

Comparison of Efficacy of Gabapentin Versus Dexamethasone in Post Operative Nausea Vomiting in Abdominal Surgeries in Pakistani Population

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ABSTRACT

Objective: This study aimed at comparing efficacy of Gabapentin with dexamethasone in terms of frequency of PONV in abdominal surgeries.

Study Design: Quasi experimental comparative study

Place and Duration: conducted at Department of Anesthesiology, Operating Rooms, Shifa International Hospital, Islamabad from June 2020 to November 2020.

Materials and Methods: 80 patients who underwent abdominal surgeries were included. As per random allocation, 40 patients in Group A were treated 300 mg of tablet Gabapentin and 40 in group B were treated by Inj. Dexamethasone 8 mg I/V intra operatively. All patients were monitored for 1 hour in PACU to determine PONV status on proforma for VAS score by anesthesiologist who was not involved in study.

Results: - Average age of patients in group A and group B was 40.25±10.46 years and 38.25 ± 10.56 years respectively. There were 39(48.8%) male and 41(51.2%) female. Rate of PONV was significantly less in group B as compared to group A (12.5% vs. 35% p=0.018) which showed that efficacy of dexamethasone was high.

Conclusion: Prophylactic administration of Dexamethasone 8 mg I/V was more effective in preventing postoperative nausea and vomiting than Gabapentin in women undergoing abdominal surgeries.

Key Words: Post-operative nausea and vomiting, Gabapentin, Dexamethasone

INTRODUCTION

Operating rooms also display post-operative nausea and vomiting (PONV), and pose a risk in post-anesthesia care units [1,2]. PONV resolves over time, but causes the patient serious pain. Each vomiting episode can trigger around 20 minutes delay in PACU discharge. The PONV percentage is between 25 and 30 percent. And after preventive medicine, this is 80% in high-risk patients. PONV factors are age, gender, form of surgery, anesthetic medicines and laparoscopic operations. PONV can result in aspiration, disorder of the electrolytes, dehydration, and even patient death [3].

Various medicinal products such as dexamethasone, ondansetron, promethazine, droperidol and propofol are used to avoid PONV. These medicines have benefits and side effects. Dexamethasone is a steroid that has a proven advantage in PONV patients[4]. It has combined emesis and inflammation effects[5].

Gabapentin is an analog of GABA (gamma amino butyric acid), which functions via the $\alpha 2-\alpha$ subunit binding of gated calcium channel voltage. Following its binding to the receptor, it inhibits calcium release[6]. By interacting with the N-methyl-D Aspartate (NMDA) receptor, gabapentin has an inhibitory effect on CNS.

Kashmiri Z et al. [7] found that dexamethasone reduces the occurrence of PONV in comparison to placebo when used in anesthesia. In their research, Pandey CK et

al.[8] showed that gabapentin reduces the occurrence of PONV in comparison to placebo.

The study's justification was to compare the effectiveness of gabapentin with dexamethasone that is not yet completed. In this analysis, the best antiemetic agent will be explored to minimize PONV with less side effects.

MATERIALS AND METHODS

This Quasi experimental comparative study was conducted at Department of Anesthesiology, Gambat Institute of Medical Sciences, Gambat, for 6-months from June 2020 to November 2020. The study was conducted after the approval from the Hospital Ethical Committee and informed written consent. The study was conducted on patients presenting to operating rooms of Shifa International Hospital Islamabad for abdominal surgeries as per inclusion criteria was divided into two equal groups randomly by Lottery method. Patients in Group A received 300 mg of Gabapentin by an anesthesiologist who is not involved in study 1 hour before surgery. Patients in Group B received Inj. Dexamethasone 8 mg I/V at time of induction of anesthesia by an anesthesiologist who was not involved in study. Anesthesia was induced with Inj Propofol 2 mg/kg, Inj fentanyl 2ug/kg and tracheal intubation was facilitated by 0.5 mg/kg of inj Atracurium after applying basic monitors. Anesthesia was maintained with Sevofurane with FIO₂ of 0.5. Intra-op monitoring of

pulse rate, non-invasive blood pressure, respiratory rate, ECG, oxygen saturation and temperature was carried out in each patient. All patients were monitored for 1 hour in PACU to determine PONV status on proforma for VAS score by anesthesiologist who is not involved in study. The study variables are VAS for nausea vomiting, gabapentin, dexamethasone, age and gender. In case of nausea or vomiting intravenous ondansetron was used as a rescue drug.

Inclusion Criteria:

- ASA I-III Patients.
- Either Gender
- Age 20-60 Years.
- Non Lactating, Non Pregnant Females as from history and medical record..
- No history of Motion Sickness or Cerebellar problems as from history and medical record.

Exclusion Criteria:

- REFUSAL to consent form.
- Known Allergy to Gabapentin or Dexamethasone as from history and medical record.
- Severe Renal, Cardiac or Hepatic Disease as from history and medical record.
- Patients on Calcium Channel Blockers (due to drug interaction with Gabapentin).
- Patients on anti-depressants(due to drug interaction with Gabapentin).

Statistical analysis: Data was entered in SPSS version 20.0 for analysis. Mean ± standard deviation was calculated for age, weight, height, VAS. Frequency and percentage were computed for qualitative variables like gender, efficacy. Chi-square test was use to compare efficacy of both groups for nausea or vomiting. Effect modifiers like gender and weight was controlled by stratification and after stratification chi-square test was also applied. P-value of ≤0.05 was considered statistically significant.

RESULTS

Eighty patients underwent abdominal surgeries were included in this study. The age of patients in group A and group B was 40.25±10.46 years and 38.25 ± 10.56 years respectively. Mean weight and VAS score of the patients is shown in table 1. There were 39(48.8%) male and 41(51.2%) female. Regarding ASA status, ASA-I was observed in 42(52.5%) and ASA-II was 38(47.5%).

Rate of PONV was significantly less in group B as compared to group A (12.5% vs. 35% p=0.018). Stratification analysis was performed and observed for gender and weight. There was a statistically significant difference in between gender of patients as females were experiencing more PONV than males(p=0.018). There was not a statistically significant difference in between patients having weight>70Kg (p=0.167). Stratified groups as shown in table 2 and 3.

Table 1: Descriptive statistics and rate of PONV with respect to groups

	Group A n=40	Group B n=40	
Characteristics	Mean±Std. Deviation	Mean±Std. Deviation	p value
Age (Years)	40.25±10.46	38.25±10.56	0.56
Weight (kg)	75.41±10.23	73.18±10.24	0.59
VAS score	25.88±13.10	20.01±8.47	0.045

Table 2 Comparison of efficacy between groups for gender

Efficacy	Group A n=40	Group B n=40	Total	P-Value
Yes[VAS=0-25]	26(65%)	35(87.5%)	61(76.3%)	0.018
No[VAS>25]	14(35%)	5(12.5%)	19(23.8%)	Chi-Square= 5.591

Table 3. Comparison of efficacy between groups for >70kg weight

Efficacy	Group A n=21	Group B n=17	Total	P-Value
Yes [VAS=0-25]	13(61.9%)	14(82.4%)	27	0.167 Chi-Square= 1.90
No [VAS>25]	8(38.1%)	3(17.6%)	11	

DISCUSSION

Postoperative nausea and vomiting (PONV) is normal in operating theaters and is very difficult in the postoperative treatment facility (PACU). PONV resolves over time, but causes the patient serious pain. The research found that the prophylactic administration in women who undergo abdominal surgery of Dexamethasone 8 mg I/V was successful in preventing post-operative nausea and vomiting as Gabapentin.

In our sample, the PONV rate was significantly lower in the dexamethasone community, which demonstrated a

high dexamethasone efficacy. Kashmiri et al. showed that dexamethasone used before surgery was less than 10 percent lower than the placebo group 33 percent. These results are consistent with recent studies which have shown that dexamethasone can prevent PONV in adults and children effectively. Dexamethasone is equivalent or more effective in minimizing the occurrence of PONV in comparison with other preventive medicines, with the benefits of low cost and longer efficacy. Similarly, Tzeng et al. indicated that administering low-dose dexamethasone (5 mg) is more efficient than metoclopramide or saline in the

prevention of epidural morphine and postoperative nausea related vomiting [9,10]. Their research examined the effects of dexamethasone in combination with morphine and epidural analgesia on nausea and vomiting reduction and found that low-dose dexamethasone was more effective for post-operative analgesia than metoclopramide PONV. However, Liu and colleagues showed that dexamethasone alone is as effective as 10 mg in reducing PONV incidence after gynecological surgery at doses of 5 mg and 2.5 mg. Even though, El hakim et al. believed 8 mg to be the minimum dose of dexamethasone to prevent PONV effectively [10].

Dexamethasone has a strong anti-emetic activity and has been shown to reduce post-operative pain with its strong anti-inflammatory effect. Due to decreased postoperative pain and PONV, patient satisfaction is achieved, and health conditions can be trusted. We suggest more trials and a longer follow-up with more patients to demonstrate dexamethasone side effects. Further trials with various doses of dexamethasone must also be performed in order to achieve the minimum dose of dexamethasone to avoid PONV.

CONCLUSION

Prophylactic administration of Dexamethasone 8 mg I/V was effective in preventing postoperative nausea and vomiting than Gabapentin in women undergoing abdominal surgeries.

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