ORIGINAL ARTICLE

Compare the Effectiveness of Ondansetron Vs Prochlorperazine for preventing Nausea & Vomiting after Laparoscopic Cholecystectomy

ITRAT HUSSAIN KAZMI[1], AAMIR WASEEM[2], SEEMA QAISAR[3], KHUMAIR ASIF[4]
[1]Consultant Anaesthetist, Department of Anaesthesia, Shalamar Medical & Dental College, Lahore
[2]Assistant Professor, Department of Anaesthesia, Shalamar Medical & Dental College, Lahore
[3]Postgraduate Trainee, Department of Anaesthesia, Shalamar Medical & Dental College, Lahore
[4]Associate Professor of Surgery, Akhtar Saeed Medical & Dental College Lahore
Correspondence to Dr. Itrat Hussain Kazmi, Email: kazmitrat@gmail.com, Cell 0321-4426672

ABSTRACT

Aim: To determine the effectiveness of ondansetron with prochlorperazine in preventing postoperative nausea and vomiting in patients undergoing laparoscopic cholecystectomy.
Study design: Randomized controlled trial.
Place and duration of study: Department of Anaesthesia, Shalamar Medical & Dental College Lahore from 1st January 2020 to 30th June 2020.
Methodology: One hundred and twenty six patients of both genders with ages 20 to 70 years undergoing laparoscopic cholecystectomy were enrolled in this study. Patients were divided into two groups; group I and group II. And each group contains 63 patients. Group I received ondansetron and group II received prochlorperazine before induction of anesthesia.
Results: No significant difference was observed between both groups regarding age, gender, body mass index and ASA class with p-value >0.05. In group I 8(12.7%) patients had nausea and 11(19.05%) had vomiting while in group II 10(15.9%) patients had nausea and 7(11.11%) patients had vomiting, no significant difference was observed between both groups I and II with p-value >0.05. In group I, 9(14.3%) patients had adverse effects while in group II, 13 (20.63%) patients had side effects of medication such as headache, dizziness and sedation. No significant difference was observed regarding anti-emetics use between both groups (p value >0.05).
Conclusion: Ondansetron and prochlorperazine both are safe and effective for preventing postoperative nausea and vomiting with fewer rates of side effects in patients undergoing laparoscopic cholecystectomy.
Keywords: Odansetron, Prochlorperazine, Laparoscopic Surgery, Nausea, Vomiting

INTRODUCTION

Postoperative nausea and vomiting (PONV) in patients after surgery is characterized as occurrences of nausea and vomiting from postoperative care unit (PACU) to the early days of patient transfer to the hospital, without any apparent reasons for hypotension.[1] The postoperative nausea and vomiting rate (20 percent - 30 percent) have been found to vary in different surgical procedures.

The application of dropridol 10-20 µg/kg reduces its incidence to 60%. Different methods and drugs have been used in the treatment of PONV.[2]Ondansetron is an antagonist of 5-HT3 serotonin receptors mainly used as an antiemetic after chemotherapy. Its effects on the peripheral and central nerves are believed to be. Ondanestron reduces the activity of the vacuum nerve to turn the vomiting centre off in the oblongate medulla and to block serotonin receptors in the trigger zone of the chemoreceptor. But the effects of dexamethasone, mostly used in ear, neck, and nose surgery patients are cheap and do not cause serious side-effects, as are the chance of extreme complications in high blood pressure and headaches in patients who are sensitive or extremely bloodthirsome. If the dexamethasone is administered orally or parenterally for more than a couple of days, the typical side effects to systemic glucocorticosis can occur[4].

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A general anaesthesia using inhaled anaesthesia can cause post-operational nausea and vomiting, the incidence estimated to be 20-30%. The incidence of PONV decreases in every 10 years after the age of 50 to around 13 percent.[5]Anti-emetic therapy revolutionized the appearance of 5-HT3 receptor antagonists in the 1990s. Its impact is significant in preventing PONV. Ondansetron is a structurally identical carbazolin derivative, but has no significant effect on the activity of dopaminergic receptors, histamine, adrenergic receptors and cholinergic receptors. Hypersensitivity reactions are the main side effect of this medicine. Other side effects include headache, lights, dizziness, intravenous line obstruction, temporary increase of levels of liver transaminase, heat feeling and constipation in the epigastrium. During the injection of this drug, cardiac disrhythms were reported. Usually the therapeutic dosage (4-8 mg) has no side effects.[1]

Antiemetic effects (dexamethasone and methylprednisolone) of glucocorticoids are known but their mechanics are not completely understood. Dexamethasone is used commonly to prevent and treat nausea in patients who have undergone chemotherapy, though historically it has been useful to prevent PONV. One dose (8-10 mg) of this medication has been shown to be effective in prevention of PONV. However, postoperative nausea and vomiting remain an important concern and the question of the appropriate preventive/treatment solution is still under consideration. It was proposed that the prevention and treatment approaches of dexamethasone be combined as a prophylactic agent against PONV. The effect of

dexamethasone and ondansetron on post-tympanoplastic nausea and vomiting has been compared by this analysis.

MATERIALS AND METHODS

This randomized controlled trial was conducted at Department of Anaesthesia, Shalamar Medical & Dental College Lahore from 1st January 2020 to 30th June 2020. A total of 126 patients of both genders with ages 20 to 70 years underwent laparoscopic cholecystectomy under general anesthesia were enrolled. Patients detailed demographic including age, sex, body mass index (BMI) and physical examination (ASA class I and II) were recorded after taking informed written consent from all the patients. Patients who received antiemetics within 48 h before surgery, patients with cardiovascular diseases, pregnant women, and Patients with a history of recurrent vomiting in the postoperative period were excluded.All the patients were equally divided into two groups; GroupI and Group II. Group I consist of 63 patients and received ondansetron 4mg and group IIconsist of63 patients received prochlorperazine 10mg in 20ml filled syringes, who administered drugs before induction of anesthesia. Efficacy of doses was examined at 24 hours after surgery and compares the frequency of nausea and vomiting between both groups. Side effects such as headache, dizziness and sedation were also examined. Need for anti-emetic use was examined between both groups.All the data was analyzed by SPSS 24. Chi-square test was applied to compare the efficacy between both groups with p-value <0.05 was taken as significant.

RESULTS

In group I, 45(71.43%) patients were females and 18(28.67%) were males with mean age 40.64±8.95 years while in group II,42 (66.7%) patients were females and 21 (33.3%) were males with mean age 41.08±9.34 years. Mean BMI between both groups I and II was23.23±3.51 kg/m^2 and 23.58±3.12kg/m^2. Fifty five(87.3%) and 8 (12.7%) patients in group I had ASA class I and II. In group II53 (84.13%) and 10(15.87%) patients had ASA class I and II. No significant difference was observed between both groups regarding age, gender, BMI and ASA class with p-value >0.05 (Table 1).

In group I, 8(12.7%) patients had nausea and 11(19.05%) had vomiting while in group II, 10(15.9%) patients had nausea and 7(11.11%) patients had vomiting. Significant difference was observed between both groups regarding incidence of nausea and vomiting between both groups (Table 2).

Table 1: Descriptive statistics of the patients

Variable	Group I	Group II
Mean age (years)	40.64±8.95	41.08±9.34
Gender		
Male	18 (28.67%)	21 (33.3%)
Female	45 (71.43%)	42 (66.7%)
Mean BMI (kg/m^2)	23.23±3.51	23.58±3.12
ASA class		
I	55 (87.3%)	53 (84.13%)
II	8 (12.7%)	10 (15.87%)

P-value >0.05, not significant

In group I, 9 (14.3%) patients had adverse effects while in group II, 13 (20.63%) patients had side effects of medication such as headache, dizziness and sedation (Table 3). No significant difference was observed regarding anti-emetics use between both groups (p value >0.05), in group I, 5(7.94%) patients and in group II, 6(9.52%) patients had need to used anti-emetics (Table 4)

Table 2: Incidence of nausea and vomiting between both groups

Variable	Group I	Group II	P-value
Nausea	8 (12.7%)	10 (15.9%)	<0.001
Vomiting	11 (19.05%)	7 (11.11%)	<0.001

Table 3: Comparison of overall side effects between both groups

Side effects	Group I	Group II	P-value
Yes	9 (14.3%)	13 (20.63%)	>0.05
No	54 (85.7)	50 (79.37)	>0.05

Table 4: Comparison rescue antiemetics

Rescue antiemetics	Group I	Group II	P-value
Yes	5 (7.94%)	6 (9.52%)	N/S
No	58 (92.06%)	57 (90.48%)	N/S

DISCUSSION

Postoperative nausea and vomiting are most common complications of general or local anaesthesia, which may lead to serious complications and prolong the hospital stay.[7]A variety of pharmaceutical drugs have been used to avoid postoperative nausea and vomiting, where ondansetrone is a medicine of choice in the prevention of postoperative nausea and vomiting.Majority of patients in the present study were females overall 69.05% and males were 30.95% with overall mean age of 40.64±8.95years. These results showed similarity to many of previous studies in which majority of patients were females 65% to 80% whom were underwent laparoscopic cholecystectomy and majority of patients were in the age group 35 to 45 years.[8,9] In the present study we found no significant difference regarding age, gender, BMI and ASA class between both groups,Qurbanet al[8] performed a comparative study to avoid PONV from laparoscopic cholecystectomy in relation to ondansetron (4 mg IV), granisterone (3 mg IV) and dexamethasone (8 mg IV) effects prior to anaesthesia. They have shown that all three medications have reduced the incidence of PONV considerably relative to placebo.[9]This study showed no significant difference was observed between both groups regarding incidence of nausea and vomiting between both groups. In group I 8 (12.7%) patients had nausea and 11 (19.05%) had vomiting while in group II10 (15.9%) patients had nausea and 7 (11.11%) patients had vomiting. However, in a new review, Lopez-Olaondoet al[10] stated that dexamethasone had as effective as ondansetrone to minimise chemotherapy nausea and vomiting. Gupta[11] also found intravenous dexamethasone and ondansetrone to have similar effects on preventing PONV. In addition, dexamethasone and ondansetron had similar effects on PONV.[12] However, another clinical study[13] showed that dexamethasone and ondansetrone had the same effects on the preventing of PONV. A second study found that dexamethasone is a little more effective in preventing PONV post-tonsillectomy than ondansetron.[14] A study by

60 laparoscopic cholecystectomy patients also indicated a substantial reduction in the incidence of PONV in the dexamethasone group (20% vs 43.3%).[15]

In addition, a trial of 60 patients receiving laparoscopic cholecystectomy found that the incidence of PONV in the dexamethasone community was considerably lower (20% versus 43.3%), as opposed to dexamethasone, was marginally more effective than ondansetron in prevention of PONV post-tonsillectomy.[15]

The incidences of PONV (p=0.002), nausea and vomiting (P=0.0002) in the prochlorperazine community, were stated by Sharma et al[16] to be significantly lower than that of the ondansetron group over the 2-12-hour period. in their analysis. Sharma et al[16]and Grover et al[17] found that the rate of oral ondansetrone in laparoscopic cholecystectomy was lower than placebo in PONV. Chaudharyet al[18] recorded that PONV was lower than those receiving odansetron after laparoscope surgery in patients receiving prochlorperazine.

In the present study,9 (14.3%)patients had adverse effects who received ondansetron while inprochlorperazine group,13 (20.63%) patients had side effects of medication such as headache, dizziness and sedation. No significant difference was observed between both groups. No significant difference was observed regarding anti-emetics use between both groups (p value >0.05). These findings were similar to those of the Chaudharyet al[18] study where there was no substantial difference in the side effects of medications among three classes. Some studies have shown that ondansetron is substantially less adverse than dexamethasone.[19-21]

CONCLUSION

Ondansetron and prochlorperazine both drugs are safe and effective for preventing postoperative nausea and vomiting with fewer rates of side effects in patients undergoing laparoscopic cholecystectomy.

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