

Postoperative Nausea and Vomiting (PONV): An Experience With and Without Metoclopramide With Opioid Use for Control of Pain

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ABSTRACT

Objective: To evaluate postoperative nausea & vomiting (PONV) with and without metoclopramide with opioid use for control of pain.

Study Design: Interventional comparative study

Place and Duration of Study: This study was carried out at KAH, Bisha, Saudi Arabia for period of 3 months 18th July 2014 to 17th October 2014.

Patients and Methods: Fifty patients were included and divided into Group A & B. Group A was given inj. Fentanyl 1.5mg/kg intra-operatively and Inj. Pethidine 1.5mg/kg post-operatively to control pain. Group B was given inj. Metoclopramide 0.15 mg/kg intra-operatively and same dose postoperatively in addition to Inj. Fentanyl and Pethidine.

Results: In Group A, 10 (40%) female patients and 02 (8%) male patients developed PONV while in Group B only one (4%) female patient developed PONV.

Conclusion: PONV is reduced when anti-emetics are used along with opioids for pain control. Inj. Metoclopramide, an anti-dopaminergic prokinetic, was found to give better results as its antiemetic action is considered.

Key Words: Post-operative nausea, Vomiting, Metoclopramide

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INTRODUCTION

The term opioid refers broadly to all compounds related to opium. The word opium is derived from opos the Greek word for juice. The drug is derived from juice of opium poppy *papaver somniferum*. Opioids can be classified, as naturally occurring, semi-synthetic, and synthetic. Natural occurring opioids are morphine, codeine. Semi-synthetic are heroin, buprenorphine and synthetic opioids are methadone, pentazocine, meperidine, fentanyl, sufentanil, remifentanil etc. In addition to the remarkable analgesic effects of opioids, toxic side effects, and additive potential of these drugs have also been known. Many of the synthetic opioids share the side effects of natural opioids, pain control by opioids needs to be considered in the context of brain circuits modulating analgesia and functions of various types of receptors in these circuits.¹ Postoperative nausea/vomiting is a serious problem that often embarrasses patient and anesthesiologists.³ The cause, treatment and prevention of postoperative nausea and vomiting has been investigated extensively,

intraoperative use of opioids and postoperative nausea and vomiting. Opioids decrease gastrointestinal motility.⁴ Gastric emptying is delayed by opioids via supraspinal (vagus nerve mediated) and spinal as well as peripheral mechanisms.⁵ Although transdermal therapeutic system (TTS) fentanyl not recommended for postoperative pain control. TTS fentanyl offers an alternative to oral morphine, TTS fentanyl for chronic pain of nonmalignant origin remains to be confirmed. Nevertheless TTS fentanyl produces the same adverse effects as other opioids mainly sedation, nausea, vomiting and constipation.⁶ Opioids decrease gastrointestinal motility. Patients receiving parenteral opioid therapy are more likely to have full stomach regardless of their NPO status gastric emptying is delayed by opioids that leads to vomiting.⁷

Nausea and vomiting in postoperative period occurs in 20-30% of patients. Apfel's simplified risk score includes female gender, nonsmoker-status, history of nausea, vomiting, motion sickness, and use of postoperative intravenous opioids when 0, 1, 2, 3 or 4 of these factors are present the risk of PONV is about 10%, 20%, 30%, 40% 60-80% respectively. Although effective antiemetics to reduce PONV are cyclizine, metoclopramide, dimenhydrinate, droperidol, dexamethasone, ondansetron and dolasetron.

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Dopamine antagonist, metoclopramide, has been used for decades to prevent PONV. It's antiemetic properties are mediated through its anti-dopaminergic action. It also has prokinetic properties.⁸ It acts peripherally as a cholinomimetic (i.e. facilitates acetylcholine transmission at selective muscarinic receptors). Its action as prokinetic is not dependent on vagal innervation, but is abolished by anticholinergic agents. Metoclopramide does not stimulate secretions.^{9,10}

PATIENTS AND METHODS

This is an interventional comparative study which was carried out at King Abdullah Hospital (KAH), Bisha Saudi Arabia, over a period of 3 months from 18th July 2014 to 17th October 2014. Permission was taken from the ethical committee of KAH. Fifty patients of surgical and allied groups were included in this study and they were randomly selected and divided into two groups, each with n=25. Group A given opioids injection fentanyl 1.5 mg/kg intraoperatively and inj. Pethidine 1.5 mg/kg postoperative in recovery area for control of pain. Group A patients were not given Inj. Metoclopramide for control of vomiting related to opioids therapy. Group B patients were given inj. Metoclopramide 0.15 mg/kg intraoperatively before giving opioids and same dose given postoperatively in recovery area before opioid therapy for pain. Patients in group B receive same dose of Inj. Fentanyl and inj. Pethidine HCl, calculated by mg/kg. Patients were divided into two groups. Both groups included age groups between 5-50 years of ASA I and II, weight of patients varied from 15.5 to 80 kgs. Patients age <5 years and >50 years, weight < 15.5 kg and >80 kgs, cataract eye surgery under local anesthesia, dental surgery under local anesthesia, intraoperative analgesics other than opioids, postoperative analgesics other than opioids, patients with ASA III and ASA IV were excluded. Type of surgery included general surgery, obstetrical and gynaecological surgery, dental surgery, orthopaedic surgery, eye surgery and urology.

RESULTS

Overall incidence of PONV was 30% in group A. Out of 25 patients, females were 16. Thus 64% of patients in group A were females. 10 patients out of 16 females in group A had PONV. Thus 62.5% of female patients in group A had PONV. Thus 40% of group A patients had PONV. 9 patients in group A were male (36%), only 2 patients out of 9 male patients had PONV. Thus 22.2% males in group A had PONV. In group B, all patients were given Inj. Metoclopramide intra and postoperatively. Out of 25 patients in group B, only 01 patient had PONV (4%). Interestingly that 1 patient was male without any history of risk factors for vomiting. In group B, 14 patients were females (56%) and 11 were males (44%). One out of 14 female patients had PONV (4%). Thus incidence of PONV was 7.5 times more in

group A than group B. Female patients are mostly prone to develop PONV as compared to males.

Table No.1: Frequency and percentage of genders

Gender	Group A		Group B	
	No.	%	No.	%
Male	9	36.0	11	44.0
Female	16	64.0	14	56.0

Table No.2: Frequency and percentage of PONV according to genders

Gender	Group A		Group B	
	No.	%	No.	%
Male	2	8.0	-	-
Female	10	40.0	1	4.0

DISCUSSION

PONV is a recognized clinical problem in patients undergoing operations under general anesthesia. Opioids are commonly being used for pain control intra and postoperatively. Out of all antiemetic, Inj. Metoclopramide was found very effective without any gross complications. PONV is unpleasant and distressing sensation and many patients consider it to be as debilitating as the pain associated with surgery. PONV may cause electrolyte disturbances and may affect the surgical outcome, with unexpected hospital admission and consequent higher health care costs. PONV is multifactorial, the important factors being age, sex, smoking status, history of PONV or motion sickness, type and duration of surgery, inhalation anesthetics and use of nitrous oxide, postoperative pain, opioid requirements, and inadequate IV fluid therapy.¹¹ In our study, 10 (40%) Female patients and 2 (8%) male patients developed PONV without Inj. Metoclopramide intra-operatively and post-operatively while only One (4%) female patients develop PONV with Inj. Metoclopramide. Female patients are mostly prone to develop PONV as compared to males in our study.

In a study by Wallenborn et al¹², dexamethasone 8 mg IV, given before induction of anesthesia, was used instead as an active-control group. The dose of 25 mg IV of metoclopramide was used in dexamethasone-metoclopramide combination therapy group according to this study, who concluded in their large multicentric study that 25 mg or 50 mg metoclopramide added to the basic intervention of 8 mg dexamethasone is effective and safe way to prevent PONV. This study also showed that Metoclopramide in a dose of 50 mg IV has been shown to significantly reduce late PONV, but the side-effects profile is unsatisfactory.

In another study by Aftab et al (2008)¹³, 30% patients i.e. 60 out of 200 experienced PONV with female dominance i.e. 20% as compared to males i.e. 10% which is similar to our study. Jamil et al (2005)¹⁴ experienced PONV with 20-30% incidence which also favors our study.

CONCLUSION

PONV is reduced when anti-emetic are used along with opioids for pain control. Inj. Metoclopramide, an anti-dopaminergic prokinetic, was found to give better results as its antiemetic action is considered.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Corrigendum

The conclusion of article titled 'When Drotaverine (No-spa) Injected in to the Perivascular Tissues of Internal Mammary Artery (IMA) Relives the Peri-operative Vascular Spasm and Increases the Blood Flow in IMA When Used as a Pedicle Graft in CABG' of 1. Muhammad Musharaf 2. Sanaullah Junejo 3. Iqbal Hussain Pathan 4. Muhammad Jawad, published in Med Forum Vol. 26, No.8 August, 2015 at pages 62-65 may be read as follows:

"The application of Drotaverine injection into the perivascular tissues of Internal mammary artery relieves the perioperative spasm with preserved safety and better results than topical application as it increases the blood flow in IMA when used as a pedicle graft in coronary artery bypass surgery."

Editor in Chief