COMPARISON OF METOCLOPRAMIDE AND DEXAMETHASONE WITH DEXAMETHASONE ALONE FOR PREVENTION OF POST-OPERATIVE NAUSEA VOMITING
Madhu Tiwari¹, Pawan Tiwari², Nidhi Garg³, Balbir Chhabra⁴, Krishan Lal Garg⁵

HOW TO CITE THIS ARTICLE:

ABSTRACT: OBJECTIVE: To study the antiemetic efficacy of combination of Metoclopramide and Dexamethasone as compared to Dexamethasone alone in prevention of post-operative nausea and vomiting in patients undergoing elective abdominal surgical procedures. SETTING AND DURATION OF STUDY: It is a prospective, randomized and blind study done in the department of Anesthesiology, SGT University of Health Sciences from June 2010 to November 2011. PATIENTS AND METHODS: 100 adult ASA I and II patients undergoing elective surgical procedures were divided into groups A and B. Patients were randomized into 2 groups, Group A (n=50) were given Dexamethasone 8mg I/V (2ml), Group B (n=50) were given a combination of Metoclopramide 10 mg and Dexamethasone 8 mg, 30 minutes before end of surgery. All patients were observed for 24 hours in the ward for nausea and vomiting (PONV) postoperatively. RESULTS: Less than two episodes were seen in 59 (59%) cases in which 36% (18/50) were in group A and 82% (41/50) in group B. Two episodes of vomiting were observed in 29(29%) and more than two episodes of vomiting was observed in 12(12%) cases. Less than two episodes of vomiting was significantly high in group B than group A (82% vs. 36%). CONCLUSION: There was significant reduction in post-operative nausea and vomiting (PONV) when Dexamethasone and Metoclopramide was used per operatively. KEYWORDS: Dexamethasone, Metoclopramide, Post-operative nausea and vomiting.

INTRODUCTION: Post-operative vomiting is troublesome and distressing for the patient. It is an unpleasant experience which may sometime cause significant morbidity from dehydration, electrolyte imbalance, nutrition problems and aspiration of vomitus. Extremely forceful vomiting may lead to abdominal wound dehiscence, bleeding beneath skin flaps and loss of vitreous fluid following intraocular surgery. Rare complications like esophageal rupture, surgical emphysema and bilateral pneumothorax may happen. Major causes of post-operative nausea and vomiting include laryngeal stimulation, anesthetic agents, gastrointestinal distension, abdominal surgery, pain and use of post-operative opioids.¹

In addition to these, hypoxia, hypotension, vestibular stimulation and psychological factors are also implicated.² Incidence of post-operative nausea and vomiting is estimated to be around 20 to 30%, which in high risk patients, is as high as 70%.

Metoclopramide is a benzamide used for prevention and treatment of post-operative nausea and vomiting. It blocks dopamine receptors at the chemoreceptor trigger zone (CTZ) and vomiting centre. Peripherally it blocks dopamine receptors in the GI tract. Metoclopramide also increases lower esophageal sphincter tone and enhances gastric and small bowel motility.³ It has a short half-life and is administered before or just after the end of surgery to have a reliable antiemetic action.
 effecting the early post-operative period. The most important side effects of Metoclopramide are extra pyramidal reactions in the form of dystonia, hypotension, supraventricular tachycardia and bradycardia. Dexamethasone is a synthetic adrenocortical steroid. This agent has been evaluated and found to be effective for the management of PONV. The mechanism of its antiemetic action is not well understood. A commonly held theory is that corticosteroid exerts their antiemetic activity via prostaglandin antagonism.

**PATIENTS AND METHODS:** The study was conducted after approval from The Ethics Committee, the Department of Anesthesiology, and Informed consent from patients. Both male and female, aged between 18 -60 years, ASA I and II patients admitted for elective abdominal surgeries were selected. Patients having the following conditions were excluded: History of motion sickness or previous post-operative vomiting, diabetes mellitus, steroid ingestion, allergy to study drugs, presence of extra pyramidal motor disease and alcoholic or drug abuse. Patients were randomly allocated by draw of numbered slips and assigned to either group.

**GROUP A:** Patients received 8 mg Dexamethasone inj.

**GROUP B:** Patients received a combination of 8 mg Dexamethasone and Metoclopramide injection 10 mg.

Drugs prepared by a nurse were administered by an anesthetist who was unaware of the drug given and the doctor responsible for evaluating the effect of the drug was also blinded to the group. On the day of surgery, intravenous access was established. Baseline recordings of non-invasive blood pressure, pulse and oxygen saturation recorded. Anesthesia was induced with propofol 5mg/kg. Tracheal intubation facilitated with atracurium 0.5mg/ kg. Maintenance of anesthesia was done by oxygen, nitrous oxide and halothane and ventilation controlled. 30-40 minutes before end of surgery, patients were given the prepared study drug according to their group allocation. At the end of surgery intramuscular diclofenac 75 mg for post-operative analgesia was injected. Reversal of neuromuscular blockade was done with neostigmine and atropine, and extubation performed.

Antiemetic efficacy of the drug was observed by the number of episodes of vomiting occurring within 24 hours post operatively. Grading was considered Mild: <2 episodes of vomiting. Moderate: = 2 episodes of vomiting. Severe: >2 episodes of vomiting. Efficacy was labeled as positive when there was mild episode of vomiting (less than 2 in 24 hrs.).

**RESULTS:** The number of episodes of vomiting less than two in 24 hours was observed in 59(59%) cases in which 36% (18/50) was in group A and 82% (41/50) in group B. 2 episodes of vomiting was observed in 29 (29%), 7 patients (14%) in group A and 22 patients (44%) in group B and more than 2 episodes of vomiting was observed in 12(12%) cases, in which two patients (04.0%) in group B and 10 patients (20.0%) in group A. Less than two episodes of vomiting was significantly high in group B than group A (82% vs. 36% p= 0.005).
Table 1: Comparison of episodes of vomiting in 24 hours between groups

<table>
<thead>
<tr>
<th>Episodes of Vomiting in 24 Hours</th>
<th>Group A n=50</th>
<th>Group B n=50</th>
<th>Total n=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2 Episodes</td>
<td>18(36%)</td>
<td>41(82%)</td>
<td>59(59%)</td>
</tr>
<tr>
<td>2 Episodes</td>
<td>07(14%)</td>
<td>22(44%)</td>
<td>29(29%)</td>
</tr>
<tr>
<td>&gt;2 Episodes</td>
<td>10(20%)</td>
<td>02(04%)</td>
<td>12(12%)</td>
</tr>
</tbody>
</table>

Pearson chi square= 27.98; df= 2 p=0.005

Table 2: Comparison of gender between groups

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group A n=50</th>
<th>Group B n=50</th>
<th>Total n=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>09(18%)</td>
<td>10(20%)</td>
<td>19(38%)</td>
</tr>
<tr>
<td>FEMALE</td>
<td>41(82%)</td>
<td>40(80%)</td>
<td>81(81%)</td>
</tr>
</tbody>
</table>

**DISCUSSION:** The “Vomiting Centre” is an ill-defined area located in the lateral reticular formation of the medulla oblongata. The vomiting reflex is integrated in the medulla after receiving carefully timed visceral and somatic components. Apart from irritative stimuli in the GIT itself, vomiting can be caused by nervous signals arising in the brain outside vomiting centre such as from vestibular apparatus, cerebellum, solitary tractus nucleus, higher control centers and no single antiemetic drug have proved to be a universal solution to post-operative nausea and vomiting. Because of saturation effects and safety, large doses of single drug are not feasible, so combinations of antiemetic drugs are recommended.

Antiemetics are not used routinely by anesthetists although studies have proved that the incidence of PONV decreases from 82% to 42% after injection of Dexamethasone, during 10 hours post operatively. Anesthesiologists focus primarily on anesthetic technique with minimal emetic potential and on the administration of different antiemetic drugs or combination of them.

In our study we have compared Dexamethasone in one group with a combination of Dexamethasone and Metoclopramide in another group to assess the post-operative vomiting.

Metoclopramide has been shown to be an effective and safe drug for both prevention and treatment of post-operative nausea and vomiting. Dexamethasone is a glucocorticoid that produces a strong antiemetic effect by undetermined mechanism.

It may act through prostaglandin antagonism, serotonin inhibition in GIT and by releasing endorphins.

Dexamethasone has also been used in combination with metoclopramide and other antiemetic with beneficial results.

The timing of administration of the antiemetic drug also affects the outcome and Dexamethasone is found to be most effective when administered at the time of induction of anesthesia. However it is suggested that in surgical procedures, lasting more than 2 hours, it might be more prudent to administer the agent towards the end of surgery.

All the patients in this study were anaesthetized with standard anesthetic technique. The duration of anesthesia was similar in both groups.
Therefore, it was likely that the difference in the incidence of PONV between the two groups was attributable to a combination of Dexamethasone and Metoclopramide rather than Dexamethasone alone.

Although long term administrations of corticosteroids are associated with side effects, brief administration (24-48 hours), with even high dose corticosteroid treatment, side effects have been rare. The most important side effects of Metoclopramide are extra pyramidal reactions in the form of dystonia, hypotension, supraventricular tachycardia and bradycardia, these are also reported following a single dose but were not reported in our series.

The combined cost of injection metoclopramide and injection dexamethasone is less than ondansetron which is also used for prevention of PONV. Since, injections Dexamethasone and Metoclopramide are freely available, economical and the single dose is not associated with any significant side-effect, it should therefore be used more frequently in the patient undergoing elective general surgeries.

CONCLUSION: This study concluded that the combination of Dexamethasone and metoclopramide when given intra operatively significantly decreases the incidence of post-operative nausea and vomiting in patients undergoing elective general surgeries. As the drug is freely available, economical and a single dose is not associated with any side effects, this combination can be used safely.

REFERENCES:


AUTHORS:
1. Madhu Tiwari
2. Pawan Tiwari
3. Nidhi Garg
4. Balbir Chhabra
5. Krishan Lal Garg

PARTICULARS OF CONTRIBUTORS:
1. Associate Professor, Department of Anaesthesia, Faculty of Medicine and Health Sciences, SGT University, Budhera, Gurgaon, Haryana, India.
2. Associate Professor, Department of Surgery, Faculty of Medicine and Health Sciences, SGT University, Budhera, Gurgaon, Haryana, India.
3. Assistant Professor, Department of Anaesthesia, Faculty of Medicine and Health Sciences, SGT University, Budhera, Gurgaon, Haryana, India.
4. Professor, Department of Anaesthesia, Faculty of Medicine and Health Sciences, SGT University, Budhera, Gurgaon, Haryana, India.
5. Professor, Department of Anaesthesia, Faculty of Medicine and Health Sciences, SGT University, Budhera, Gurgaon, Haryana, India.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Madhu Tiwari,
A-104, Medical Campus,
SGT University,
Budhera, Gurgaon, India.
Email: tiwaripawan58@gmail.com

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