

Postoperative Vomiting after single dose of Injection Dexamethasone at the time of Induction of General Anesthesia

Muhammd Sajid, Rubina Firdous, Muhammad Afzal, Ijaz Tanveer Hussain, Abdul Hameed Virk

ABSTRACT

Objective: To describe the effect of single dose of injection dexamethasone at the time of induction of general anesthesia on post operative vomiting within first 24 hour in Allied hospital Faisalabad

Methodology: This is hospital based prospective comparative study conducted from November 2007 to November 2008 at surgical unit III, Allied /DHQ Hospital Faisalabad. Two groups, cases and controls, were made. Injection dexamethasone was given to the cases group and injection normal saline was given to the controls group at the time of induction of general anaesthesia. The data was entered into a structured proforma separately. Number of episodes of vomiting was recorded

within 24 hour postoperatively in each group. Both groups were compared.

Results: A total of 90 patients were included in this study. Equal number of cases and control were taken (45 patients in each group). During the 24-Hour Postoperative observation period, 34% of patients in the dexamethasone group, compared with 63% of patients in the saline group, reported nausea and vomiting ($p < 0.001$).

Conclusion: Injection dexamethasone given at the time of induction of general anesthesia significantly reduces the frequency of post operative vomiting.

Keywords: post operative, nausea, vomiting, dexamethasone

INTRODUCTION

For most patients, avoiding postoperative nausea and vomiting (PONV) after general anesthesia is a high priority[1]. The fear of PONV in patients undergoing surgery is more prevalent than that of postoperative pain[2]. Furthermore, intractable PONV is costly as it is the most common cause of unexpected admission following ambulatory surgery[3,4].

A clinical trial published in 1993 suggested that dexamethasone can prevent PONV[5]. Subsequent studies indicated that dexamethasone may effectively decrease the incidence of PONV in patients recovering from general anesthesia[6,7,8,9]. The aim of this study was to evaluate the antiemetic effect of 10 mg iv dexamethasone administered at the time of induction of anesthesia, in a sample population of patients undergoing general anesthesia.

METHODOLOGY

Patients in whom general anesthesia was given were included in the study. Cases included in the study were

of thyroidectomy, mastectomy and laparoscopic cholecystectomy. After obtaining institutional review board approval and written informed consent, 90 patients (ASA I or ASA II), were enrolled in the study. Patients undergoing any open abdominal surgery, history of previous abdominal surgery, Motion sickness or unexplained vomiting were also excluded.

On arrival in the operating room, routine monitoring devices were placed, and baseline blood pressure, heart rate and pulse oximetry values were recorded. Patients were then randomly assigned to one of two groups ($n = 45$ each) using a computer-generated random number table. Study medications (2 ml) were prepared by one of the investigators and were administered. At the time of induction, one group of patients received dexamethasone 10 mg i.v. and the other group received 2 ml of injection normal saline.

The anaesthetic regimen was standardized for all patients. Anaesthesia was induced with sodium pentothal 4 mg/kg and glycopyrrolate 0.2 mg. Tracheal

intubation was facilitated with suxamethonium and anesthesia was maintained with 1.0-2.5% (inspired concentration) isoflurane in oxygen.

Vomiting was assessed immediately after operation. Patients were observed 24 hours postoperatively. Injection metoclopramide 10 mg was given after the vomiting episode on patient request.

Sample size was predetermined. We expected a 30% difference in the occurrence of vomiting between groups. Parametric data were analyzed with unpaired t-test.

RESULTS

Of the 90 patients enrolled in this study, nine patients who could not be contacted due to early hospital discharge were eliminated from the study. The data obtained from remaining 81 patients were analyzed. There were no significant differences in blood pressure, heart rate and respiratory rate. No patient demonstrated a SaO₂ below 90%.

The efficacy of dexamethasone as a prophylactic antiemetic compared with placebo treatment is summarized in Table 2. During 24 hour of postoperatively, 34% of patients of dexamethasone group in comparison with 63 % of patients in the saline group reported nausea and vomiting (p <0.001, chi square test)

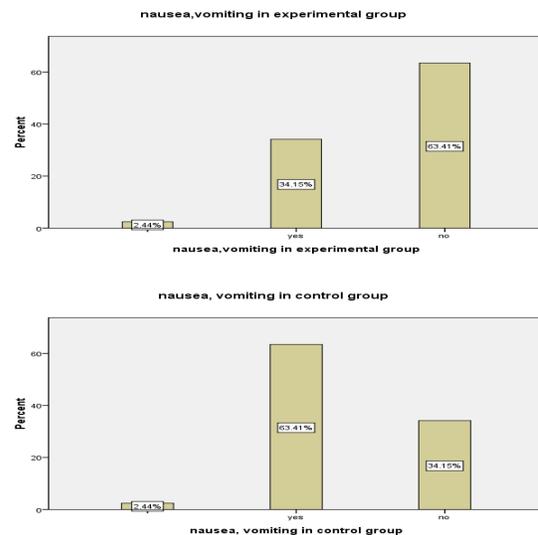
Table-1
Patient's characteristics. values are numbers of medians

Group	Experimental	control
n	41	40
Age	(38)28-58	(37)26-55
Duration of Anaesthesia	(60)38-90	(59)30-90
Duration of surgery	(47)25-75	(49)25-76

Table-2
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided) P value
Pearson Chi-Square	41.005 ^a	4	.000
Likelihood Ratio	9.407	4	.052
N of Valid Cases	41		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .02.



Graph 1

DISCUSSION

Dexamethasone was first reported as an effective antiemetic in patients receiving cancer chemotherapy in 1981 [10]. Since then, several studies have shown that dexamethasone is equal to or better than other antiemetic agents in preventing the nausea and vomiting associated with chemotherapy [11,12]. Recently, dexamethasone has also been reported to be effective in preventing nausea and vomiting in patients undergoing tonsillectomy, thyroidectomy and abdominal hysterectomy [7]. Therefore, we hypothesized that dexamethasone will prevent vomiting in patients undergoing general anaesthesia. In the present study, we found that the prophylactic use of dexamethasone significantly reduced the incidence of postoperative vomiting in patients undergoing general anaesthesia.

The exact mechanism by which dexamethasone exerts its antiemetic action is not known. Glucocorticoids have been shown to have various effects on the central nervous system. They regulate neurotransmitter concentrations, receptor densities, signal transduction and neuron configuration [13,14,17,18,19,20]. These nuclei are known to have significant neuronal activity in the regulation of the nausea and vomiting reflex [15,16]. Dexamethasone may exert its antiemetic action through these nuclei.

A wide range of doses of dexamethasone (8-32 mg) has been used in the management of post operative nausea and vomiting and emesis associated with chemotherapy [11,12]. Among these doses, 8-10

mg has been used most frequently in the prevention of post operative nausea and vomiting [17,20]. Therefore, an 10mg dose was chosen for the present study. Although it might not be the optimal dose, dexamethasone 8 mg significantly decreased the incidence of postoperative vomiting in patients undergoing general anaesthesia. Dose response studies, however, will be necessary in the future to determine the optimal dose of dexamethasone for the prevention of postoperative vomiting in patients undergoing general anaesthesia.

Long term corticosteroid therapy may have significant morbidity. However, side-effects from brief (24-48 h), even high dose, corticosteroid treatment have been rare. After conducting an extensive literature search, we were unable to find a report of side-effects associated with use of single dose of dexamethasone. Although a single dose of dexamethasone is considered safe [17,20] further studies are indicated.

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