

## Postoperative Nausea and Vomiting in Patients Undergoing Laparoscopy

Farnad Imani<sup>1,\*</sup>, Maryam Zafarghandi-Motlagh<sup>1</sup>

<sup>1</sup> Department of Anesthesiology and Pain Medicine, Rasoul-Akram Medical Center, Iran University of Medical Sciences (IUMS), Tehran, Iran

\*Corresponding author: Farnad Imani, Department of Anesthesiology and Pain Medicine, Rasoul-Akram Medical Center, Iran University of Medical Sciences (IUMS), Tehran, Iran. Tel: +98-2188560501, Fax: +98-2188696708, E-mail: farimani@tums.ac.ir.

**Received:** Jun 30, 2013; **Accepted:** July 03, 2013

**Keywords:** Postoperative Period; Nausea; Vomiting; Laparoscopy

### Dear Editor,

I read the article entitled "Effect of ondansetron and dexamethasone on post-operative nausea and vomiting in patients undergoing laparoscopic cholecystectomy (1). The authors found combination of dexamethasone and ondansetron more effective, for preventing nausea and vomiting in the patient undergone elective surgery with general anesthetic using laparoscopic cholecystectomy procedure, than the treatment of postoperative nausea and vomiting (PONV) by each of these drugs following separately the laparoscopic cholecystectomy. Considering the safety of laparoscopic surgery, the focus is currently on improving the postoperative recovery. Postoperative nausea and vomiting are distressing and result from the frequent adverse events of anesthesia and surgery which occurs frequently after laparoscopic cholecystectomy. PONV remains to be a predictor of complicated recovery profile and deserves further attention. The combination of ondansetron and dexamethasone has been found to be more effective in the prevention of postoperative nausea and vomiting than ondansetron alone. Moreover, several other pharmacologic antiemetic agents, including traditional and non-traditional drugs, such as ondansetron, granisetron, scopolamine, dimenhydrinate, promethazine, droperidol, metoclopramide, dexamethasone, and propofol have been taken to prevent or to control postoperative nausea and vomiting while undergoing laparoscopic surgery (2, 3). None of the available antiemetics is entirely effective, perhaps because most of them act through the blockade on one type of receptor. Patients at high risk of postoperative nausea and vomiting often receive more than one prophylactic antiemetic drug. Combined antiemetic therapy improves the efficacy for PONV prevention and treatment via acting through different receptors, synergistically (4, 5). It

is highly likely that combined antiemetics with different sites of activity would be more effective than one drug alone for the prophylaxis against PONV. This multimodal PONV management approach includes using the multiple different antiemetic medications (double or triple combination antiemetic therapy acting at different neuroreceptor sites), less emetogenic anesthesia techniques, adequate intravenous hydration, and adequate pain control (6). Prophylactic dexamethasone has significantly reduced the incidence of PONV in patients undergoing laparoscopic cholecystectomy. Dexamethasone is as effective as ondansetron and granisetron, and it is more effective than placebo. The efficacy of adding dexamethasone to ondansetron or granisetron improves antiemetic efficacy in PONV. A review of the role of dexamethasone for the prevention of postoperative nausea and vomiting compared to placebo shows that dexamethasone treatment reduced early PONV by 35%, and late PONV by 50%. The dose used most frequently was 8 or 10 mg IV. The combination of dexamethasone with ondansetron or granisetron further decreased the risk of PONV. The most effective prophylaxis is achieved by combining dexamethasone with 5HT<sub>3</sub> receptor antagonist (7). Efficacy of some analgesics and their role on pain relief and improving patients' satisfaction and reduced nausea and vomiting has already been studied in patients undergoing laparoscopic surgery (8-10). Dexamethasone is a glucocorticoid and adjuvant analgesic that has strong antiemetic effect by an undetermined mechanism, yet. It may act through prostaglandin antagonism, serotonin inhibition in the gut and releasing endorphins. The prophylactic antiemetic effect of dexamethasone has been documented in laparoscopic surgery. There are no reports of dexamethasone related adverse effects in the doses used for management of PONV although even meta-analyses

and systemic reviews may not detect rare complications. The prophylactic antiemetic effect of ondansetron and granisetron has also been documented in laparoscopic surgery. The 5HT<sub>3</sub> receptor antagonists are highly specific and selective for nausea and vomiting. Members of this group exert their effects by binding to the serotonin 5HT<sub>3</sub> receptor in the chemoreceptor trigger zone (CTZ) and at vagal afferents in the gastrointestinal tracts. In summary, knowledge regarding antiemetics is necessary to completely prevent and treat PONV in patients scheduled for laparoscopic cholecystectomy.

### Financial Disclosure

There is no financial disclosure.

### Funding Support

There is no funding support.

### References

1. Eidy M, Vafaei HR, Rajabi M, Mohammadzadeh M, Pazouki A. Effect of Ondansetron and Dexametasone on Post-Operative Nausea and Vomiting in Patients Undergoing Laparoscopic Cholecystectomy. *J Minim Invasive Surg Sci*. 2013;**2**(2):138-143.
2. Fujii Y. The utility of antiemetics in the prevention and treatment of postoperative nausea and vomiting in patients scheduled for laparoscopic cholecystectomy. *Curr Pharm Des*. 2005;**11**(24):3173-83.
3. Hessami MA, Yari M. Granisetron Versus Dexamethasone in Prophylaxis of Nausea and Vomiting After Laparoscopic Cholecystectomy. *Anesth Pain*. 2012;**2**(2):81-84.
4. Kim EJ, Ko JS, Kim CS, Lee SM, Choi DH. Combination of antiemetics for the prevention of postoperative nausea and vomiting in high-risk patients. *J Korean Med Sci*. 2007;**22**(5):878-82.
5. Sanchez-Rodriguez PE, Fuentes-Orozco C, Gonzalez-Ojeda A. Effect of dexamethasone on postoperative symptoms in patients undergoing elective laparoscopic cholecystectomy: randomized clinical trial. *World J Surg*. 2010;**34**(5):895-900.
6. Kovac AL. Prevention and treatment of postoperative nausea and vomiting. *Drugs*. 2000;**59**(2):213-43.
7. Dabbous AS, Jabbour-Khoury SI, Nasr VG, Moussa AA, Zbeidy RA, Khouzam NE, et al. Dexamethasone with either granisetron or ondansetron for postoperative nausea and vomiting in laparoscopic surgery. *Middle East J Anesthesiol*. 2010;**20**(4):565-70.
8. Alimian M, Imani F, Faiz SH, Pournajafian A, Navadegi SF, Safari S. Effect of Oral Pregabalin Premedication on Post-Operative Pain in Laparoscopic Gastric Bypass Surgery. *Anesth Pain*. 2012;**2**(1):12-16.
9. Gousheh SM, Nesioonpour S, Javaher foroosh F, Akhondzadeh R, Sahafi SA, Alizadeh Z. Intravenous Paracetamol for Postoperative Analgesia in Laparoscopic Cholecystectomy. *Anesth Pain*. 2013;**3**(1):214-8.
10. Imani F. Postoperative pain management. *Anesth Pain*. 2011;**1**(1):6-7.