated with Inj. Glycopyrrolate 0.2mg and Inj. Ranitidine 50 mg intravenously. Patients were classified into two groups according to the type of drug received. **Twenty-five patients in Group O were received Inj Ondansetron 4 mg I.V. And the other Twenty five patients in Group M received Inj Metaclopramide 10 mg I.V. 10 minutes before Spinal Anaesthesia.**

The Spinal Technique Used:

Patients were positioned in the Left lateral position. After painting with povidone iodine and alcohol under aseptic and antiseptic precautions and draping, 25 gauge spinal needle was inserted in the midline at L_{3-4} interspace.

Drug was injected over 10-15 seconds after free flow of clear cerebrospinal fluid. The patient was placed in supine position immediately after injection.

Desired operative position was given after 5 minutes.

Intra Operative:

All patients of both groups were monitored for:

- Pulse rate.
- Systolic &diastolic blood pressure
- Arterial Oxygen Saturation (Sp_{O2}).

Pulse rate, Systolic blood pressure, Diastolic blood pressure, $SpO_{2,}$ were monitored at regular intervals till the end of surgery.

- Side effects and complications were noted and treated.

Bradycardia defined as pulse rate < 60/min and was treated with Inj. Atropine sulphate 0.6mg IV. Hypotension defined as systolic BP≥20% from the base level and was treated with mephenteramine 6mg IV.

Post Operative:

All patients were shifted to recovery room and were watched for pulse, blood pressure, Spo2 & nausea & vomiting.

The patients were observed for 24 hours post operatively. Nausea, retching and emesis were recorded at 0-4 hours, 4-8 hours, 8-12 hours and 12-24 hours respectively.

The number of episodes of emesis and type were recorded. Repeated vomiting within 1–2-minute period was recorded as single emesis. The data was taken as follows.

No emesis- complete control

1-2 episodes - Nearly complete control

3-5 episodes - Partial control

> 5 episodes - Failure.

Similarly, the number of episodes of retching (dry heaves) were also registered.

Nausea was graded as 0,1,2, and 3.

0- None

1- Mild

2- Moderate

3- Severe

Rescue Antiemetic: In case of no response to the study drug with respect to nausea and vomiting, Injection Metoclopramide 10 mg I.V was used as a rescue antiemetic.

Complete Responders: It is defined as no PONV and no need for another rescue antiemetic medication.

Nausea: It is defined as the subjectively unpleasant sensation associated with awareness of the urge to vomit.

Retching: It is defined as the laboured, spastic, rhythmic contraction of the respiratory muscles without the expulsion of gastric contents.

Vomiting: It is defined as the forceful expulsion of gastric contents from mouth.

At each interval of time patients were asked about the intensity of nausea and for episodes of vomiting and rescue antiemetic was given in case of moderate to severe degree of nausea and on incidence of vomiting.

PONV score was assessed as follows:

0- No symptoms
1- Nausea
2- Retching
3- vomiting

Vitals of the patients were measured and recorded at regular interval both intra and post operatively. Any side effects appreciated were recorded. The results were tabulated during the 24 hours period post operatively. Severe nausea and vomiting were labelled as failure and rescue therapy was initiated with IV metoclopramide and with IV fluids. All the observations and particulars of each patient were recorded in a proforma.

Observations and Results

A total of 50 patients with ASA grading I or II undergoing elective LSCS under Spinal anaesthesia were enrolled in the present study. They were divided into two groups. 25 patients in Group O and 25 patients in Group M. Patients were premedicated with Inj. Glycopyrrolate 0.2 mg IV and Inj. Ranitidine 50 mg IV.

Group O: Patients received Inj. Ondansetron 4 mg I.V.

Group L: Patients received Inj. Metaclopramide10 mg I.V.

Patients received drug ten minutes before Spinal Anaesthesia.

Table 1: Distribution of patients according to age in two different groups

Age Group (yr)	Group O (N=25)		Group M (N=25)		P-Value
	No.	%	No.	%	
19-22	9	36.00	8	32.00	0.7347
23-26	8	32.00	9	36.00	0.7347
27-30	6	24.00	5	20.00	0.5689
31-34		8.00	3	12.00	0.1765
Total	25	100.00	25	100.00	
				Comparison of Mean (T-test)	
Mean	24.88		25.24	0.7257	
Sd	3.50		3.71		

Table 2: Patient characteristics according to weight in two different groups.					
Weight	Range	Mean	Sd	P-Value	
GROUP O (n=25)	50-65	56.36	4.31	0.4242	
GROUP M (n=25)	50-66	57.32	4.11		

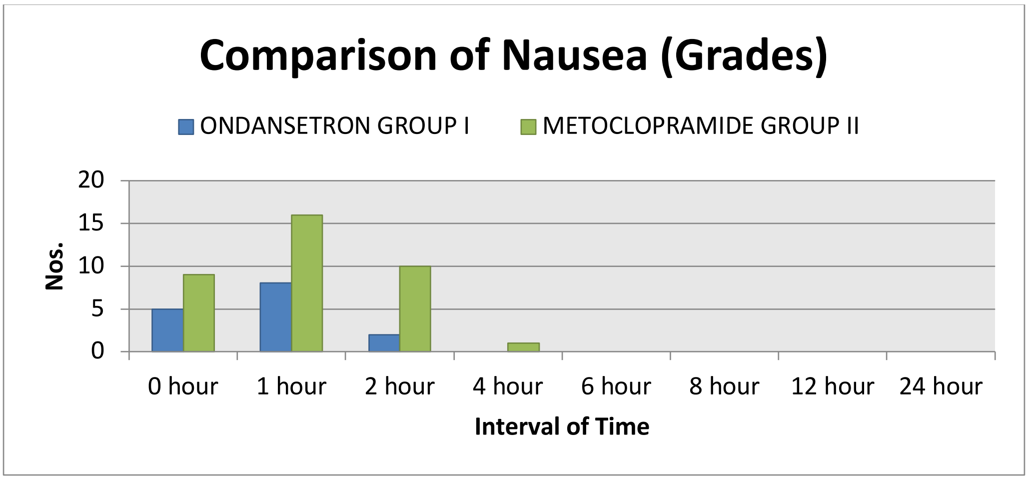
Large number of cases were in the 19-22 years age group in Group O and 23-26 years age group 2 in Group M. Mean age was 24.88 years in Group O and 25.24 years in Group M (Table 1). The mean weight in Group O patient was 56.36 and Group M was 57.32 (Table 2).

The demographic distribution in terms of age, weight and ASA grading was comparable between two groups. **(P value>0.05), statistically not significant.**

Table 3: Comparison of Nausea (Grades)

Nausea	Group O (N=25)	Group M (N=25)
0 hour	5	9
1 hour	8	16
2 hours	2	10
4 hours	0	1
6 hours	0	0
8 hours	0	0
12 hours	0	0
24 hours	0	0
		P= 0.6147

When the incidence of nausea was compared between the groups, it showed a significantly low nausea grades in the Group O compared to Group M at 2nd hours. Though grading of nausea was less in 1st hour also, it was not significant statistically. (Table 3)



Graph 1: Graph showing comparison of Nausea (Grades)

Table 3a: Comparison of Nausea (Mean Grades)					**MedCalc - Comparison of Mean T-Test**	
Nausea	**Ondansetron Group I (N=25)**		**Metoclopramide Group II (N=25)**		P-Value	
	Mean	SD	Mean	SD		
0 hour	0.20	0.50	0.36	0.64	0.3295	
1 hour	0.32	0.63	0.64	0.86	0.1399	
2 hours	0.08	0.28	0.40	0.71	0.0413	
4 hours	0.00	0.00	0.04	0.20	N.A.	
6 hours	0.00	0.00	0.00	0.00	N.A.	
8 hours	0.00	0.00	0.00	0.00	N.A.	
12 hours	0.00	0.00	0.00	0.00	N.A.	
24 hours	0.00	0.00	0.00	0.00	N.A.	

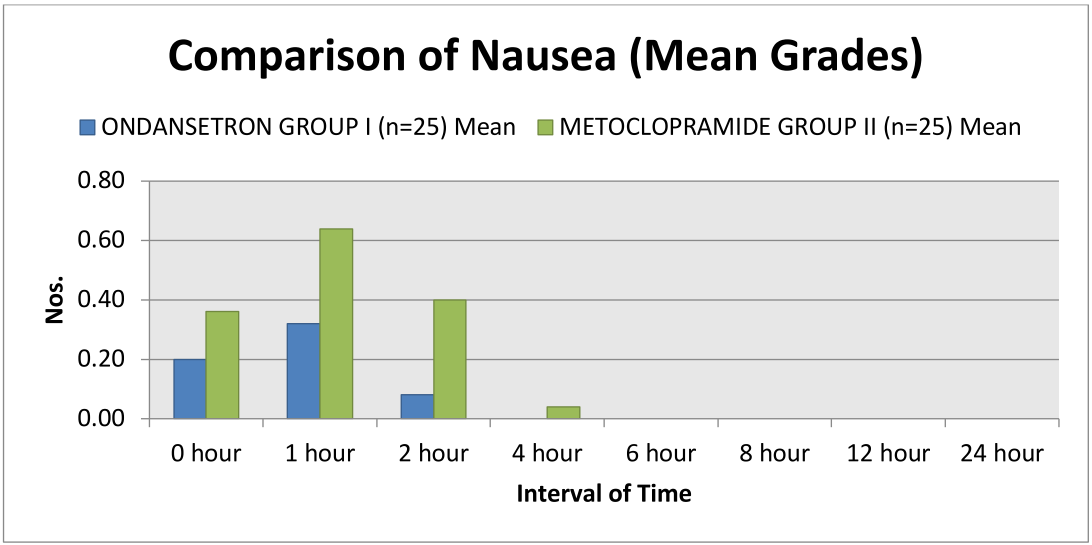


Table 3b: Frequency of Nausea grades					**MedCalc - T-Test**
Nausea	**Ondansetron Group I (N=25)**		**Metoclopramide Group II (N=25)**		**P-Value**
	No.	**%**	**No.**	**%**	
0 hour	4	16	7	28	0.3563
1 hour	6	24	10	40	0.1034
2 hours	2	8	7	28	0.0293
4 hours	0	0	1	4	0.3273
6 hours	0	0	0	0	N.A.
8 hours	0	0	0	0	N.A.
12 hours	0	0	0	0	N.A.
24 hours	0	0	0	0	N.A.

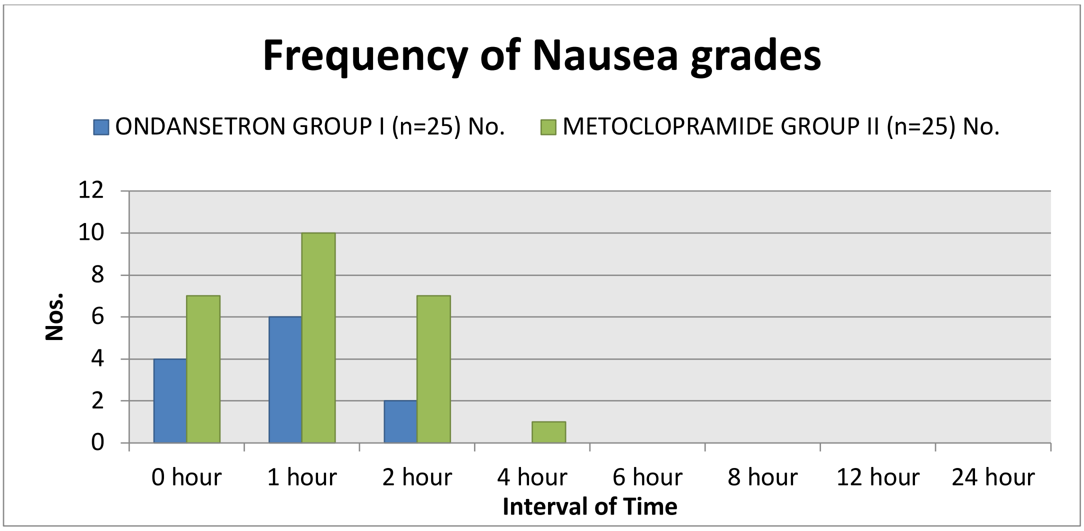


Table 4: Comparison of Retching episodes		
Retching	**Ondansetron Group I**	**Metoclopramide Group II**
0 hour	1	2
1 hour	1	3
2 hours	1	6
4 hours	0	0
6 hours	0	0
8 hours	0	0
12 hours	0	0
24 hours	0	0
P-value		P=0.7808

Incidence of Retching was more in the 0 hr, 1 hr and 2 hrs in Group M. A 24 % of Group-M patients experienced retching ,while 4% of Group -O patients experienced retching. Incidence of retching was reduced significantly in the Group -O patients at 2 hrs.

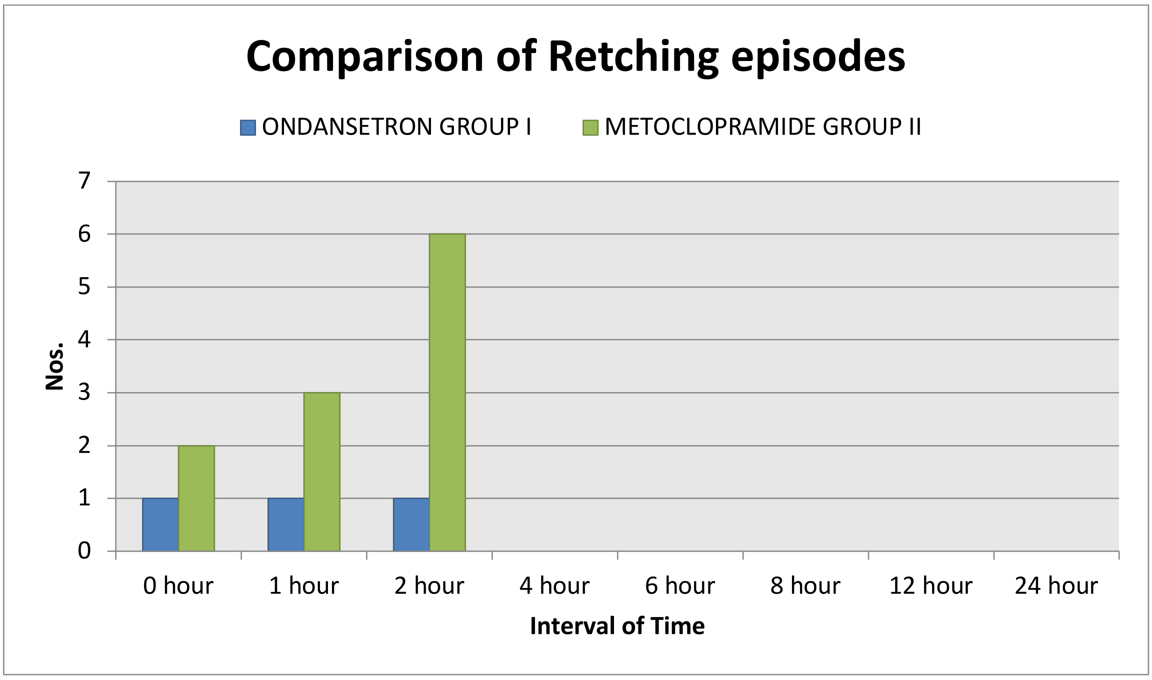


Table 5a: Comparison of Retching episodes (Mean)					MedCalc - Comparison of Mean T-Test
Retching	**Ondansetron Group I (N=25)**		**Metoclopramide Group II (N=25)**		**P-Value**
	Mean	SD	Mean	SD	
0 hour	0.04	0.20	0.08	0.28	0.5638
1 hour	0.04	0.20	0.12	0.33	0.3051
2 hour	0.04	0.20	0.24	0.44	0.0440
4 hour	0.00	0.00	0.00	0.00	N.A.
6 hour	0.00	0.00	0.00	0.00	N.A.
8 hour	0.00	0.00	0.00	0.00	N.A.
12 hour	0.00	0.00	0.00	0.00	N.A.
24 hour	0.00	0.00	0.00	0.00	N.A.

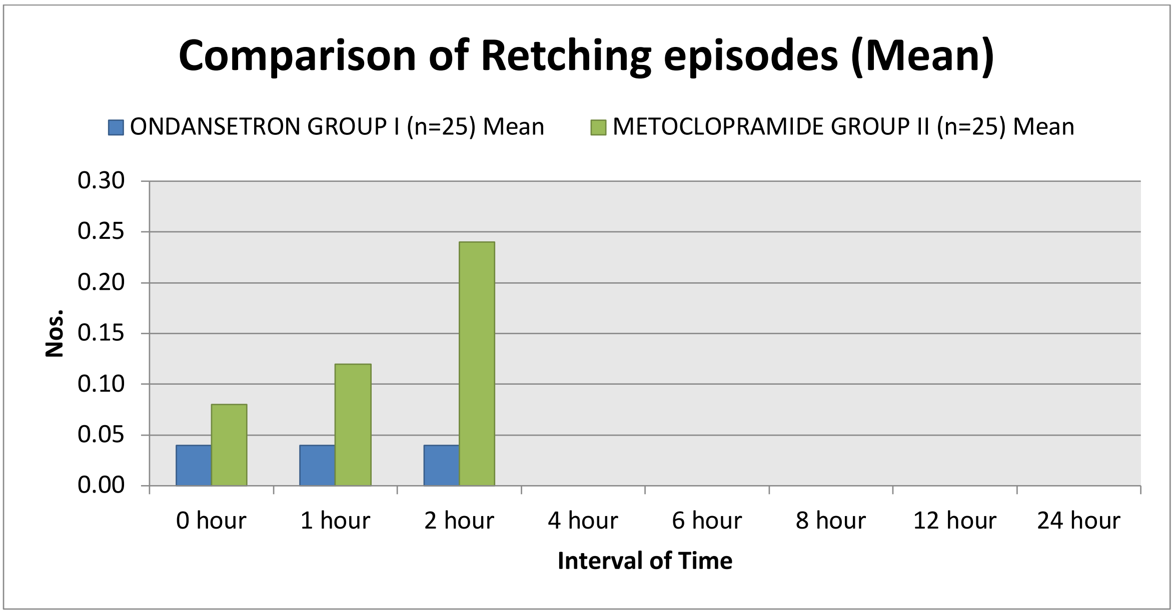


Table 5b: Frequency of Retching episodes					MedCalc - T-Test
Retching	**Ondansetron Group I (N=25)**		**Metoclopramide Group II (N=25)**		P-Value
	No.	%	No.	%	
0 hour	1	4	2	8	0.5743
1 hour	1	4	3	12	0.3273
2 hour	1	4	6	24	0.0220
4 hour	0	0	0	0	N.A.
6 hour	0	0	0	0	N.A.
8 hour	0	0	0	0	N.A.
12 hour	0	0	0	0	N.A.
24 hour	0	0	0	0	N.A.

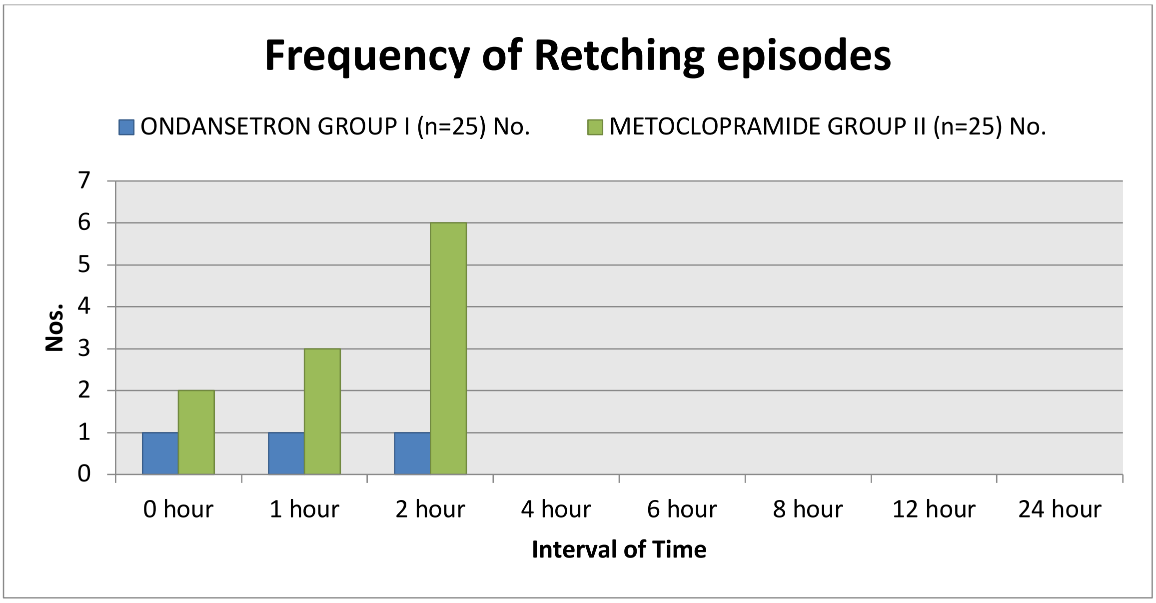


Table 6: Comparison of episodes of Vomiting		
Vomiting	**Ondansetron Group I**	**Metoclopramide Group II**
0 hour	1	3
1 hour	4	6
2 hour	3	5
4 hour	1	1
6 hour	0	0
8 hour	0	0
12 hour	0	0
24 hour	0	0
Chi-Square Test P-Value		P = 0.9347

Number of episodes of vomiting at 0 hr, 1 hr, 2 hrs,4 hrs,6 hrs,8 hrs,12 hrs and 24 hours were recorded. Incidence of Vomiting was decreased in Group-O than Group-M, but was not statistically significant. (Table 6)

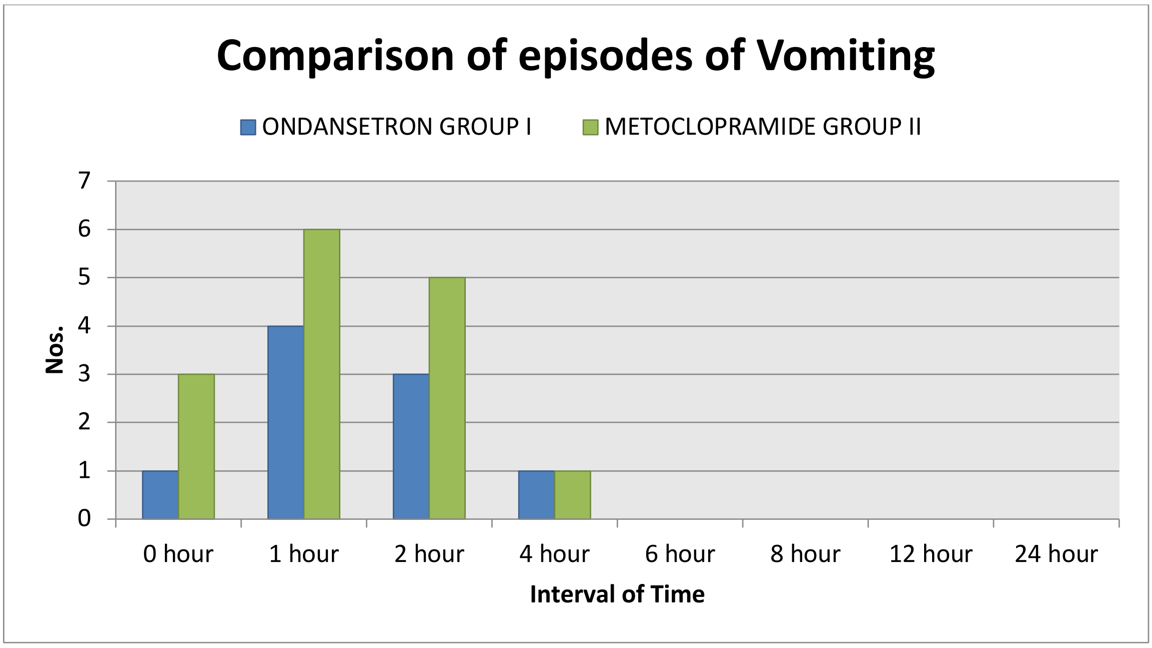


Table 6a: Comparison of episodes of Vomiting (Mean)					MedCalc - Comparison of Mean T-Test	
Vomiting	**Ondansetron Group I (N=25)**		**Metoclopramide Group Ii (N=25)**		**P-Value**	
	Mean	SD	Mean	SD		
0 hour	0.04	0.20	0.12	0.33	0.3051	
1 hour	0.16	0.37	0.24	0.44	0.4899	
2 hour	0.12	0.33	0.20	0.41	0.4510	
4 hour	0.04	0.20	0.04	0.20	1.0000	
6 hour	0.00	0.00	0.00	0.00	N.A.	
8 hour	0.00	0.00	0.00	0.00	N.A.	
12 hour	0.00	0.00	0.00	0.00	N.A.	
24 hour	0.00	0.00	0.00	0.00	N.A.	

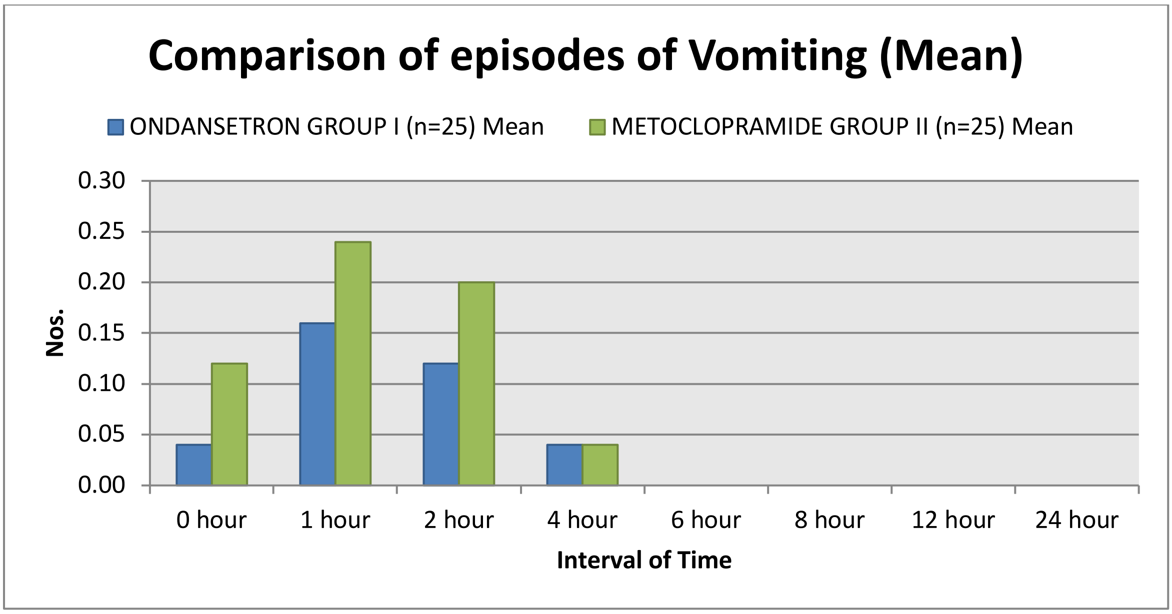


Table 6b: Frequency of episodes of Vomiting between ondansetron and metoclopramide groups					MedCalc - T-Test
Vomiting	**Ondansetron Group I (N=25)**		**Metoclopramide Group Ii (N=25)**		**P-Value**
	No.	**%**	**No.**	**%**	
0 hour	1	4	3	12	0.1615
1 hour	4	16	6	24	0.4254
2 hour	3	12	5	20	0.4907
4 hour	1	4	1	4	1.0000
6 hour	0	0	0	0	N.A.
8 hour	0	0	0	0	N.A.
12 hour	0	0	0	0	N.A.
24 hour	0	0	0	0	N.A.

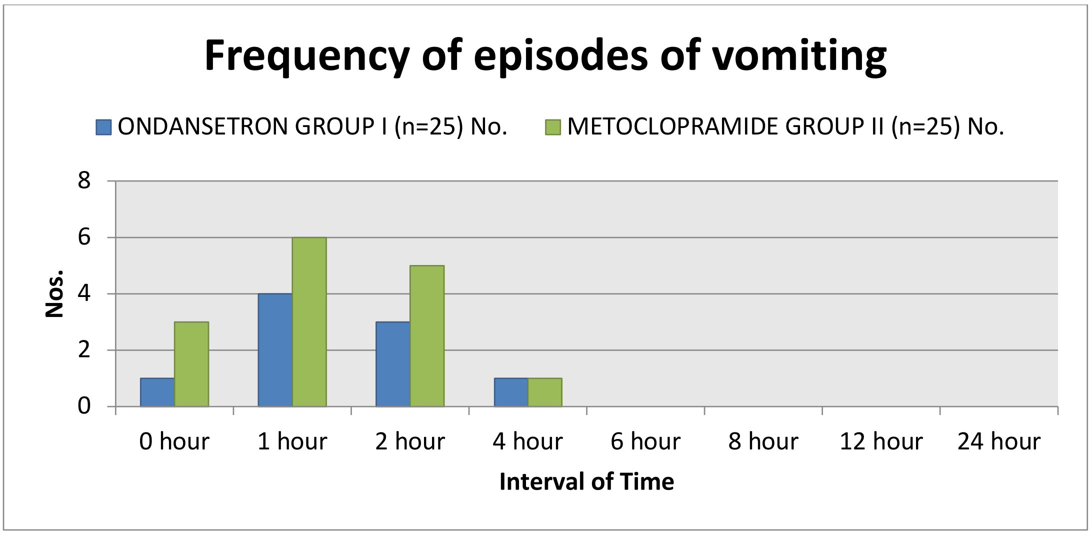


Table 7: Comparison of Rescue Antiemetic		
Rescue Antiemetic	**Ondansetron Group I**	**Metoclopramide Group II**
0 hour	0	0
1 hour	0	0
2 hour	1	2
4 hour	0	0
6 hour	0	0
8 hour	0	0
12 hour	0	0
24 hour	0	0
Chi-Square Test P-Value		P = 1.0000
Number of Rescue Antiemetic required at 0 hour,1 hour,2 hour,4 hour,6 hour,8 hour, 12 hours and 24 hours were tabulated and it was comparable between two groups **(P-1.0000), Statistically not significant.**		

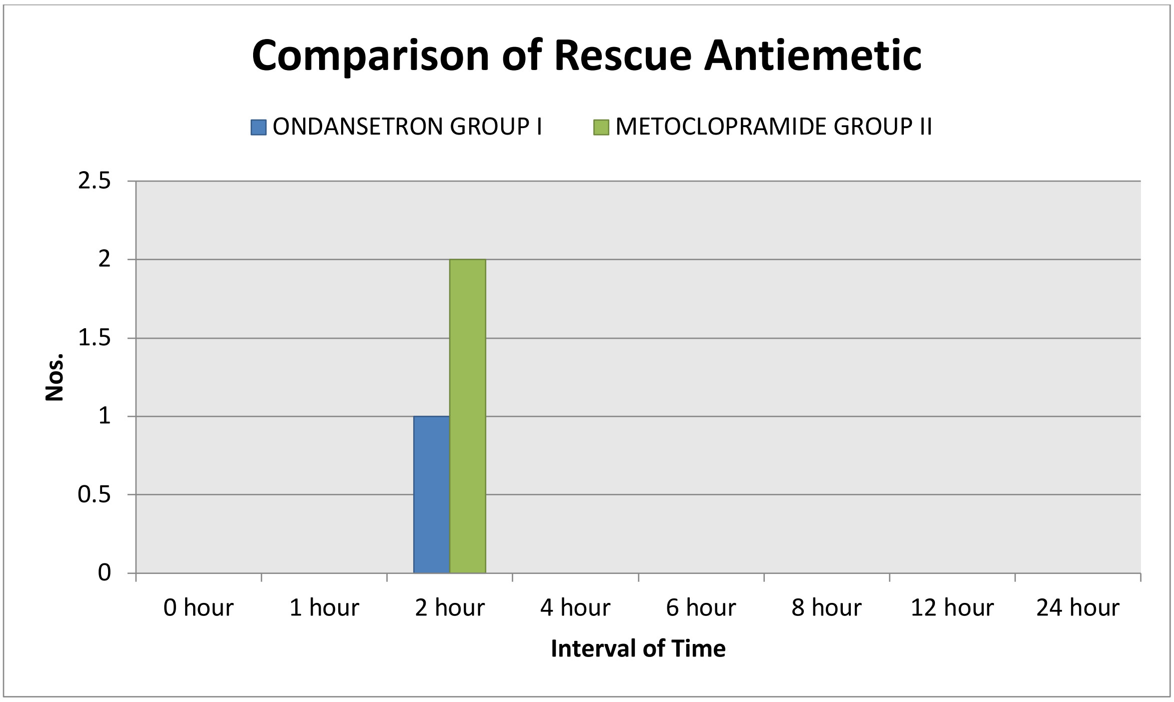


Table 7a: Comparison of Rescue Antiemetic (Mean)					MedCalc - Comparison of Mean T-Test
Rescue Antiemetic	Ondansetron Group I (N=25)		Metoclopramide Group II (N=25)		P-Value
	Mean	SD	Mean	SD	
0 hour	0.00	0.00	0.00	0.00	N.A.
1 hour	0.00	0.00	0.00	0.00	N.A.
2 hour	0.04	0.20	0.08	0.28	0.5638
4 hour	0.00	0.00	0.00	0.00	N.A.
6 hour	0.00	0.00	0.00	0.00	N.A.
8 hour	0.00	0.00	0.00	0.00	N.A.
12 hour	0.00	0.00	0.00	0.00	N.A.
24 hour	0.00	0.00	0.00	0.00	N.A.

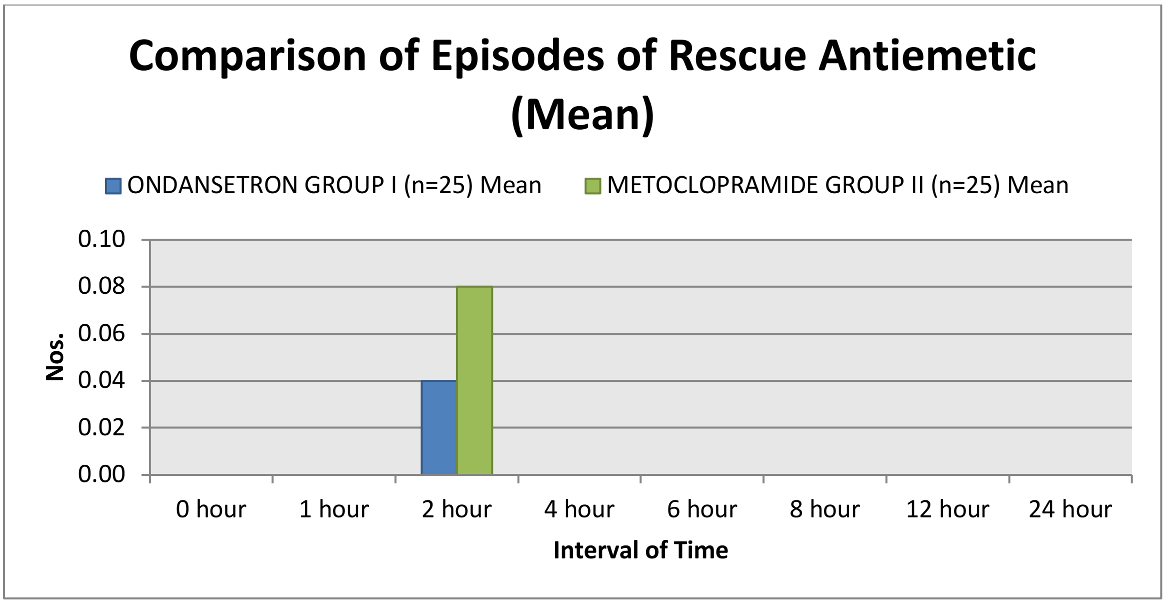
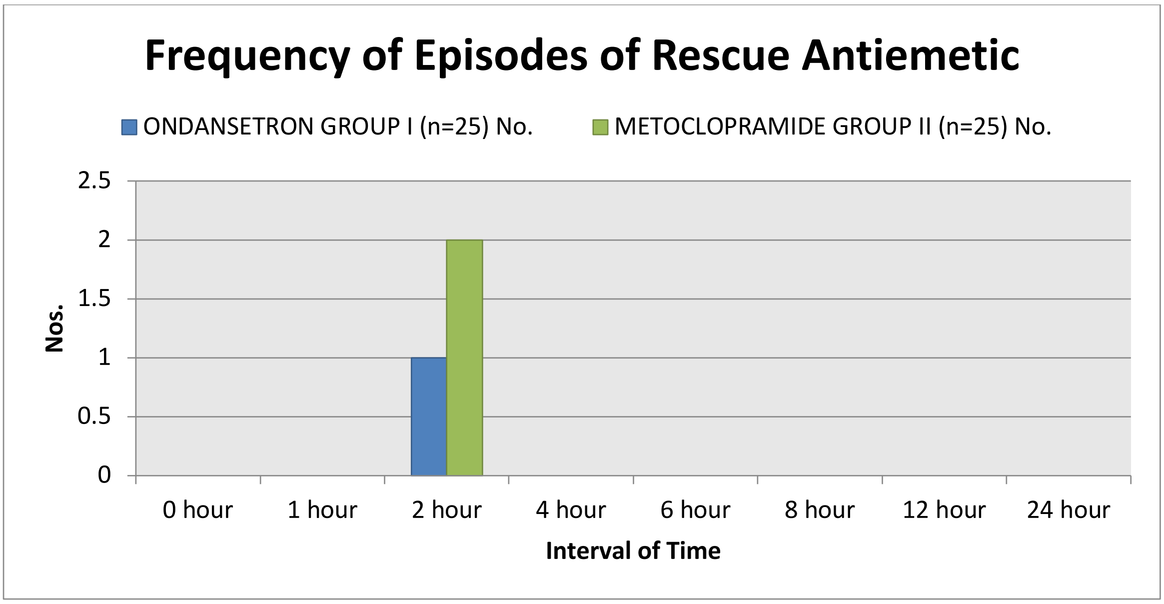


Table 7b: Frequency of Episodes of Rescue Antiemetic					MedCalc - T-Test
Rescue Antiemetic	Ondansetron Group I (N=25)		Metoclopramide Group II (N=25)		P-Value
	No.	%	No.	%	
0 hour	0	0	0	0	N.A.
1 hour	0	0	0	0	N.A.
2 hour	1	4	2	8	0.5743
4 hour	0	0	0	0	N.A.
6 hour	0	0	0	0	N.A.
8 hour	0	0	0	0	N.A.
12 hour	0	0	0	0	N.A.
24 hour	0	0	0	0	N.A.



Invidence of Adverse Effects: No complication was observed in Group O and Group M during intraoperative as well as postoperative period.

Discussion

Post operative nausea and vomiting is the most unpleasant experience for a patient who has under gone surgery under anaesthesia. Many antiemetic drugs are helpful in the prevention of post operative nausea and vomiting like Metaclopramide, Anti cholinergics, Anti- histamines, Domperidone.

For LSCS under spinal anaesthesia, the strong emetic stimuli are hypotension, manipulation of abdominal viscera and hormonal influences. Incidence of PONV is affected by the factors such as age, sex, history of previous PONV or motion sickness, surgical procedure, smoking, duration of surgery and anaesthesia and patient and parenteral anxiety.

In this study, we compared the safety, efficacy and anti-emetic effect of intravenous ondansetron (4 mg) and Metaclopramide(10mg) in preventing or reducing the incidence of post operative nausea and vomiting in 50 pregnant patients aged more than 18 years , ASA I or II scheduled for elective LSCS under spinal anaesthesia

In our study the safety, efficacy and antiemetic effect of injection Ondansetron is more than injection Metaclopramide. In the present study, Nausea control was significant with incidence of Metaclopramide group 100 % which reduced to 48% in the Ondansetron group and severity of nausea was less in Ondansetron group than Metaclopramide group (8 % V/S 28 % at 2 hour)

64% of Ondansetron group patients were emesis episodes free while in Metaclopramide group, 40% patients experienced no emesis. The incidence of vomiting was decreased in Ondansetron group than Metaclopramide group. The incidence of vomiting was more at 1 hour and 2 hour in both groups and incidence was less in Ondansetron group at both time intervals. We observed retching separately from vomiting. The insidence of retching was less in Ondansetron group than Metaclopramide group.

88% experienced no retching in Ondansetron group while it was 56% in Metaclopramide group. Severity also was less in Ondansetron group.

The findings were also similar in studies conducted by Vasanthakumar J, etal [7] (2014)

Sanjul Dandona, et al [8] (2014), Prasad Rao Manem, et al [10] (2016), Kothari Asit, et al [12] (2021).

In K Upendra Singh, et al [9] (2015), they concluded that prophylactic administration of either 10 mg Metaclopramide or 4mg Ondansetron IV is useful and equally effective.

In a Study [13], they found a correlation between increase in age and decrease in emesis.

Average age in present study was 24.88 in group O and 25.25 years in group M.

In this study, the incidence of PONV was more in younger patients in both groups.

Obesity is usually seen to be associated with increased incidence of PONV.

In the present study the mean weight was 56.36 in group O and 57.32 in group M. The incidence of vomiting was more in patients with weight more than 57.32 kgs.

In a study [8], they observed 2 patients complained of headache in Ondansetron group. In Metaclopramide group, 2 patients complained of giddiness (6%) and 1 drowsiness (3%) respectively.

Therefore, it is fair to conclude from this study that the safety, efficacy and antiemetic effect of injection Ondansetron, a 5 HT3 antagonist in the dose of 4 mg is more than the injection Metaclopramide in the prevention of post operative nausea and vomiting in patients undergoing LSCS under spinal anaesthesia.

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