PREVENTION OF POSTOPERATIVE NAUSEA AND VOMITING IN LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Objective: To assess the efficacy of ondansetron and dexamethasone in the prevention of nausea and vomiting in patients undergoing laparoscopic cholecystectomy.

Material and Methods: This study was conducted at the Department of Surgery, Khyber Teaching Hospital, Peshawar from May 2010 to December 2010. A total of 67 patients, aged 18 years and above, scheduled for elective cholecystectomy were included by purposive non probability sampling. All the patients received ondansetron 4mg and dexamethasone 8mg intravenously as prophylactic antiemetics at the commencement of surgery. Post operatively the frequency of nausea and vomiting was observed.

Results: During the immediate postoperative 24 hour period, 57 (85%) patients did not experience nausea or vomiting. 10 (15%) patients experienced some degree of nausea and vomiting requiring administration of rescue anti emetic. No significant side effects were noted.

Conclusion: The combination of ondansetron and dexamethasone administered prophylactically effectively prevents nausea and vomiting during the postoperative period after laparoscopic cholecystectomy.

Key Words: Postoperative nausea and vomiting (PONV), dexamethasone, ondansetron.

INTRODUCTION

Post operative nausea and vomiting (PONV) is a common unwanted effect in patients undergoing laparoscopic cholecystectomy. PONV can be very distressing to the patient, sometimes more than the surgery itself, and it can result in several complications like dehydration, gastric aspiration and wound disruption. Several factors have been implicated specifically in laparoscopic cholecystectomy like carbon dioxide insufflation, distension of the abdomen and irritation of the diaphragm and other abdominal viscera. In addition, other factors have also been associated like female gender, history of motion sickness, obesity, length of surgery, postoperative pain, use of opioids and use of inhalational anaesthetics like halothane. Ondansetron 4 mg and dexamethasone 8 mg IV have been shown to reduce the risk of PONV significantly. Their efficacy has been proven against a variety of antiemetic drugs. It has been shown to reduce the frequency of rescue anti emetic drugs use and reduce the length of hospital stay. As laparoscopic cholecystectomy has become the preferred procedure for gallstone disease and upto 70% patients suffer postoperative nausea and vomiting without adequate prophylaxis or with routine antiemetics like metoclopramide or cyclizine, this study was designed to study the efficacy of ondansetron and dexamethasone in prevention of nausea and vomiting in patients undergoing laparoscopic cholecystectomy.

MATERIAL AND METHODS

This descriptive study was conducted over a period of 8 months from May 2010 to December 2010 in the Department of Surgery, Khyber Teaching Hospital, Peshawar. The study design was approved by the ethical committee of the hospital. A total number of 67 patients undergoing laparoscopic cholecystectomy under general anaesthesia were included in the study. Patients with ASA (American Society of Anaesthesiologists) grade III and IV, BMI more than 30 kg/m², history of motion sickness, upper gastrointestinal pathology like peptic ulcer disease, conversion of the procedure to open cholecystectomy and length of surgery more than 90 minutes were excluded from the study. An informed and written consent was obtained from all the patients.

The patients were admitted the day before surgery, all routine investigations were done and any co morbid conditions were excluded. They were kept nil by mouth for 6-8 hours. On arrival into the operation theatre an 18 G IV cannula was passed in...
the non-dominant arm and routine haemodynamic monitoring started. Before induction of anaesthesia, ondansetron 4 mg and dexamethasone 8 mg in separate syringes were administered i.v. slowly. Anaesthesia induction was done with propofol and succinyl choline and endotracheal tube passed. Anaesthesia was maintained with inhalation of isoflurane and oxygen, pain control was with tramadol 100 mg i.v. slow and muscle relaxation with acuron.

The stomach was emptied with 16 French nasogastric tube. With the patient in a supine position, entry into the abdomen was done with veress technique at subumbilical incision site. Three ports were used in all cases. Gas insufflation was done with carbon dioxide with maximum pressure of 12 mm Hg. At the end of the procedure ketorolac 30 mg was given i.v. and the port site wounds were infiltrated with 10 ml of bupivacaine 0.125%. Patients were recovered from anaesthesia in the operation theatre. During the first 24 hours after surgery the patients were assessed for the presence or absence of nausea and vomiting, adequacy of analgesia and the use of rescue anti emetics. Whenever the patient complained of nausea for more than 15 minutes or vomiting, rescue anti emetic metoclopramide 10 mg was given. Analgesia was routinely obtained with tramadol 50 mg 8 hourly i.v. and ketorolac 30 mg 8 hourly i.v. All the data was recorded on a pre designed proforma. Statistical analysis was done with SPSS ®version 11.0 for windows. For continuous variables mean and standard deviation was calculated. Categorical data was presented in percentages and proportions.

RESULTS

A total number of 67 patients fulfilled the selection criteria for inclusion into the study, among them 49 were females and 18 males. Mean age was 49.4 years (S.D. 14.6). Total number of 57(85%) of them 49 were females and 18 males. Mean age was calculated. Categorical data was presented in percentages and proportions.

Table 1: Patients’ characteristics and duration of surgery

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>67</td>
</tr>
<tr>
<td>Age (years)</td>
<td>49.4 ± 14.6</td>
</tr>
<tr>
<td>Sex (F/M)</td>
<td>49/18</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>26.3 ± 4.7</td>
</tr>
<tr>
<td>History of motion sickness</td>
<td>12</td>
</tr>
<tr>
<td>History of PONV (n)</td>
<td>4</td>
</tr>
<tr>
<td>Non Smokers (n)</td>
<td>56</td>
</tr>
<tr>
<td>Duration of surgery (min)*</td>
<td>55.7 ± 23.2</td>
</tr>
</tbody>
</table>

DISCUSSION

Our study shows that with the administration of ondansetron 4 mg and dexamethasone 8 mg, 15% of the patients experienced PONV during the first 24 hours. Without prophylactic anti emetics, the incidence of nausea and vomiting after laparoscopic cholecystectomy has been more than 70%. According to the literature the combination of ondansetron and dexamethasone reduces the risk significantly.

Ondansetron is a selective 5 hydroxy tryptamine (serotonin) receptor antagonist used for prevention of PONV. It is given in 4 mg and 8 mg doses but it has been shown in various studies that 4 mg is the optimal dose as increasing the dose to 8 mg does not confer any additional beneficial effect. A drug more popular for prevention of nausea and vomiting associated with chemotherapy, it was shown that it is a very effective drug for the prevention of post operative nausea and vomiting as well. Dexamethasone is a glucocorticoid and has been successfully used for anti emesis. The mechanism of action is unknown but it has been suggested that it may act by prostaglandin antagonism, serotonin inhibition in the gut and by releasing endorphins. The effectiveness of dexamethasone in preventing PONV has been shown in laparoscopic and gynaecological surgeries. The optimal dose studied ranges from 2 to 32 mg, however, most of the studies show 8 mg to be the most effective dose.

The pathophysiology of vomiting reveals that vomiting can occur by different neurotransmitters acting on various receptors at various sites. The combination of dexamethasone and ondansetron provides blockade of these receptor actions at different sites and this phenomenon has been validated. Dexamethasone 8 mg plus ondansetron 4 mg have been shown in various studies to significantly reduce the incidence of PONV. Elhakim et al have shown that the incidence of PONV reduced from 83% to 16% with 4mg ondansetron and 8 mg dexamethasone. Bano et al in a randomised controlled trial comprising 100 patients in 2 groups, found that dexamethasone 8 mg plus ondansetron 4 mg significantly reduced the risk of PONV when compared to dexamethasone alone. Lekskowi et al similarly found that prophylactic antiemetics with ondansetron and dexamethasone significantly reduced the incidence of PONV when compared to...
six different combinations of various antiemetics. Similar results have been found by several studies18-26.

CONCLUSION

A combination of dexamethasone 8 mg and ondansetron 4 mg appears to be a safe prophylactic measure for the prevention of PONV in patients undergoing laparoscopic cholecystectomy.

REFERENCES


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