

Ondansetron Orally Disintegrating Tablet Versus Placebo for the Prevention of Postdischarge Nausea and Vomiting After Ambulatory Surgery

Tong J. Gan, MB, FRCA*, Randall Franiak, MD†, and Jolin Reeves, BS*

*Department of Anesthesiology, Duke University Medical Center, Durham, North Carolina; †Department of Anesthesiology, Methodist Hospital, Indianapolis, Indiana

Ondansetron orally disintegrating tablet (ODT) is a new freeze-dried oral formulation of ondansetron. It does not require water to aid swallowing and is therefore easily administered to patients who have difficulty in swallowing or when nausea is making them reluctant to drink. It is absorbed via the gastrointestinal tract when the saliva is swallowed and its absorption kinetics are similar to the ondansetron tablet (1). There are no published data on the use of ondansetron ODT in preventing postdischarge nausea and vomiting (PDNV). The primary hypothesis of this study was that the administration of ondansetron ODT would result in a decreased incidence of postdischarge vomiting with a secondary hypothesis of a decreased incidence of nausea.

Methods

After IRB approval and written informed patient consent, 60 ASA I and II patients undergoing outpatient gynecological laparoscopy received a standardized general anesthetic incorporating fentanyl, propofol, and sevoflurane. All patients received a prophylactic dose of ondansetron 4 mg IV at induction. Immediately before discharge from the ambulatory surgery unit (ASU), patients were randomly allocated to receive ondansetron ODT 8 mg or identical placebo tablet and a second dose 12 h after. The incidence of postoperative nausea and vomiting (PONV), severity of nausea, rescue antiemetic, side effects profile, satisfaction with PONV management were assessed at 2 and 24 h (by telephone) after surgery by research personnel unaware of the randomization. Nausea was scored using an 11-point linear numerical scale from 0

to 10, with zero representing no nausea and 10 representing nausea "as bad as it can be." The acceptability of the study drug (How did you rate the taste of the drug?) was assessed at 24 h using a similar scale where 0 represents "totally unacceptable" and 10 represents "extremely acceptable." Patients were familiarized with the rating scales before surgery. Droperidol 1.25 mg IV was administered if a patient experienced two episodes of emesis in an hour or if it was requested by the patient. Satisfaction with management of PONV was assessed (2) and they were also asked if they would use the drug again.

For estimation of sample size, the incidence of vomiting was used as a primary outcome. Pilot data revealed a baseline incidence of vomiting of 25%. Thirty patients per group was adequate to demonstrate a 60% reduction in the incidence of vomiting between two groups with $\alpha = 0.05$ and $\beta = 0.2$. χ^2 test, Wilcoxon's Mann-Whitney *U*-test, and Fisher's exact test were used where appropriate and a *P* value of <0.05 was considered statistically significant.

Results

Patients' demographics were similar between groups. The incidence of pre- and PDNV, pre-discharge rescue antiemetic use, severity of nausea, patient satisfaction with PONV management, and acceptability of study drug are presented in Table 1. Ondansetron ODT patients had less severe nausea and fewer vomiting episodes after discharge from PACU compared with placebo patients. This group was also more satisfied with PONV control. However, the active drug was less acceptable to patients although they would use it again.

Discussion

PONV can and usually does persist beyond discharge from the ASU. Carroll et al. (3) demonstrated a 35%

Supported, in part, by a grant from Glaxo Smith Kline, Inc.

Accepted for publication December 28, 2001.

Address correspondence and reprint requests to T. J. Gan, Department of Anesthesiology, Duke University Medical Center, Box 3094, Durham, NC 27710. Address e-mail to gan00001@mc.duke.edu.

Table 1. Patient Demographics, Incidence of Pre- and Postdischarge Nausea and Vomiting, Patient Satisfaction with PONV Management, and Acceptability of Ondansetron Orally Disintegrating Tablet

	Ondansetron ODT (n = 30)	Placebo (n = 30)
Age (yr)	41 ± 14	37 ± 13
Weight (kg)	76 ± 11	73 ± 14
Intraoperative fentanyl (μg)	128 ± 52	137 ± 71
Duration of anesthesia (min)	83 ± 36	71 ± 34
History of PONV & motion sickness (n)	8	10
Predischarge nausea (%)	40	37
Predischarge emesis (%)	3	0
Predischarge rescue antiemetic use (%)	33	30
Postdischarge nausea (%)	30	50
Postdischarge emesis (%)	3*	23
Severity of nausea (VRS)	0 (0-0)*	2 (0-10)
Patient satisfaction (%)		
Satisfied	90*	63
Neither satisfied nor dissatisfied	3	3
Dissatisfied	7	34
Acceptability of study drug (VRS)	5.5 (1-10)†	10 (9-10)

Data are either mean ± SD, percentages, or median (25%-75% percentiles).

PONV = postoperative nausea and vomiting; VRS = verbal rating score (scale 0-10).

* $P < 0.05$; † $P < 0.01$.

incidence of PDNV after ambulatory surgery. Most of these patients had not experienced the symptoms in the recovery room. Patients in the Placebo group in our study reported a more frequent incidence of post-discharge nausea (50%). This may be attributable to the frequent incidence of PONV in gynecological laparoscopy (4,5), as compared with a number of different surgical populations in Carroll et al.'s study (3), some of whom are associated with a decreased incidence of PONV. In another study, Gan et al. (6) demonstrated that PONV may persist up to 5 days after ambulatory surgery.

The dosage of ondansetron ODT used is similar to that recommended for ondansetron oral tablet (8 mg). We chose to use this new formulation rather than the tablet formulation, as there are potential advantages of avoiding taking the drug with water and the costs were similar between the two formulations. It would be interesting to compare whether smaller doses were as effective, as have been demonstrated in a study using the IV formulation of ondansetron (7). Interestingly, patients rated the taste of ondansetron ODT less favorably than the placebo ODT. This may be because of the bitter aftertaste of the active ingredient.

In summary, ondansetron ODT significantly reduces the incidence of PDNV, and improves patient satisfaction with PONV management after ambulatory surgery. However, additional comparative studies are needed to determine its role in clinical practice.

The authors thank Habib El-Moalem, PhD, for statistical analysis.

References

1. LeBourgeois JP, McKenna CJ, Coster B, et al. Efficacy of an ondansetron orally disintegrating tablet: a novel oral formulation of this 5-HT₃ receptor antagonist in the treatment of fractionated radiotherapy-induced nausea and emesis. *Clin Oncol (R Coll Radiol)* 1999;11:340-7.
2. Fortney JT, Gan TJ, Graczyk S, et al. A comparison of the efficacy, safety, and patient satisfaction of ondansetron versus droperidol as antiemetics for elective outpatient surgical procedures. *Anesth Analg* 1998;86:731-8.
3. Carroll NV, Miederhoff P, Cox FM, Hirsch JD. Postoperative nausea and vomiting after discharge from outpatient surgery centers. *Anesth Analg* 1995;80:903-9.
4. Tang J, Watcha MF, White PF. A comparison of costs and efficacy of ondansetron and droperidol as prophylactic antiemetic therapy for elective outpatient gynecologic procedures. *Anesth Analg* 1996;83:304-13.
5. Eriksson H, Korttila K. Recovery profile after desflurane with or without ondansetron compared with propofol in patients undergoing outpatient gynecological laparoscopy. *Anesth Analg* 1996; 82:533-8.
6. Gan TJ, Glass PSA, Ray J, Gogineni L. When do patients return to normal activity after ambulatory surgery? *Anesth Analg* 1998;86: S8.
7. Scuderi P, Wetchler B, Sung YF, et al. Treatment of postoperative nausea and vomiting after outpatient surgery with the 5-HT₃ antagonist ondansetron. *Anesthesiology* 1993;78:15-20.