INTRODUCTION: To compare the efficacy of intravenous ondansetron (4 mg, 2 mL) and granisetron (2 mg, 2 mL) for preventing postoperative nausea and vomiting (PONV) in patients undergoing surgical procedures under general anaesthesia.

MATERIAL AND METHODS: A prospective, randomized, and double blind clinical study was carried out with 60 patients undergoing surgical procedures under general anaesthesia. Patients were divided into two groups of 30 individuals each. Approximately 15 minutes before the end of surgery, each patient received either 4 mg (2 mL) ondansetron or 2 mg (2 mL) granisetron intravenously in a double blind manner. Balanced anaesthetic techniques were used for all patients. Patients were assessed for episodes of nausea, retching, vomiting, and the need for rescue antiemetics at intervals of 0-6, 6-12, and 24 hours after surgery. Incidence of complete response and adverse effects were assessed at 24 hours postoperatively. Data was tabulated and subjected to statistical analysis using the chi-square test, unpaired t-test. A P-value less than 0.05 was considered statistically significant.

RESULTS: There was no statistically significant difference between the two groups for incidence of PONV or the need for rescue antiemetics. Both study drugs were well tolerated with minimal adverse effects; the most common adverse effect was headache. The overall incidence of complete response in the granisetron group (86.7%) was significantly higher than the ondansetron group (60.0%).

CONCLUSION: In conclusion, granisetron at an intravenous dose of 2 mg was found to be safe, well tolerated, and as effective as 4 mg intravenous ondansetron for antiemetic prophylaxis in patients suffering from general anaesthesia, and can be employed as routine antiemetic prophylaxis for PONV. It is a valuable alternative to ondansetron.

KEYWORDS
protocol of the required procedure.

Inclusion criteria- Patients of ASA grade I & II within the age group of 20-40 years and body weight between 40 to 70 kg undergoing elective surgery (duration <3hrs) under balanced general anaesthesia are selected for the study. Only those patients who were not having any systemic disease and approved preanaesthetically were included.

This study was conducted on 60 patients divided into 2 groups. Each group contain 30 patients. They have received either injection Ondansetron 2 ml (4mg) IV or injection Granisetron 2 ml (2 mg) IV 15 min. before end of surgery. All the patients were divided in two groups.

Group A (n = 30) injection Ondansetron 4mg IV in 2 ml
Group B (n = 30) injection Granisetron 2mg IV in 2 ml

Preoperatively: In the operation theatre after proper identification of patients, written informed consent was taken. Preoperatively pulse and BP was recorded after applying monitors and starting IV line with RL or other crystalloidal fluids. All the patients were given pre anaesthetic medication with inj Glycopyrolate 0.2 mg, inj. Midazolam 0.04mg/kg I.V. and inj Pentazocine 30 mg I.V. Preoxyegenation of all the patients was done for 3 minutes in operation theatre before induction of anaesthesia.

Induction of anaesthesia was done with inj. Propofol 2 mg/kg IV slowly followed by inj. Succinylcholine 2mg/kg IV and IPPV with 100% oxygen was given. Intubation with proper size of disposable PVC cuffed endotracheal tube was done after muscle fasciculations pass off from hand muscles and complete muscle relaxation was achieved.

Maintenance of anaesthesia was done with 67 % Nitrus Oxide +33 % Oxygen and 1% to 2% halothane and nondepolarizing muscle relaxants (atracurium) and patients were mechanically ventilated to maintain ETCo2 (35 to 40mm of Hg).

Intraoperative period: Vital parameters eg pulse, blood pressure, spo2, ETCo2 and signs of inadequate plane of anaesthesia, lacrimation, involuntary movements etc are noted and managed accordingly. No patient was given any other antiemetic drug during the intraoperative period. 15 min. before end of surgery the study drug was given by other person (blindly). So the observer does not know the name of drug and the person who injected the drug labeled the syringes as: A, and B.

Reversal: Patient given inj. Neostigmine 0.05 mg/kg IV with inj. Glycopyrolate 0.01 mg/kg, as respiratory efforts begin.. After regaining muscle power to maintain spontaneous respiration and adequate tidal volume, patients were extubated after discontinuation of oxygen via mask, patients were observed for oxygen saturation if it remains above 97%, patients were shifted to recovery room and/or postoperative ward, where the patient was observed by some other observer for nausea & emetic episodes. Then drug was assumed and confirmed for putting the patient in group A, and B accordingly.

Postoperatively, all patients were assessed at the PACU and department wards for episodes of nausea, retching, vomiting, and the need for rescue antiemetic at intervals of 0-6, 12, and 24 hours.

Episodes of PONV were identified by spontaneous complaints from patients or by direct questioning. The patients were observed for 24 hours postoperatively for incidence of complete response and adverse effects.

"Complete response" was defined as the absence of nausea, retching, or vomiting and no need for rescue antiemetic during the 24 hour observation period. Rescue antiemetic in the form of an intravenous injection of metoclopramide 10 mg, was given in the event of one or more episodes of vomiting depending on the observer's discretion.

Observation Table 1 Number Of Patients And Incidence Of Nausea And Retching

<table>
<thead>
<tr>
<th>Duration</th>
<th>NAUSEA</th>
<th>GRP A</th>
<th>P VALUE</th>
<th>GRP B</th>
<th>P VALUE</th>
<th>RETCHING</th>
<th>GRP A</th>
<th>P VALUE</th>
<th>GRP B</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6 hrs</td>
<td>26(66)</td>
<td>0.195</td>
<td>0.0</td>
<td>1(3.33)</td>
<td>0.082</td>
<td>1(3.33)</td>
<td>0.0</td>
<td>1(3.33)</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>6-12 hrs</td>
<td>26(66)</td>
<td>0.155</td>
<td>0.0</td>
<td>0(0)</td>
<td>0.0</td>
<td>0(0)</td>
<td>0.0</td>
<td>0(0)</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 Incidence Of Vomiting And Rescue Medication

<table>
<thead>
<tr>
<th>Duration</th>
<th>GRP A</th>
<th>B</th>
<th>P VALUE</th>
<th>GRP A</th>
<th>B</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6 hrs</td>
<td>2(6.66)</td>
<td>0</td>
<td>0.155</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>6-12 hrs</td>
<td>2(6.66)</td>
<td>0</td>
<td>0.195</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>12-24 hrs</td>
<td>2(6.66)</td>
<td>0</td>
<td>0.155</td>
<td>0</td>
<td>0</td>
<td>0.321</td>
</tr>
</tbody>
</table>

Table No 3 Complete Response

<table>
<thead>
<tr>
<th>No of pat.</th>
<th>A</th>
<th>B</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>26</td>
<td>0.021</td>
<td></td>
</tr>
<tr>
<td>percentage</td>
<td>60</td>
<td>86.7</td>
<td></td>
</tr>
</tbody>
</table>
reported by Bhattacharya and Banerjee (complete response=80% in ondansetron group and 93% in granisetron group). This may be explained by a difference in the type and duration of surgical procedures included in the present study, as tubal ligations were also included in their study.

CONCLUSION
In conclusion, granisetron at an intravenous dose of 2 mg was found to be safe, well tolerated, and as effective as 4 mg intravenous ondansetron for antiemetic prophylaxis surgery patients receiving general anesthesia, and can be employed as routine antiemetic prophylaxis for PONV. It is a valuable alternative to ondansetron.

REFERENCES