

Original Article

COMPARISON OF ONDANSETRON AND GRANISETRON FOR PREVENTION OF PONV FOLLOWING ELECTIVE LUCS

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ABSTRACT :

The aim of the study was to compare the antiemetic effects of oral ondansetron (8mg) and granisetron (2mg) for prevention of PONV following elective caesarean section. Ninety parturients scheduled for elective caesarean section under spinal anaesthesia were randomly allocated into three groups. Group A (n=30) were received vitamin tab, group B (n=30) parturients were received oral ondansetron (8mg) & group C (n=30) parturients were received oral granisetron (2mg). Anesthetic procedure was common to all groups. Emetic episodes in early postoperative period (1st 24 hrs.) were recorded and compared in different study groups. Emetic episodes were observed in six parturients (20%) in group A (control), 3 parturients in group B (3%) and 3 parturients in group C (3%). So to conclude, minimal emetic episodes were observed in early postoperative period in parturients who had received ondansetron or granisetron than the control group.

Keyword : LUCS, PONV, Ondansetron, and Granisetron.

INTRODUCTION :

Postoperative nausea and vomiting (PONV) are common sequelae of general as well as regional anaesthesia and a leading cause of delayed discharge and unanticipated hospital admission after surgical procedure.¹

The incidence of PONV after anaesthesia and surgery varies from 14% to 82%. The wide variation of these result are partly due to differences in design of studies.² This is very frequent in gynaecological surgery leading to recommendation of routine prophylactic administration of antiemetics. The availability of an emesis basin for every patient in post anaesthesia recovery unit is a reflection of the limited success with the available therapeutic technique. The aetiology of nausea and vomiting after surgery is multifactorial in origin, age,

menstrual cycle, type of surgery and anaesthetic procedure may influence PONV.³

Many drugs have of far been tried to prevent or alleviate this problem. The antiemetics that are currently being widely used for treatment in our country are prochlorperazine, metochlopramide and promethazine. But these drugs have varying effectiveness and their use is limited because of delayed recovery, sedation and sometimes distressing side effect of extrapyramidal symptoms.^{4,5,6}

The introduction of 5HT₃ receptor antagonist in 1990s was heralded as a major advance in the treatment of PONV because of the absence of adverse effect that were observed with commonly used traditional antiemetics.^{7,8}

The present study was done to compare the antiemetic effect of optimal dose of oral ondansetron (8mg) and granisetron (2mg) for prevention of PONV following elective caesarean section.

METHODS :

This prospective comparative study was carried out in the department of Anaesthesiology DNMCH in 90 parturient scheduled for elective caesarean section under Subarachnoid block. Informed consent was taken from each parturient. After selection, parturient were randomly allocated into three groups, thirty in each by card sampling. Ninety cares were prepared and every parturient included in the study allow choosing a card in the preoperative period. In group-A, parturient were received vitamin tab, in group-B parturient were received tab ondansetron (8mg) & in group-C, parturient were received tab granisetron (2mg). The parturient who had psychological instability, known sensitivity to study drugs, know contraindication to SAB, significant renal, hepatic, cardiac & coagulation abnormalities were excluded.

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After overnight fasting she was prescribed the study drugs as per group of the patient according to random assignment. In the operation room an intravenous canula (18G) was inserted and the patient received IV pre-hydration 15ml/kg body weight- Ringers lactate solution within 20 minutes.

After pre-hydration under all aseptic precaution lumbar puncture was performed with 25 gauge Quincke's needle in the L3-L4 or L4-L5 space in sitting position and 0.5% Hyperbaric Bupivacain 2.5 ml (12.5 mg.) was injected within 10-12 sec. After noting the time of injection, patient was immediately placed in supine position. A wedge was placed under the right hip. All patient was received supplemental O₂ (4 liter per minute) via mask or nasal canula. Immediately after administration of spinal anaesthesia pulse rate, blood pressure, rate of respiration, discomfort and occurrence of side effects: shivering, nausea, vomiting was recorded every 2 minute for first 10 minutes, then at 10 minutes interval for remainder of the operation.

In the recovery room postoperative analgesia was provided with injection ketorolac tromethamine 30 mg IM on complaining pain and repeated in all patients if necessary. Presence of nausea and vomiting patients were interviewed at one hourly over the first 3 hours then at 3 hourly up to 24 hours postoperative period. Resque antiemetic of prochlorparazine 10 mg I/M was given if vomiting

occurs once, nausea for 10 minutes or at the patient request. Rest other parameters as for example; heart rate, BP, respiration and SpO₂ were also recorded at same interval. Patients were carefully observed for any adverse effects like headache, flushing, drowsiness or any other symptoms.

The data was collected in a pre designed 'Data collection form'. All data were compiled and analysed using one-way ANOVA or Chi square (X²) test as appropriate with the help of SPSS. The result was regarded as significant if P<0.05 or á Value of .05 with confidence interval 95%.

RESULTS :

- Demographic data (Age, weight, height) of parturients & duration of surgery are displayed in table-I.
- No clinically significant difference in heart rate in intraoperative and postoperative period were seen between the groups in time interval (Fig-1).
- Statistically no significant different was also observed in mean blood pressure during operation and postoperatively between the groups (Fig-2).
- Incidence of nausea and vomiting in different groups and comparison between these groups are analyzed in table II & III and also in Fig-3.

Table-I

The demographic data of Age, Weight, Height and Duration of surgery of different groups (mean ± SE, n=30)

Groups	Age	Weight	Height	Duration
Group-A	25.37 (±0.97)	61.87 (±0.97)	150.70 (±0.97)	51.37 (±0.97)
Group-B	23.87 (±0.96)	62.63 (±0.96)	148.57 (±0.96)	52.20 (±0.96)
Group-C	24.87 (±1.20)	60.00 (±1.20)	151.30 (±1.20)	52.00 (±1.20)
f	0.97	0.46	1.98	0.25
P	0.38	0.63	0.14	0.78

Values are expressed as mean ± SEM. Statistical analysis were done by 'f' test. Values are regarded as significant if p<0.05.

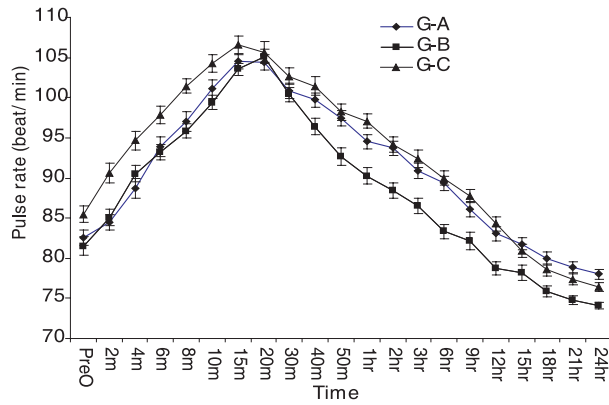


Fig-1: Intra operative and post operative pulse rate changes of different groups

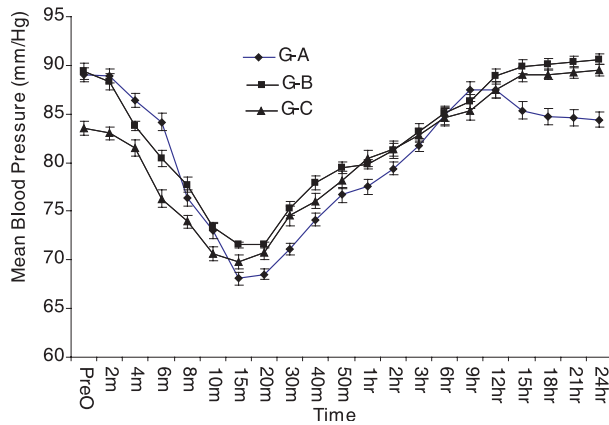


Fig-2: Intra operative and post operative mean blood pressure changes of different groups

INCIDENCE OF NAUSEA AND VOMITING

Incidence of Nausea and vomiting was higher in group-A (20%) than in group-B (3%) and group-C (3%).

Table II
Incidence of Nausea and vomiting

Groups	Cases	Percentage
Group – A(n = 30)	6	20%
Group - B (n = 30)	1	3%
Group – C (n = 30)	1	3%

The incidence of Nausea and vomiting of different groups were subjected to 'Z' test. The significant difference ($P < 0.02$) was observed between Group – A Vs Group-B and Group-A Vs Group-C. No significant changes was observed between group-B Vs

Group-C.

Table-III
Comparison of Different Groups.

Groups	Z Value	P value
Group - A Vs Group - B	2.01	0.02
Group-A Vs Group-C	2.01	0.02
Group-B Vs Group-C	-	-

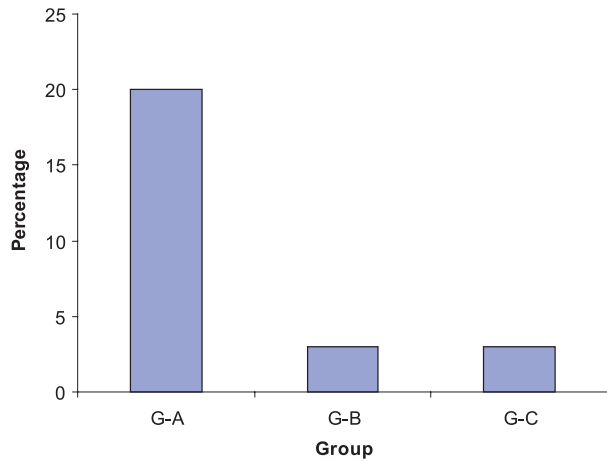


Fig.-3: Incidence of post operative nausea and vomiting.

DISCUSSION :

Nausea and vomiting are common and sometimes dangerous side effects following surgery. Most of the incidence of nausea and vomiting occur during the first two hours of recovery from anesthesia. The etiology of postoperative nausea and vomiting is multi-factorial. Many factor associated with anesthesia and surgery may contribute to nausea and vomiting. In the present study concern factors are type of anesthesia, female patient and gynecological surgery. Incidence of nausea and vomiting is two to three times more in female due to changing endocrine environment which sensitize the brain stem emetic mechanism. During LUCS the regional anesthesia as well as some traction of vagal innervated gut may play role in triggering emesis. The reported overall incidence of nausea and vomiting after gynecological surgery is 75%.⁹

In lower uterine caesarean section the incidence of nausea and vomiting is relatively more then other gynaecological procedure. The antiemetics are now mainstay of therapy to prevent PONV. The

antiemetics that are now currently being widely used for treatment in our country are prochlorperazine, metochlopramide and promethazine and many study have done with these drugs. But these drugs have varying effectiveness and there use is limited because of delayed recovery, sedation and sometimes distressing side effect of extrapyramidal symptoms. ^{4,5,6}

The introduction of 5HT₃ receptor antagonist in 1990s was heralded as a major advance in the treatment of PONV because of less adverse effects that were observed with commonly used traditional antiemetics. ^{7,8} Granisetron is a newer drug and limited study have done with this drug in our country. So we have chosen ondansetron and granisetron for prevention of PONV in elective LUCS to compare these drug about their efficacy and side effects during operations and 24 hours post operative period.

In the present study incidence of nausea and vomiting in group-A (control group) is 20%, in group-B (those received tab ondansetron 8 mg) is 3% and in group-C (those received tab granisetron 2mg) is 3% Both ondansetron and granisetron decreases nausea and vomiting significantly in group-B and Group-C but the comparison between this to groups for prevention of PONV following elective caesarean section is similar.

In one study M Naguib with his co-worker shows that prophylactic antiemetic treatment with ondansetron resulted in a lower incidence of PONV than with metochlopramide and placebo in a randomized double blind comparative study on laparoscopic cholecystectomy¹⁰.

In another study Dr. Dipasri Bhattacharya with his co-worker shows that granisetron is much better than ondansetron for prevention of PONV following day case gynecological laparoscopy in a randomized double blind technique¹¹.

In another study John D. Bridges, BS (Pharm) shows that low dose granisetron was shown to be equally effective as comparator agents (ondansetron, dolasetron) with no toxicity in female patients at high risk for PONV¹².

In our study most of the incidence of PONV occur with first two hours after surgery in all three groups but in rest of the period no nausea and vomiting occur which is similar with the study of Dr. Bridges¹². It has some dissimilarities with the study

of Dr. Naguib¹⁰ and Dr. Dipasri Bhattacharya¹¹. Most of the operations in previous study done under general anaesthesia.

Regarding hemodynamic changes (Pulse, Blood pressure) SpO₂, respiratory changes, during operation and 24 hours post operative period no significant changes occur. No other adverse effect like headache, constipation and flushing during operation and 24 hours postoperative period were observed in this study.

CONCLUSION:

Both ondansetron and granisetron reduce postoperative nausea & vomiting significantly but comparison between this two drugs for prevention of PONV following elective caesarean section is similar.

However further work is required to compare between ondansetron and granisetron about their efficacy for prevention of PONV in LUCS under SAB.

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