



ORIGINAL RESEARCH PAPER

Anesthesiology

PREVENTION OF POST OPERATIVE NAUSEA AND VOMITING IN ADENOTONSILLECTOMY PATIENTS A COMPARATIVE STUDY BETWEEN DEXAMETHASONE AND ONDANSETRON

KEY WORDS:

nausea,vomiting,dexamethasone,on dansetron

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ABSTRACT

Postoperative nausea and vomiting is one of the commonest and distressing complications associated with Adenotonsillectomy Hence, the need to prevent postoperative nausea and vomiting in these patients is very important. AIM OF THE STUDY : To compare the effect of single ,pre induction dose of dexamethasone 0.2mg per kilogram(Group A) and ondansetron 0.1 mg per kilogram (GroupB) in prevention of post operative nausea and vomiting in patients who were scheduled for elective adenotonsillectomy surgery.OBSERVATION AND RESULTS:None of the patients in both the groups complained of nausea and vomiting in the first hour of post operative period. There was no statistically significant differences among the two groups in incidence of nausea and vomiting within the 24 hour period. There was no statistically significant differences among the two groups in prevention of nausea and vomiting as detected by one tailed, two sample students T test by which the probability was greater than 0.1.CONCLUSION:A single dose of intravenous dexamethasone can be used as effective safe antiemetic and can improve oral intake in patients undergoing adenotonsillectomy

INTRODUCTION

The first extensive description of nausea and vomiting was made by John Snow in 1848 in his book within 2 years of the demonstration of ether anaesthesia by W.T.G .Morton in 1846.

Postoperative nausea and vomiting is one of the commonest and distressing complications. The incidence was more when ether and chloroform were used. Many patients and surgeons feel that prevention nausea is an important requirement .

Adenotonsillectomy is associated with a high incidence of nausea and vomiting and nowadays adenotonsillectomies are done increasingly as outpatient procedures. Hence, the need to prevent postoperative nausea and vomiting in these patients .

Most of the antiemetic drugs used currently have significant adverse effects such as sedation , dry mouth, dysphoria, extra pyramidal symptoms, etc. ondansetron , a 5-HT₃ receptor antagonist is devoid of significant adverse effects.

Dexamethasone has been found to have significant antiemetic action and it has been used in prophylaxis and treatment of nausea and vomiting. A single dose of dexamethasone given before induction reduces the incidence of post operative nausea and vomiting with virtually no side effects.

AIM OF THE STUDY

The aim of this double blind, randomised , control study is to compare the effect of single , pre induction dose of dexamethasone 0.2mg per kilogram(Group A) and ondansetron 0.1 mg per kilogram (GroupB) in prevention of post operative nausea and vomiting and acceptance of oral intake of first 24 hrs post operative period in patients undergoing adenoton sillectomy.

MATERIALS AND METHODS

This was a randomised double blind control study conducted at the Government Raja Mirasudar Hospital , Thanjavur. A total of 50 patients who were scheduled for elective adenotonsillectomy surgery under general anaesthesia were included in the study . All patients were ASAII-II , aged 6-22 years belonging to both sexes.

Exclusion criteria

The exclusion criteria included patients with history of motion sickness, H/O nausea and vomiting in previous surgeries, regular or temporary use of anti emetics and patients already on steroid therapy for some other illness.

Informed consent was obtained from all the 50 patients.

Methods of study The patient were randomised and divided into two groups each containing 25 patients to receive either dexamethasone 0.2mg /kg upto maximum of 10mg(Group A) intravenously or ondansetron 0.1mg/kg upto maximum of 4 mg(Group B) intravenously, just before induction of anaesthesia. The drugs were administered by an anaesthesiologist who was not involved in the assessment of the patient.

Premedications

All the patients were premedicated with glycopyrrolate 0.01mg/kg intramuscularly , 45 min prior to surgery. Preoxygenation was done for 3 minutes with 100% oxygen .Pentazocine 0.6mg/kg intravenously was given for analgesia. Anaesthesia was induced with thiopentone sodium 5mg/kg IV and tracheal intubation was facilitated with suxamethonium chloride 2mg/kg IV. Anaesthesia was maintained by intermittent positive pressure ventilation with 67% N₂O/33% O₂ mixture and 0.5% Halothane,Pancuronium bromide 0.08mg/kg IV followed by 0.02mg/kg IV as additional doses were given for muscle relaxation . At end of surgery neuromuscular blockade was reversed with neostigmine 0.04mg/kg and glycopyrrolate 0.01mg/kg IV. The pulse , blood pressure and oxygen saturation of the patients were monitored intraoperatively.The patients were assessed for nausea and vomiting at the time of recovery and then one hour , 4 hours and 24 hours. Complaints of nausea and vomiting between the assessment period were recorded. All the patients were asked about other complaints like headache dizziness, constipation etc.

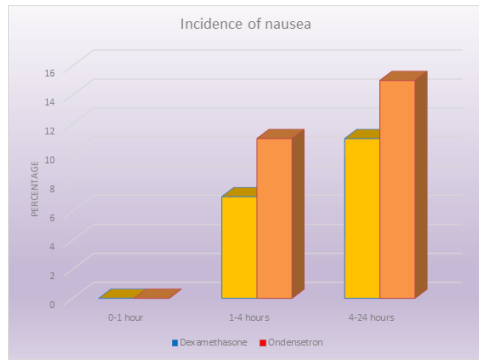
Oral fluids were started after 6 hours postoperatively . if the patients were able to take fluids without any problem, then solids were given. The acceptance of oral intake was monitored during the 24 hours postoperative period .

OBSERVATION AND RESULTS

A total of 50 patients were taken for study. They were divided into 2 groups to receive either dexamethasone or ondansetron . There were no significant difference between the two groups in terms of age, sex or other parameters. The total duration of anaesthesia was 45 -60mins.

TABLE 1: NUMBER OF PATIENTS WITH NAUSEA

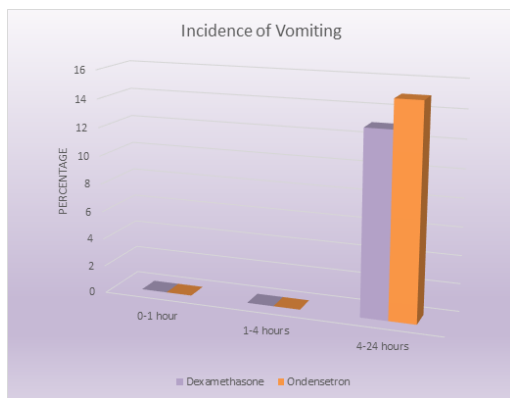
DRUG	0-1 HOUR	1-4 HOURS	4-24 HOURS
Dexamethasoe	Nil	2	3
Ondansetron	Nil	3	4



As shown in table 1, none of the patients experienced nausea in both groups during the first post operative hour in the 1 to 4 hours period, two patients in dexmethasone group and three patients in the ondansetron group experienced nausea. In the 4-24 hours period three patients in the dexamethasone group and four patients in the ondansetron group experienced nausea.

Table 2: Number of patients with vomiting

Drug	0-1 hour	1-4 hour	4-24 hours
Dexamethasone	Nil	Nil	3
Ondansetron	Nil	Nil	4



The number of patients vomiting is shown in table 2 none of the patients in both group had vomiting between 0-1 hour and 1-4 hours post operative period. in the 4-24 hour period three patients in the dexamethasone group and four patients in the ondansetron group had vomiting.

Table 3: 24 hours occurrence of nausea and vomiting

	Dexamethasone	Ondansetron
Nausea	4	5
No nausea	21	20
Vomiting	3	4
No vomiting	22	21
Nausea or vomiting	4	5
No nausea or vomiting	21	20

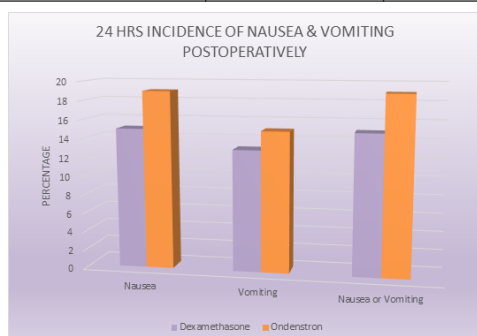


Table 3 shows the overall occurrence of nausea and vomiting in 24 hours observation period. Five patients in the ondansetron group and four patients in the dexamethasone group had nausea. four patients in the ondansetron group and three patients in the dexamethasone group had vomiting in the first 24 hours postoperatively. The total number of patients with either nausea or vomiting was four in dexamethasone group and five in ondansetron group. In both groups none of the patients had more than two episodes of vomiting.

There is no statistically significant differences among the two groups in prevention of nausea and vomiting as detected by one tailed, two sample students T test by which the probality was greater than 0.1 which means that there is no significant differences between the two groups.

DISCUSSION

Post operative nausea and vomiting is a common and distressing problem for the patients and may be the only distressing memory of the patients experience regarding general anaesthesia. Post operative nausea and vomiting delays recovery and adds to morbidity of the patient causing reduced oral intake and dehydration. It can delay discharge.

Adenotonsillectomy which is frequently done as outpatient procedure is associated with a high incidence (70-75%) of post operative nausea and vomiting. The causes include (1) swallowed blood causes irritation of the gastro intestinal chemo receptor ,(2) stimulation of the trigeminal nerve during surgery and (3)the stimulation of the glossopharyngeal afferents due to inflammation of the pharyngeal structure. Hence antiemetic prophylaxis is an important requirement in patients undergoing adenoton sillectomy.

Ondansetron a 5-HT3 receptor antagonist has been used in the prophylaxis and treatment of chemotherapy induced vomiting and in post operative nausea and vomiting. Many studies have shown that ondansetron is a effective and safe druing the treatment and prophylaxis of post operative nausea and vomiting compared to other antiemetics such as metoclopramide , droperidol etc. though it is effective and not associated with significant adverse effects .

Dexamethasone was first reported to be an effective antiemetic inpatients undergoing chemotherapy in 1981. Since then, several studies have demonstrated the efficacy of dexamethasone in prophylaxis of nausea and vomiting associated chemotherapy, radiotherapy and post operative nausea and vomiting without significant adverse effect.

The mechanism of anti emetic action dexamethasone is unknown the possible mechanism include(1) central inhibition of prostaglandin synthesis (2) decrease in serotonin turn over in the central nervous system(3) decrease in the permeability of membranes to emetic substance (4) the strong anti inflammatory effect of the drug on pharynx,larynx and trachea. A single dose of dexamethasone is virtually an adverse effect even when given in a large dose

The primary objective of this study is to compare the efficacy of a single pre induction dose of dexamethasone with that of ondansetron in prophylaxis of nausea and vomiting in patients undergoing adenotonsillectomy. The study results show that the incidence of nausea was 16% in the dexamethasone group and 20% in the ondansetron group and the incidence of vomiting was 12% in the dexamethasone group and 16% in the ondansetron group in the 24 hours observation period the overall incidence of nausea and vomiting was 16% in dexamethasone group and 20% in ondansetron group. There is no statistical difference between the two groups as tested by one-tailed, two-sample students T-test by which the P value >0.1. 92% of the patient in the dexamethasone group were able to take solids but only 52% in the ondansetron group were able to take solids in the 6-24 hours post

operative period. The better acceptance of the oral intake in the dexamethasone group is probably due to its anti-inflammatory action in the pharyngeal structures. There was no significant difference in any of the patients in dexamethasone group.

Thus, a single dose of intravenous dexamethasone can be used as an effective and safe antiemetic and can improve oral intake in patients undergoing adenotonsillectomy.

CONCLUSION

Intravenous dexamethasone (0.2mg/kg) given just before induction in patients undergoing adenotonsillectomy is as effective as ondansetron (0.1mg/kg) in the prevention of postoperative nausea and vomiting. There is no significant difference between the two groups in the incidence of nausea and vomiting.

The ability to take solids is significantly better in the dexamethasone group.

Hence, dexamethasone given just before induction is reliable, safe and cost effective method to effectively control postoperative nausea and vomiting.

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