

Comparative Study of Efficacy of Ondansetron versus Ondansetron and Dexamethasone Combination in Preventing Postoperative Nausea and Vomiting after Laparoscopic Cholecystectomy

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Abstract: This study aims to compare the efficacy of Ondansetron alone versus Combination of Ondansetron and Dexamethasone in terms of preventing Postoperative Nausea and Vomiting, Pain and duration of hospital stay. **Material and Methods:** A prospective interventional randomized control study was conducted in the Department of General Surgery, SGT Medical College Hospital and Research Institute, Gurgaon, Haryana. The randomization was done according to the standard methods to allocate the patients to either Group A (total 30 patients) receiving Ondansetron 4mg + 2ml normal saline (total of 3ml) intravenous (IV), 1 minute before induction of anesthesia and Group B (total 30 patients) receiving Ondansetron 4mg and Dexamethasone 8mg (total of 3ml) IV, 1 minute before induction of anesthesia. Adequate sample size of 60 patient fulfilling inclusion and exclusion criteria mentioned are studied. The data was collected in a pre - designed study proforma and statistical analysis was performed. The treatment and drug efficacy were compared between two groups in terms of postoperative nausea and vomiting, pain and duration of hospital stay. **Result:** The total incidence of post - op nausea and vomiting following administration of Dexamethasone along with ondansetron was 1 patient (3.3 %) whereas 15 patients (50%) in group where dexamethasone was not administered which is significant. The 1 patient of Group B was a case of abdominal tuberculosis with fibrosis of stomach serosa. Marked relief in post - op pain and shorter hospital stay was observed in group B which was administered steroid. **Conclusion:** From this study, we can conclude that administration of steroid like dexamethasone along with Ondansetron has significant role in prevention of post - op nausea and vomiting, pain and gives shorter hospital stay, making it a necessary step to be followed when performing Day - care Laparoscopic Cholecystectomy.

Keywords: laparoscopic cholecystectomy, post - operative nausea, PONV, dexamethasone, ondansetron

1. Introduction

Laparoscopic cholecystectomy (LC) has supplanted open cholecystectomy for the managing of uncomplicated gallbladder disease since its inception in 1985 & has become the standard of care in subjects with indicative cholelithiasis. As opposed to open cholecystectomy, this method typically results in a shorter stay at hospital, quicker recovery, & return to normal actions with less pain & postoperative ileus. The probability of postoperative nausea & vomiting (PONV) following LC varies from 53–72 percent depending on surgical, anaesthetic, & individual patient characteristics. Post - operative complications such as haemorrhage, wound dehiscence, stomach aspiration, & electrolyte imbalance are more likely in patients with untreated PONV. They also have the potential to lengthen patients' time in the PACU & lead to unplanned hospitalisations, both of which add substantially to the cost of medical treatment [1]. Depending on the type of surgery performed, the incidence of PONV ranges from 20% to 30% when no preventative measures are taken. However, PONV after LC is more common than after other types of surgery. Subjects who did not get antiemetic medication following LC had a rate of 6% - 75%, according

to reports [2]. Delays in discharging these patients place an unnecessary strain on the healthcare system. Anesthesia, surgery, & individual susceptibilities all have a role in the development of postoperative neovascularization (PONV) [3]. Since there are several potential causes of PONV after LC, it is best to use a mix of anti - emetics [5]. Ondansetron, granisetron, & tropisetron, all of which block the 5 - HT₃ receptor, are the best - studied & most widely - used anti - emetic medications. Other anti - emetics, such as metoclopramide, dexamethasone, & droperidol, have also been utilised. Despite the wide availability of antiemetic medications, no one agent has been shown to be 100% effective against PONV [2]. The present study was conducted to evaluate postoperative nausea and vomiting among patients given ondansetron and combination of dexamethasone and ondansetron preoperatively.

2. Methods and Materials

The study was conducted from December 2020 to November 2022. Patients admitted in the department of surgery for elective cholecystectomy were enrolled in the study after fulfilling the eligibility criteria.

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Inclusion criteria

- All Patients >18yrs of age undergoing Laparoscopic Cholecystectomy.

Exclusion criteria

- Pregnancy
- Patients taking sedatives, anxiolytics, antihistamines, & anti - emetics prior to surgery.
- Known drug allergy or hypersensitivity to anti - emetics
- Vertigo or any ear infection
- Choledocholithiasis
- Pancreatitis
- Cholangitis

A total of 60 patients were enrolled in the study (30 in each group) and were randomly allocated to one of the group. In Group A (total 30 patients) received Ondansetron 4mg + 2ml normal saline (total of 3ml) intravenous (IV), 1 minute before induction of anesthesia and in Group B (total 30 patients) received Ondansetron 4mg & Dexamethasone 8mg (total of 3ml) IV, 1 minute before induction of anesthesia. PONV was observed at regular interval and the rescue medicine metoclopramide (10 mg IV) was given to patients who experienced nausea or vomiting that persisted longer than 15 minutes. Drug or drugs were labelled efficient if no nausea & vomiting occurs 6 hours.

Statistical Methods

SPSS 20 was used for the statistical analysis. Categorical variables such as gender, ASA, & PONV have their frequencies & percentages calculated. Quantitative factors such as age & weight were used to determine means, standard deviations, & medians. The mean age gap between the groups was determined using an independent sample t - test after verifying for normality. Mann - Whitney U test (a non - parametric test) was used. Weight comparisons between groups will be based on the median rather than the mean due to the non - normality of the data. The postoperative nausea & vomiting rates were compared among the groups using the Chi - square test.

3. Results

Both group A & B had equal number of males (13.33%) & females (86.67%) with mean age in Group A was 44.60 ± 13.37 whereas in Group B it was equal to 40.37 ± 14 . Obesity was present in 93.33% of subjects in Group A & 86.7% in Group B. Vomiting was present in 50% (15) of subjects in Group A & 3.3% (1) in Group B. ($P < 0.02$). Incidence of vomiting at half an hour showed vomiting was present in 30% (9) of subjects in Group A & 0% in Group B ($P = 0.001$). Incidence of vomiting at one hour showed vomiting was present in 16.67% (5) of subjects in Group A & 3.33% (1) in Group B ($P = 0.043$). Incidence of vomiting at three hours showed that vomiting was present in 3.33% (1) of subjects in Group A & 0% in Group B. ($P = 0.31$). Incidence of vomiting at six hours showed vomiting was present in 0% of subjects in Group A & 0% in Group B. ($P = 1$). Incidence of vomiting at 12 hours among the study groups showed vomiting was present in 0% of subjects in Group A & 0% in Group B ($P = 1$). Mean \pm SD pain score of subjects in group A was 4.67 ± 1.09 & in group B was $4.27 \pm$

0.87. ($p = 0.12$) Mean \pm SD hospital stay of subjects in group A was 2 ± 0.74 & in group B was 1.67 ± 0.76 . ($p = 0.09$) Intra - op time showed less than 1 hr time was taken by 23.3% in Group A & 30% in Group B. Between 1 - 2 hrs time was taken by 63.3% in Group A & 53.33% in Group B. More than 2hr time was taken by 13.3% in Group A & 16.7% in Group B. ($P = 0.29$).

4. Conclusion

One of the most upsetting aspects of anaesthesia & surgery is postoperative nausea & vomiting (PONV). Ondansetron is representative of a relatively new class of medications called 5HT₃ antagonists that have emerged in the search for more effective antiemetic treatments without the risk of sedative or extrapyramidal side effects. 5HT₃ antagonists are powerful antiemetics, but no medicine has yet been shown to successfully manage PONV by itself. Since it is assumed that employing a combination of antiemetics acting on distinct receptors can further lower the frequency of PONV, this has led to a number of research examining the efficacy of such a strategy. Our research examined outcomes for Groups A & B, who received a different combination of interventions one minute prior to inducing general anaesthesia. The findings of this study suggest that the prophylactic use of 4 mg of both ondansetron & dexamethasone is superior to the use of ondansetron 4 mg alone in the prevention of PONV. It has been found that both monotherapy & combination therapy are quite safe & well tolerated by patients. In terms of avoiding PONV, the combined therapy has a better patient response.

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