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Antiemetic Efficacyof Propofol- A Clinical Study

KEYWORDS: propofol, PONV, antiemetic efficacy.

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ABSTRACT *Post operative nausea and vomiting(PONV) is a major concern in anaesthesia practice. Varieties of drugs have been used but are less popular due to their side effects. There are reports of propofol being used as an alternative to 5HT3 antagonists for PONV, as it possesses antiemetic property. Thus we undertook this study to find out the antiemetic efficacy of propofol in post operative period. A randomized controlled trial was carried out in 60 patients posted for elective surgical procedure under general anaesthesia. The patients belong to age group of 18-50 years of ASA grade 1 and 2. They were grouped in two,*

Group 1- 20 patients; received normal saline and used as control

Group 2- 20 patients; received 0.5mg/kg of propofol.

The incidence of retching and vomiting was 14.52% with propofol as compared to normal saline which was 36.24%.

INTRODUCTION

In modern anaesthesia practice also, PONV remains a major concern. Its incidence is as high as 20% to 30% even with the use of newer anaesthetic agents. Post operative nausea and vomiting is a major cause of distress to the patient as well as to the anaesthesiologist. It may lead to significant morbidity from dehydration, electrolyte imbalance, suture line tension and many other problems that may pose difficulties in postoperative recovery. It also significantly increases the risk of aspiration in post operative period. PONV also delays discharge from the hospital in case of ambulatory surgery. The recent trend of performing more and more surgeries on outpatient basis emphasizes the need for effective antiemetic therapy. Most of the antiemetic drugs used in today's practice have either undesirable side effects or are not cost effective. Propofol possesses direct antiemetic properties at sub- anaesthetic doses and is devoid of side effects and is cost effective. Propofol is also increasingly being used for chemotherapy induced nausea and vomiting and for refractory PONV.

AIMS AND OBJECTIVES

- To study the antiemetic effect of propofol when compared to normal saline (placebo)
- To observe side effects like sedation in postoperative period.

MATERIALS AND METHODS

After approval by ethical committee the study was carried out

- To study the antiemetic effect of propofol when compared to normal saline (placebo)
- To observe side effects like sedation in postoperative period.

PATIENT SELECTION

A randomized controlled trial was carried out including patients 40 of either sex. The patients were posted for elective non-gastrointestinal surgical procedures under general anaesthesia. The patients belong to age group of 18-50 years of ASA grade 1 and 2. They were randomly grouped in two,

Group 1- 20 patients; received inj normal saline as control

Group 2- 20 patients; received 0.5mg/kg of propofol

For post operative assessment parameters like vomiting and retching and sedation were used. Patients were followed up for every 15 min for 1 hour, every 30 min for next 3 hours, every hour for next 4 hour and every 4 hour for next 16 hours.

PROCEDURE

Pre- operative evaluation

Pre anaesthetic evaluation was carried out the day before the surgery. The patients with history of motion sickness and history of post operative nausea and vomiting were excluded from the study. Also the patients with history of allergy of anaesthetic drugs were excluded from the study. Detailed history, general physical examination and physical examination was carried out, also basic laboratory investigations were done.

All the patients were given general anaesthesia

INDUCTION

Inj. Pentothal sodium 5mg/kg IV
Inj suxamethonium 2mg/kg IV

MAINTAINANCE

50% O_2+ 50%N_2O on IPPV
Isoflurane as an inhalational agent
Atracurium as muscle relaxant.

Intraoperatively pulse blood pressure, oxygen saturation were recorded at 5min interval until the end of the operation.

Patients were reversed with inj neostigmine and inj glycopyrrolate.

The patients in group 1 received normal saline and were kept as control. The patients in group 2 received inj propofol 0.5mg/kg. Patients were monitored for every 15 min for 1 hour, every 30 min for next 3 hours, every hour for next 4 hour and every 4 hour for next 16 hours for the symptoms of

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vomiting and retching.

Assessment of sedation score was done by sedation score at 30min, 1hour and 4 hour after the operation. Patient sedation score was defined as

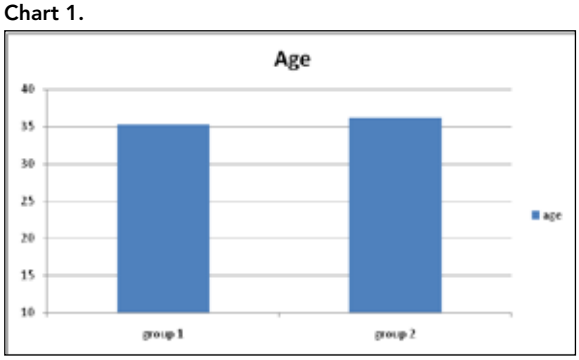
1. Asleep, not arousable by verbal contact.
2. Asleep, arousable by verbal contact
3. Drowsy, not sleeping
4. Alert/ awake.

RESULTS

Table 1. Age wise distribution in two groups

Group	Number of patients	Age
Group1	20	35.23+/- 2.48
Group2	20	36.15+/-1.98

Chart 1.

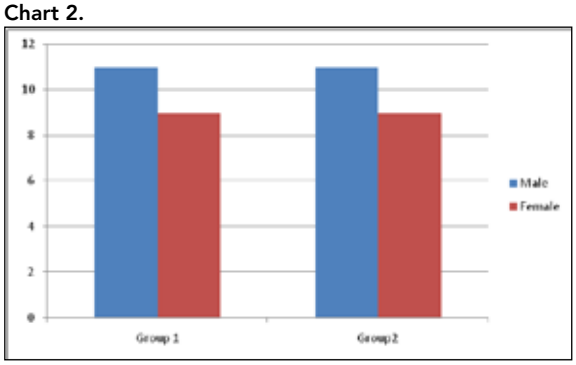


By using unpaired t- test, p- value > 0.05. Therefore there is no significant difference between the mean ages in two groups.

Table 2. Sex wise distribution in two groups

	Gender		Total
	Male	Female	
Group 1	11	9	20
Group 2	11	9	20

Chart 2.

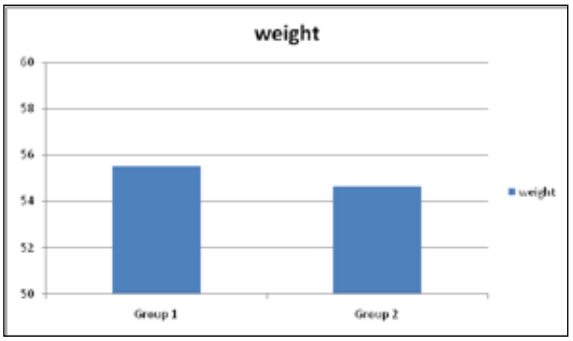


Sex wise distribution in two groups was comparable.

Table 3. Comparison of weight in two groups

	Number of patients	Weight in kg
Group 1	20	55.5+/-30
Group 2	20	54.65+/-82

Chart 3.



By using unpaired t- test, p- value > 0.05. Therefore there is no significant difference between the mean age in two groups.

Table 4. Incidence of vomiting and retching in two groups

Incidence of vomiting and retching in two groups at	Group 1	Group 2
1 – 4 hours	25%	5%
5 – 24 hours	5%	0%

Chart 4a. Chart showing incidence of vomiting and retching at 1 – 4 hours.

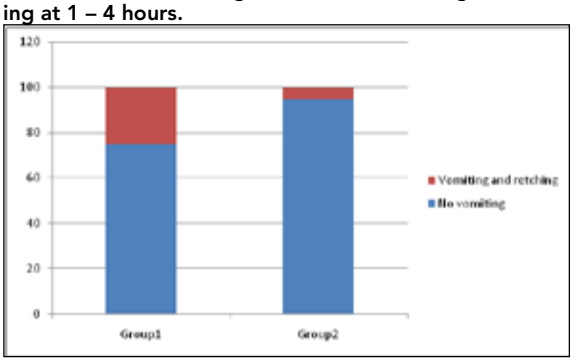


Chart 4b. Chart showing incidence of vomiting and retching at 4- 24 hours.

By using unpaired t- test, at 1 – 4 hours and 4 – 24 hours, there is significant difference in incidence of vomiting between two groups.

Table 5. Comparison of sedation score in two groups.

	sedation score		P- Value
	Group 1	Group 2	
Immediate post operative	2	2	>0.05
1st hour	1	1	>0.05
2nd hour	2	2	>0.05
4th hour	2	2	>0.05

By using unpaired t- test, p- value >0.05. Therefore there is no significant difference between the sedation score in two groups

Table 6. Length of surgeries in two groups

Groups	Length of surgery in minutes
Group 1	93+/-4 min
Group 2	95+/- 2 min

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By using unpaired t- test, p- value >0.05. Therefore there is no significant difference between the length of surgery in two groups.

DISCUSSION

Post operative nausea and vomiting (PONV) is a distressing symptom, leads to dehydration, dyselectronemia, suture line tension, and aspiration of vomitus[1]. PONV also leads to delay in discharge and unanticipated hospital readmission.[2].

PONV can be managed with pharmacological methods like antiemetic drugs to non – pharmacological methods like acupuncture and hypnosis[3].

The use of intravenous anaesthetic agent, propofol for preventing nausea and vomiting is an evolving and promising concept[4]. The mechanism of action of propofol as an antiemetic is unclear. Modulation of sub cortical structures, antidopaminergic activity, decreased release of glutamate and aspartate from olfactory cortex and reductions of serotonin concentrations in area postrema are postulated mechanisms for propofol antiemesis.[5,6].

In our study we have randomly chosen 40 patients in age group between 18 – 50 year belonging to ASA1 or ASA 2. The two groups were comparable in age, sex, ASA grading and weight.

The patients were posted for surgeries like thyroidectomy, FESS, modified radical mastoidectomy, dentigerous cyst excision etc. Under general anaesthesia.

In our study we randomly divide our patients in two groups. Group 1 received normal saline as placebo and group 2 received intravenous propofol 0.5mg/kg after induction of anaesthesia. There was statistically significant difference in incidence of PONV in two groups in first 4 hours. The incidence of vomiting and retching and vomiting was 25% in group 1 and 5% in group 2, in first four hours postoperatively.

Mistuko Numazaki and Yoshitaka Fuzi have reported the incidence of PONV to be 60% with normal saline and 15% with inj propofol 0.5mg/kg, in patients undergoing thyroidectomy. This study is comparable to our study[7] .

In another study by Gan Tong J et al, they administered inj propofol 20mg for patients undergoing ambulatory surgery and intralipid as placebo. They found that incidence of PONV was about 56% in placebo group as against 12% with propofol. This study is also comparable to our study with respect to decrease in incidence of vomiting after administration of propofol.[8]

In our study we found that sedation score was not significant in two groups. No other side effects were noted.

SUMMARY

The study was carried out in 40 patients of ASA 1 or ASA 2 in age group of 18 – 50 years

They were randomly grouped in two,
Group 1- 20 patients; received inj normal saline as control
Group 2- 20 patients; received 0.5mg/kg of propofol

The study was done

- To study the antiemetic effect of propofol when compared to normal saline (placebo)
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Patients were reversed with inj neostigmine and inj glycopyrrolate.

The patients in group 1 received normal saline and were kept as control. The patients in group 2 received inj propofol 0.5mg/kg. Patients were monitored for every 15 min for 1 hour, every 30 min for next 3 hours, every hour for next 4 hour and every 4 hour for next 16 hours for the symptoms of vomiting and retching.

Both the groups were comparable in respect to age, weight, sex and duration of surgery. There is significant statistical difference of PONV in two groups, 25% for saline group and 5% for propofol group, 4 hours postoperatively.

Sedation score was similar in two groups and no other side effects were observed.

CONCLUSION

Propofol effectively decreases the incidence of post operative nausea and vomiting in early post operative period.

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