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PJBS

ISSN 1028-8880

**Pakistan
Journal of Biological Sciences**

ANSI*net*

Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Comparison the Effects of Metoclopramide and Dropridol Associated with Dexamethasone on Post Operative Nausea and Vomiting

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Abstract: The aim of study was, comparison of effects of Metoclopramide and Dropridol associated with Dexamethasone on prevalence of nausea and vomiting after operation was considered. In this study 160 patients ASA physical status I were divided into two groups. In both groups, premedication and induction of anesthesia were given equally according to weight. To the first group, Metoclopramide associated with Dexamethasone and to the second group, Dropridol associated with Dexamethasone was ordered. At the end of the operation, after removing tracheal tube, prevalence of nausea and vomiting in both groups was considered after 2 h and results were analyzed with t-test and Chi-square. Ratio of nausea and vomiting after operation in the first group was 24% and in the second 8%. So results show that prevalence of nausea and vomiting in the second group was considerably lower than the first group ($p < 0.004$). According to the results of this study our conclusion, Dropridol with dexamethasone given at the before of general anesthesia was more effective in decreasing the prevalence of nausea and vomiting in patients compared with metoclopramide with dexamethasone

Key words: Nausea, vomiting, dropridol, metoclopramide, dexamethasone

INTRODUCTION

Nausea and vomiting is an unpleasant mood and sometimes risk full that can cause numerous complications as, dehydration, losing electrolytes, spasm, hypoxia and pulmonary aspiration (Wallenborn *et al.*, 2006; Eltringham *et al.*, 1998; Vickers *et al.*, 1999). Pneumonia usually occurs following by aspiration that can be very dangerous and even deadly. This danger will be more in patients with full stomach, eye patients, brain shock and caesarean (Wallenborn *et al.*, 2006; Rang and Dale, 1987; Fujii *et al.*, 2001a). Prevention and treatment of Post Operative Nausea and vomiting (PONV), continues to be a major challenge in postoperative care (Soltanni and Seyedi, 2008). At the present time, Dropridol and metoclopramide are two current and available drugs that most anesthesiologists prescribe them. The other drugs that can be mentioned are ondansetron, Granistrone and scopolamine which some of these drugs in our country drug market do not exist or are expensive. Dropridol belongs to butyrophenones group and have calmative effects to antinauseant and antivomiting that its central consequence is more than peripheral consequence (Wallenborn *et al.*, 2006; Fujii *et al.*, 2001a).

Metoclopramide has weak calmative effect to antinauseant and antivomiting that its peripheral consequence is stronger (Fujii *et al.*, 2001b; Hirayama *et al.*, 2001). Dropridol is a butyrophenone that was approved by the U.S. Food and Drug Administration (FDA) for clinical use as an antiemetic and as an adjuvant during general anesthesia (as part of a neuroleptic anesthetic technique) in 1970. Its more than 30 years of clinical use during the perioperative period, there is not even a single case report documenting that dropridol caused a cardiac arrhythmia (White, 2002).

Corticosteroids such as dexamethasone can decrease postoperative nausea and vomiting after surgery. previous study founded that 8mg dexamethasone significantly reduced the postoperative nausea and vomiting (Mohammadi, 2007).

Despite improvements in anaesthesia, 20-30% of patients still experience nausea and vomiting after surgery. A large clinical trial of postoperative nausea and vomiting showed that 4 mg ondansetron, 4 mg dexamethasone, or 1.25 mg dropridol were effective and that combinations of these drugs had an additive effect. Dexamethasone was recommended as the first line drug, as it is safe and cheap (Wallenborn *et al.*, 2006). A

meta-analysis reported that 10 mg metoclopramide was clinically ineffective and did not improve when combined with 8 mg dexamethasone (Henzi *et al.*, 1999). Metoclopramide is an antagonist that is selective of dopamine DA2 receptors. Metoclopramide is already normally used control nausea and vomiting and to facilitate bowel transit (Ceccherelli *et al.*, 2010). Dexamethasone is widely used to prevent postoperative nausea and vomiting (PONV) in pediatric tonsillectomy. Dexamethasone decreased the risk of PONV dose dependently (Czarnetzki *et al.*, 2008).

The efficacy of dexamethasone alone or in combination with a serotonergic antagonist to prevent nausea and vomiting in laparoscopic cholecystectomy is well established, but few data exist regarding its effects on perioperative cortisol and glucose levels (Cowie *et al.*, 2010).

In consideration of numerous studies Dexamethasone has anti-nauseant and anti-vomiting effect. Combination of it with each of Dropridol and metoclopramid drugs can lead to better results. Therefore this study was accomplished for comparison the effect of metoclopramid and Dropridol associated with Dexamethasone on prevalence of nausea and vomiting after operation.

MATERIALS AND METHODS

This experimental study was accomplished on 160 patients ASA physical status I (American Society of anesthesiologists class one) with age around 16-65 years scheduled to undergo elective general surgery (laparotomy) with general anesthesia, in Shahid Beheshti and Yahya Nejad Babol hospitals. Babol University of Medical Sciences ethics committee approved the protocol in 2007 and each patient provided written informed consent to participate in the study. All patients that had history of systematic disease (Cardiovascular, respiratory, high blood pressure and diabetes and obesity) or patients were in the risk of nausea and vomiting as patients with full stomach, laparoscopic surgery, middle ear, strabismus and so on were excluded from the study. All the patients had elective operation and operation time was 1-2 h and were randomly assigned to receive metoclopramide group (n = 80) or Dropridol group (n = 80).

After patients were settled on the operation table, monitored by ECG monitoring, pulse oximeter, blood pressure and pericardial connected. All patients received 0.1 mg kg⁻¹ diazepam and 0.1 mg kg⁻¹ morphine as premedication according to weight. Before the anesthesia, to the first group 0.15 mg kg⁻¹ metoclopramide associated with 8 mg dexamethasone and to the second group, 15 µg kg⁻¹ Dropridol and 8 mg dexamethasone was injected. Anesthesia induction starts with 5 mg kg⁻¹

thiopental and 0.5 mg kg⁻¹ atracurium and 90 sec before putting tracheal intubation, 1.5 mg kg⁻¹ lidocaine was injected. After putting tracheal tubes, keeping anesthesia in both group was done with O₂ and N₂O (50%) associated with halothane 0.5-1%. Both groups was considered base on prevalence of nausea and vomiting from the time of removing tracheal tube or tracheal extubation, for 2 h later. Patients were looked to assess to their nausea and vomiting by research anesthesiologist who were blinded to the study. The results from the two treatment groups were compared using the t-test for quantities variables and Chi-2 test for qualitative data. p<0.05 was considered statistically significant.

RESULTS

According to research findings, 84 persons from 160 patients on the study were men and 76 were women. The mean age and weight in both groups was equal and had not significant difference. Demographic data shows in Table 1.

In patients who have received Dropridol and Dexamethasone, the prevalence of nausea and vomiting was 8% and in patients who have received Metoclopramide and Dexamethasone was 24% which this difference was meaningful with (p<0.004) (Fig. 1).

Also, Fig. 2 which is base on sex and nausea and vomiting analysis indicates that prevalence of nausea and vomiting in women is more than men and is significant.

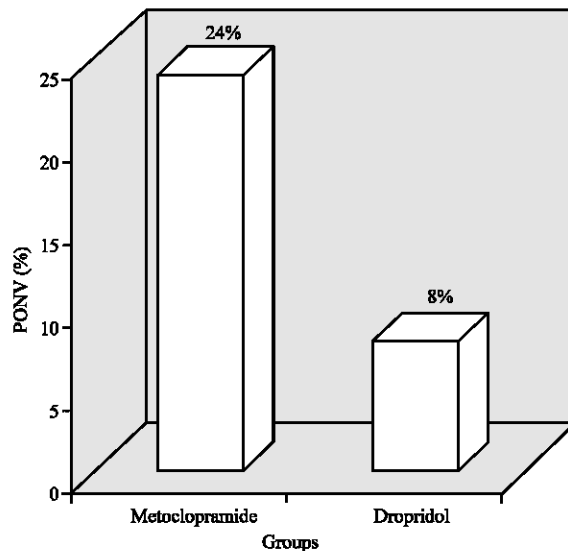


Fig. 1: Post operative percentage distribution of nausea and vomiting in both metoclopramide and Dropridol groups associated with dexamethasone. *Postoperative Nausea and Vomiting (PONV)

Table 1: Demographic data for the two groups

Groups	Metoclopramide (N = 80)	Dropridol (N = 80)	p-value
Age (year)	45±10	42±13	0.16
Weight (kg)	64±10	61±7	0.69
Gender (M/F)	41/39	43/37	

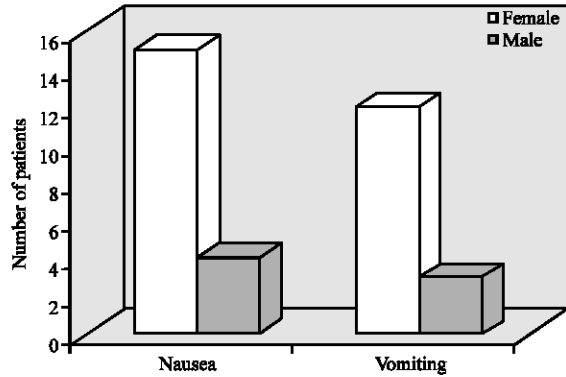


Fig. 2: Comparison of postoperative nausea and vomiting between female and male according to exist of nausea or vomiting

DISCUSSION

Nausea and vomiting after operation in the Metoclopramide group was 24% and in the Dropridol group was 8%. So results show that prevalence of nausea and vomiting in the deropridol group was considerably lower than the first group ($p < 0.004$).

A common complication after anesthesia and surgical operation is nausea and vomiting and one of the aim of anesthesiologists is reducing and eliminating it (Fujii *et al.*, 2001b). There are various ways to collate it and all of them some how reduce this complication but eliminate it totally.

Metoclopramide as a premedication of anesthesia in reducing stomach mass in patients who needs urgency operation is useful. Of course, this drug doesn't guarantee the evacuation of stomach. Also, Dropridol by blocking bipamine recipients cause decrease in nausea and vomiting after operation, but using of high doses of this drug lead to long time of recovery (Wallenborn *et al.*, 2006; Fujii *et al.*, 2001b). Unusual complications of this drug are vertigo, impatient and extra pyramidal signs. Adding benzodiazepine as premedication, prevent these complications. Also, Dropridol has anti arrhythmia effect like.

According to the consideration was accomplished by Hirayama *et al.* (2001), using Dexamethasone associated with Metoclopramide and Dropridol reduced nausea and vomiting after operation from 66-80 to 16-50% (Hirayama *et al.*, 2001). Also another study, which was

accomplished in 1986 indicated that patients who received Dropridol and metoclopramide needed less antiemetic in unit. Meanwhile in this study Dropridol had more effect. In another consideration that was accomplished by Janinis *et al.* (2000), just using of granistron in 19.6% patients and associated with Dexamethasone in 100% patients was useful on deduction of nausea and vomiting after operation. likewise, the study that was accomplished by Wang *et al.* (2000) have proved the antiemetic effect of Dexamethasone so that in laproscopic surgery the prevalence of vomiting without using of Dexamethasone 34% while with adding Dexamethasone reduced to 23%. In another consideration that was accomplished by Eberhart *et al.* (1999), using Dexamethasone associated with Dropridol has reduced nausea and vomiting to 10% as compared with Dropridol.

Soltani reported that dexamethasone can reduce of PONV. This result same with the present study (Mohammadi, 2007).

This study and other studies indicates antiemetic Dropridol effect is better than Metoclopramide and using of Dexamethasone associated with Dropridol has considerably reduced the prevalence of nausea and vomiting after operation (Tuominen *et al.*, 1986; Janinis *et al.*, 2000; Wang *et al.*, 2000; Eberhart, 1999; White, 2002; Wallenborn *et al.*, 2006).

CONCLUSION

Study showed, dropridol with dexametasone given at the before of general anesthesia was more effective in decreasing the prevalence of nausea and vomiting in patients compared with metoclopramide with dexametasone as a alone. We are suggested that prevented of PONV employed two drugs with together that preventive.

ACKNOWLEDGMENTS

This study was supported by grant from Babol University of Medical Sciences; we thank all of research committee and also patients who employed in Mazandaran hospitals.

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