



Ondansetron for Prevention of Post-Operative Nausea and Vomiting (PONV) in General Surgery Patients

**Muhammad Naeem ^{a#}, Rafia Tabassum ^{a≡}, Muhammad Saleh Khaskheli ^{aω},
Aijaz Hussain Awan ^{a†}, Munazzah Meraj ^{b‡} and Rao Irfan ^{c*†}**

^a Department of Anesthesiology, SICU and Pain Center, PUMHS, Pakistan.

^b Department of Biochemistry, IPRS, PUMHSW, Pakistan.

^c Pharmaceutical Sciences, IPS, PUMHS Pakistan.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i51B33508

Editor(s):

(1) Dr. Koteshwara Mudigonda, Propharmex Company, India.

Reviewers:

(1) M.Ranga Priya, Excel College Of Pharmacy, India.

(2) Sivakumar, Pondicherry Institute of Medical Sciences, India.

(3) Naser Faisal Al-Tannak, Kuwait University, Kuwait.

Complete Peer review History, details of the editor(s), Reviewers and additional Reviewers are available here:

<https://www.sdiarticle5.com/review-history/77013>

Received 08 September 2021

Accepted 16 November 2021

Published 24 November 2021

Original Research Article

ABSTRACT

Aim: To determine the efficacy of single dose ondansetron in preventing PONV in patients.

Methodology: In this cross sectional study 49 patients were given Ondansetron. Every patient was evaluated for PONV at 1, 2, 3, 6, 12 and 24 hours post operatively. This study was conducted at General surgery operation theatres and surgical wards I, II, III and Department of Anesthesia and SICU Peoples University of Medical & Health Sciences for women Nawabshah, District Shaheed Benazirabad, Sindh.

Results: A sample of 49 patients with age between 20-60 years (mean age 43.72±5.67 years),

MBBS, DA Anesthetist Specialist;

≡ MBBS, DA, FCPS, Associate Professor;

ω MBBS FCPS, Professor;

† MBBS, DA Assistant Professor;

‡ PhD Biochemistry, Associate Professor;

¥ PhD Pharmaceutical Sciences, Associate Professor;

*Corresponding author: E-mail: raoirfan1@pumhs.edu.pk;

35% male and 65% female was included in this study. In this study ondansetron was given (N=49) 4 mg I/V before induction. Regarding complications there was not significant ($p \leq 0.05$) PONV was observed.

Conclusion: Our study results showed in patients who received ondansetron regarding frequency of post operative complications (PONV) showed insignificant results as no p-value is found to be ≤ 0.05 . It was concluded that a single dose of ondansetron is very effective in preventing PONV in general surgery patients.

Keywords: Efficacy; postoperative nausea and vomiting; PONV; ondansetron.

1. INTRODUCTION

Nausea and vomiting are most common postoperative complications and occur after local, regional and general anesthesia. Now in anesthetic practice several drugs e.g ketorolac, ondansetron, buprenorphine, propofol and techniques (i.e spinal opioid administration, total intravenous anesthesia, patient control analgesia has become more commonly used practices [1, 2].

Postoperative Nausea and Vomiting (PONV) are among the common stressful complications of surgery and anesthesia [3]. It may leads to amplified costs due to prolonged hospital stay. Precisely the laparoscopic surgeries are related with considerably high rate of PONV [2] due to creation of pneumoperitoneum during the procedure [4]. In high risk groups the incidence still remained around 80% despite use of modern anesthetic practices [5]. The cause of PONV is multifactorial and six independent factors which enable us to predict PONV are female gender, past history of PONV and motion sickness, use of opioids, nitrous oxide and non-smoking history [6,7]. A considerable proportion of patient experience PONV despite the widespread use of prophylactic antiemetics, including 5-HT₃receptor antagonists [8,9].

Another study by Sanjwal et al revealed that complete response of 92% with ondansetron and dexamethasone combination [10, 11].

The purpose to conduct this study was to determined the efficacy of ondansetron as in post-operative patients to reduce the nausea and vomiting as well as their prolong stay in hospital.

2. MATERIALS AND METHODS

This cross sectional study was conducted at General surgery operation theatres and surgical wards I, II, III and Department of Anaesthesia and SICU Peoples University of Medical & Health

Sciences for women Nawabshah, District Shaheed Benazirabad, Sindh Pakistan. A written informed consent was taken from the patients. The patients of gender, age between 20-60 years with American Society of Anesthesiologists (ASA) type I & II were included in this study. Patients with history of previous exposure to general anaesthesia, upper gastro intestinal disease, motion sickness pregnancy and menstruation and those have taken antiemetic drugs pre operatively within 24 hours of operation were excluded from this study.

In this study 49 patients were selected who fulfill the inclusion and exclusion criteria. The sample size was calculated by using Rao software.

Research instrument was predesigned proforma, which incorporate clinical examination, relevant laboratory investigations, ASA score and post-operative outcome/ nausea & vomiting. All patients were kept nil by mouth for 8 hours before surgery. All monitoring equipments like pulse oximeter, noninvasive blood pressure & ECG monitors wire checked and applied to each patient on arrival to the operating room. A sample of 49 patients was received ondansetron 4 mg I/V before induction. Patients were transported to the recovery room and later to the ward after confirming an adequate level of consciousness and intact reflexes. The incidences of PONV was recorded within the first 24 hours after surgery at intervals of 0-2 hours, 3 hours, 6 hours, 12 hours and 24 hours. Episodes of PONV were identified by spontaneous complaints by the patients or by direct questioning. The results were analyzed by using SPSS-21 version and level of significance was kept at p -value <0.05 .

3. RESULTS

A sample of 49 patients with age between 20-60 years (mean age 43.72 ± 5.67 years), 35% male and 65% female was included in this study (Fig. 1).

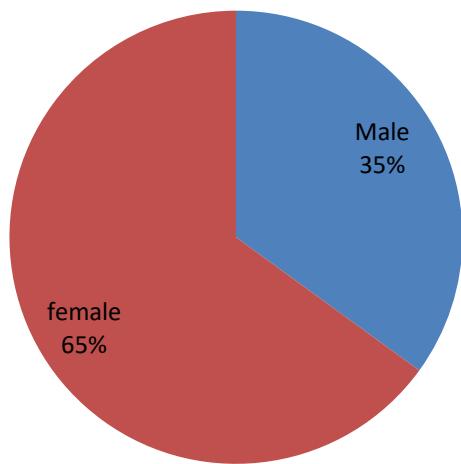


Fig. 1. Gender distribution of patients receiving ondansetron

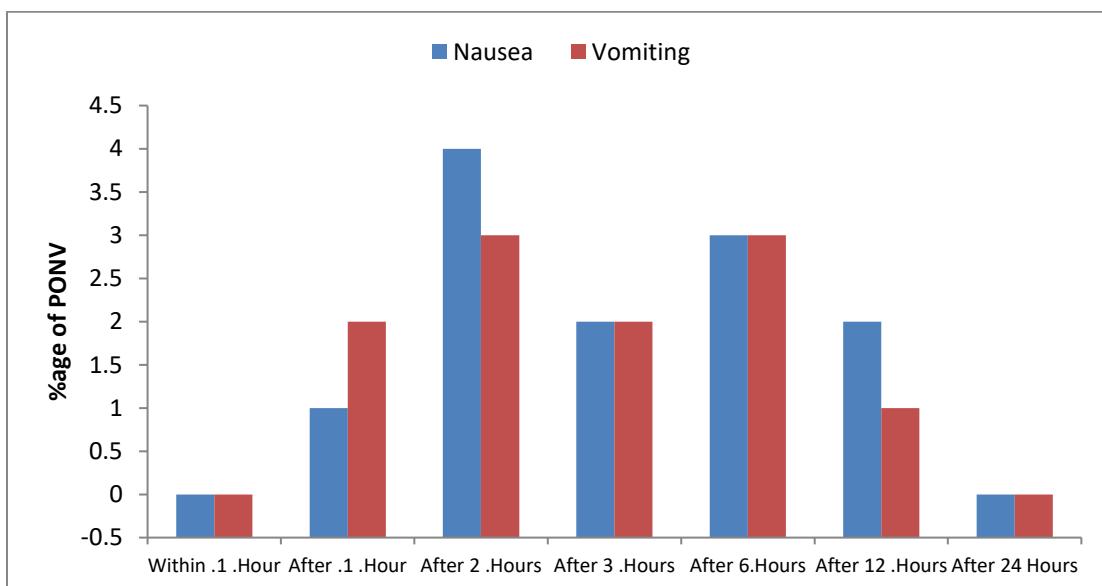


Fig. 2. FREQUENCY OF POSTOPERATIVE COMPLICATIONS

There was observed no any patient (0% frequency) of postoperative complications (PONV) within 1 hour. After one hour vomiting was observed in 4.08% patients with 2.04% nausea complain. After 2hrs vomiting was observed in 6.12% patients while nausea in 8.16% patients. After 3 hrs nausea and vomiting was observed in 4.08% patients. PONV was observed 6.12% after 6 hrs. After 12 hrs 4.08% and 2.04% nausea and vomiting was observed respectively (Fig. 2). After 24 hrs no nausea and vomiting was observed in any patient.

4. DISCUSSION

Fujii et al. in 2002 reported that Antiserotonin (ondansetron, granisetron, and ramosetron) are highly effective in decreasing the incidence of PONV for 24 h postoperatively, compared with traditional antiemetics alike present study [12]. Berg et al reported dissimilar results with present study as they found significant difference between ondansetron and placebo group ($p=0.001$ and $p=0.054$) respectively [13].

A study by Dr. Dipasri Bhattacharya and Dr. Arnab Banerjee in 2003 reported that emetic episodes were observed in 20% patients who had received intravenous ondansetron [14]. Nisar Ahmed et al in 2012 conducted a descriptive study over a period of 8 months from May 2010 to December 2010 in the Department of Surgery, Khyber Teaching Hospital, Peshawar [15]. The study showed that with the administration of ondansetron 4 mg and dexamethasone 8 mg, 15% of the patients experienced PONV during the first 24 hours alike present study which shows no nausea and vomiting after 24 hours. Without prophylactic anti-emetics, the incidence of nausea and vomiting after laparoscopic cholecystectomy has been more than 70%. Jyoti et al revealed that the incidence of PONV was 50% with placebo while 20% with ondansetron within 6 hours post-operatively in patients undergoing daycare gynaecological laparoscopy [16].

5. CONCLUSION

It was concluded that the incidence of PONV was significantly lower after using ondansetron within 24 hrs.

CONSENT

All authors declare that 'written informed consent was obtained from the patient.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Gecaj-Gashi A, Hashimi M, Sada F, Baftiu N, Salihu S, Terziki H, Bruqi B. Propofol vs isoflurane anesthesia-incidence of PONV in patients at maxillofacial surgery. Advances in medical sciences. 2010;55(2): 308-12.
2. Srivastava A, Niranjani A. Secrets of safe laparoscopic surgery: Anaesthetic and surgical considerations. Journal of minimal access surgery. 2010 Oct;6(4):91.
3. Chandrakantan A, Glass PS. Multimodal therapies for postoperative nausea and vomiting, and pain. British Journal of anaesthesia. 2011;107(suppl_1):i27-40.
4. Aziz N, Naz U, Ilyas M. A comparative study between metoclopramide and dexamethasone for prevention of postoperative nausea and vomiting in laparoscopic cholecystectomy. J Med Sci. 2011;19(3):129-32.
5. Shams TM, Nahla E, Raga EI. Prophylactic small doses of mixture of 5-HT3 receptor antagonists and dexamethasone on PONV and adverse effects. EJCT. 2012;1:132-8.
6. Bhattacharjee DP, Dawn S, Nayak S, Roy PR, Acharya A, Dey R. A comparative study between palonosetron and granisetron to prevent postoperative nausea and vomiting after laparoscopic cholecystectomy. Journal of anaesthesiology, clinical pharmacology. 2010;26(4):480.
7. Bhalla J, Baduni N, Bansal P. Comparison of palonosetron with ondansetron for postoperative nausea and vomiting in patients undergoing laparoscopic cholecystectomy under general anesthesia. Journal of minimal access surgery. 2015;11(3):193.
8. Walker JB. Efficacy of single-dose intravenous dolasetron versus ondansetron in the prevention of postoperative nausea and vomiting. Clinical therapeutics. 2001;23(6):932-8.
9. Jokela R, Koivuranta M, Kangas-Saarela T, Purhonen S, Alahuhta S. Oral ondansetron, tropisetron or metoclopramide to prevent postoperative nausea and vomiting: a comparison in high-risk patients undergoing thyroid or parathyroid surgery. Acta anaesthesiologica Scandinavica. 2002; 46(5):519-24.
10. Culebras X, Corpataux JB, Gaggero G, Tramèr MR. The antiemetic efficacy of droperidol added to morphine patient-controlled analgesia: a randomized, controlled, multicenter dose-finding study. Anesthesia & Analgesia. 2003;97(3):816-21.
11. Hill RP, Lubarsky DA, Phillips-Bute B, Fortney JT, Creed MR, Glass PS, Gan TJ. Cost-effectiveness of prophylactic antiemetic therapy with ondansetron, droperidol, or placebo. The Journal of the American Society of Anesthesiologists. 2000;92(4):958-67.

12. Fujii Y, Tanaka H. RETRACTED: Comparison of granisetron and ramosetron for the prevention of nausea and vomiting after thyroidectomy. Clin Ther 2002;24: 766–72.
13. Berg V, Johansen SH. PRE-ANAESTHETIC MEDICATION WITH CHLORPROMAZINE: A Comparison with Morphine. Acta Anaesthesiologica Scandinavica. 1958 Sep;2(3):133-47.
14. Arnab Bhattacharya D, Banerjee A. Comparison of ondansetron and granisetron for prevention of nausea and vomiting following day care gynaecological laparoscopy. Indian journal of Anaesthesia. 2003;47(4):279-82.
15. Ahmed N, Muslim M, Aurangzeb M. Prevention of postoperative nausea and vomiting in laparoscopic cholecystectomy. Journal Of Medical Sciences. 2012; 20(1):33-6.
16. Jyoti B, Neha B, and Pooja B. Comparison of palonsetron with ondansetron for postoperative nausea and vomiting in patients undergoing laparoscopic cholecystectomy under general anesthesia,J minim access surg. 2015; 11(3)193-197.

© 2021 Naeem et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/77013>