

Comparison of ondansetron and metoclopramide in the prevention of nausea, vomiting after laparoscopic cholecystectomy.

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Summary:- Patient undergoing laparoscopic cholecystectomy are at risk of experiencing post operative nausea and vomiting (PONV). The aim of the study was to evaluate and compare the antiemetic efficacy of ondansetron and metoclopramide when given preoperatively for prevention of postoperative nausea and vomiting after laparoscopic cholecystectomy, 7 minutes prior to induction of anaesthesia 60 patients received in a randomized double blind manner injection ondansetron or injection metoclopramide .2mg/kg or placebo (n=10 per group). Intravenously patients were then observed for the next 24 hrs after administration. During 24hrs after LC, the percentage of patients free of nausea and vomiting were 58% with ondansetron, 52% with Metoclopramide and 46% with placebo. There were no significant differences between the groups. The overall risk of adverse effects did not differ and (p<0.05). The result in our study suggests that ondansetron and metoclopramide when given prophylactically. Before induction of balanced general anaesthesia were not significantly effective to central PONV in laparoscopic cholecystectomy in comparison to placebo.

Keywords: Antiemetic, Nausea, Vomiting. **Pharmacology:** Ondansetron, Metoclopramide. **Surgery:** Laparoscopic cholecystectomy.

I. INTRODUCTION

postoperative nausea and vomiting are common and disturbing adverse effects after general anaesthesia and surgery^{1,2}. The incidence of PONV has been reported high with no antiemetic treatment in patient undergoing LC^{3,4,5}. PONV causes discomfort to patient and also electrolyte disturbances, regurgitation and risk of aspiration, increased bleeding and wound dehiscence⁶.

Patients who suffer from PONV require additional care and more attention and material resources leading to higher costs. Hence prophylactic antiemetic therapy is needed for these patients.

Ondansetron administered in small doses before anaesthesia is claimed to be an effective antiemetic, metoclopramide is also reported to reduce the incidence of PONV^{7,8}. But it can cause extrapyramidal side effects. However, it does not have significant undesirable side effect when used for prophylactic purpose^{9,10}.

This study was done in a randomized double blind manner, to compare the antiemetic efficacy of a single intravenous dose of ondansetron or metoclopramide after tracheal extubation in the prevention of PONV after laparoscopic cholecystectomy.

Methods:- Informed consent from each patient was obtained, 60 patients aged 20–60 yrs classified as grade I or II were included in the study.

Patients with gastrointestinal disease, previous history of PONV pregnancy or menstruation were excluded from study even patient who had taken antiemetics with 24hrs before operation were excluded from the study.

In operation theatre routine monitoring like SpO₂, heart rate, ECG, NIBP, and ET CO₂ were observed throughout the study period, no patients received preanesthetic medication. Anaesthesia was induced with injection fentanyl 18 mgm and injection thiopentone sodium 5mgm/kg intubation was done by injection vecuronium 0.15mg/kg anaesthesia was maintained with halothane 1% Nitrous oxide 60% in oxygen with controlled ventilation to maintain end total carbon dioxide between 4.6 and 5.2 kpa. Throughout the procedure muscle relaxation for surgical procedure was provided with additional dose by vecuronium. A nasogastric tube was passed and suction was applied to empty stomach. The nasogastric tube was removed before tracheal extubation.

Abdominal insufflation for the laparoscopic procedure was achieved with CO₂ and intra-abdominal pressure was maintained between 1.3-1.8 kpa. At the end of surgery the residual neuromuscular blockade was antagonized by injection atropine 0.02 mg/kg injection neostigmine 0.05 mg/kg and extubation was done.

After extubation patients were allocated in equal members into 3 groups of 30 patients each to receive either injection ondansetron or injection metoclopramide .2mg/kg or normal saline 2ml as a placebo. Post operative pain relief was provided with injection tramadol when pain score was more than 5 (VAS). All patients

received supplementation of oxygen 4 lit/min. by face mask in postoperative period for 4 hrs and were monitored continuously in the recovery room. Episodes of nausea and vomiting were determined and noted in the first 24 hrs after operation at different intervals 0 - 4hrs , 4- 8 hrs ,8 – 16 hrs and 16 – 24 hrs at the end of each interval an anesthesiologist registered whether vomiting has occurred and asked patient whether they felt nauseated. The result was scored in same as to Belville etal¹¹ (0=none , 1=nausea/retching,2=vomitting).

Side effects were noted during first 2 hrs after surgery in the recovery room. The patients were also monitored for headache, dizziness, dry mouth/lips, restlessness during next 22 hrs. They were monitored every 2 hrs for the same. Data was analyzed using chi-square test and one way analysis of variance including duncan's multiple.

II. RESULTS

The treatment groups were comparable with regards to patient demographics (Table 1).

Complete control of established PONV (no emesis) for 24 hrs after administration of study agent was achieved in 58% of patients with ondansetron, 52% of patients with metoclopramide and 46% with placebo. The differences were not significant between the groups.

One Patient in Ondansetron group and one patient in metoclopramide group complained of headache, 6 patients of Ondansetron group and 1 patient of metoclopramide group complained of dizziness. Restlessness was seen in 2 patients in Ondansetron group and one patient in metoclopramide group.

| | Ondansetron (n=30) | Metoclopramide (n=30) | Placebo (n=30) |
|------------|--------------------|-----------------------|----------------|
| Age(years) | 40+_30 | 41+_14 | 42+_13 |
| Weight(kg) | 61+_10 | 61+_10 | 61+_10 |

III. DISCUSSION

Post operative nausea and vomiting is common complication of anesthesia but after laparoscopic surgery the incidence is high. In this clinical study duration and agents used in anesthesia were similar in both groups the duration of surgery was also similar in both groups. Nitrous oxide may influence PONV because of its diffusion in middle ear and bowel which may cause activation of dopaminergic system. Grief etal²⁴ stated in his study that patients breathe a higher inspired oxygen concentration during peri operative period and can lower incidence of PONV. In this study all patients were supplemented with 4 lit of oxygen via face mask post operatively.

For reversal along with neostigmine atropine was used to ameliorate the emetic episodes produced by neostigmine. Atropine crosses the blood brain barrier and reduce PONV as it is a tertiary amine. The efficacy of metoclopramide in controlling PONV is controversial. According to previous study prophylactic administration of metoclopramide 20 mgs i/v could prevent PONV.

The low dose metoclopramide has effect on central dopaminergic action and on 5HT₃ receptors¹². According to current study metoclopramide 0.2mg/kg given intravenously after extubation of trachea was not so effective as compared to placebo (p > 0.05) Piper etal¹³. Adverse effects during this study were not serious and overall incidence of adverse events were similar among the 3 study groups.

Neither ondansetron nor metoclopramide in 0.2mg/kg doses were effective in comparison with placebo in controlling PONV. When used prophylactically in patients posted for laparoscopic cholecystectomy and undergoing general anesthesia for it.

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