

Comparison of Efficacy of Ondansetron Pre-treatment in Alleviating Pain due to Propofol during General Anaesthesia with Placebo

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ABSTRACT

Background: Ondansetron is a 5HT₃ receptor blocker and has multifaceted action like sodium channel blocker and μ - opioid agonist.

Objective: To compare the efficiency of ondansetron pre-treatment in alleviating pain caused by propofol during induction of general anaesthesia with placebo.

Material & Method: In this randomized controlled trail 120 patients of ASA grade I & II undergoing elective surgery were included and divided into two equal groups A & B by using lottery method. Each group comprised of 60 patients. In group A two ml 0.9 % normal saline and in group B, 2 ml ondansetron (4mg) given intravenously. In both groups propofol was given in a dose of 2.5 mg / Kg intravenously.

Results: The mean age of patients in group A was 29.95 ± 4.79 year and in group B was 30.30 ± 4.87 year. Majority of patients 67(55.83 %) were between 18 to 30 year of age. Out of 120 patients. 63 (52.50 %) were ASA I & 52 (47.50 %) were ASA II. Efficacy of group A (placebo) was seen in 11 (18.33 %) while in group B (ondansetron) was seen in 56 (93.33 %).

Conclusion: Ondansetron pre-treatment in alleviating pain cause by propofol is very effective.

Keywords: Pain, ondansetron, propofol, general anaesthesia.

INTRODUCTION

Pain is a complex phenomenon and peri-operative pain is like nightmare for patients.¹ Immediate vascular pain with propofol injection during induction of anaesthesia is very common.² Propofol is a potent intravenous anaesthetic agent which is commonly used for sedation and general anaesthesia.³ Propofol is an oil – in – water emulsion. It is 1% aqueous solution containing glycerol, egg lecithin and soybean oil.⁴ Incidence of pain is 70 % & different have been used to decrease pain like pre injection administration of acetaminophen, ketamin, metoclopramide, opioids, lidocaine, ketrolac and serotonin selective reuptake inhibitors (Ondansetron).^{5,6,7,8}

Previously ondansetron was used as a strong antiemetic agent. Ondansetron also act on sodium channels and block them and also bind to the opioid μ receptors and exhibits agonist activity. Due to multifaceted action. Ondansetron is also used to alleviate pain produce by propofol.⁹ Similarly in the study of Ye et al they found that ondansetron is 15 times more potent than lidocaine in alleviating pain produce by propofol.¹⁰

The purpose of my study was to evaluate the effectiveness of ondansetron pre-treatment for alleviation of pain with propofol in pakistani population.

MATERIAL & METHOD

After seeking permission of study from combined military hospital Lahore (CMH) ethics committee 120 patients of ASA I & II status of age 18 to 40 years of both sex undergoing general anaesthesia electively were selected. Written informed consent were taken from all patients on

preoperative visit and divided them into two equal groups A & B by lottery method. Group A patients received normal saline as placebo and group B received ondansetron. All patients were made aware of visual rating scale (VRS) for measuring pain intensity. The solution were prepared by anaesthesiologist who was not knew the content of pre-treatment solutions. A 20 gauge cannula was placed into the largest vein on the dorsum of hand. In all patients ringer's solution was connected and free flow was confirmed. All patients received 2 ml of pre-treatment solution intravenously (0.9 % normal saline in group A & ondansetron 4 mg in group B) 5 minutes before propofol injection. Propofol 2.5 mg / Kg was used and given in 15 sec in all patients. Routine monitoring done in all patients like pulse oximetry, ECG, temperature, non-invasive blood pressure monitoring & capnography. Pain was assessed at the time of injection of propofol. This study was randomized controlled trail and sampling technique was non probability consecutive sampling. Power off the test was 80 % and level of significance was 5 % and total no. of patients were 120. Data was entered and analysed in SPSS version 20.0. Chi square test was used and P value < 0.05 was consider significant.

RESULTS

Age range in this study was from 18 to 40 years with mean age of 30.12 ± 4.81 years. The mean age in group A was 29.95 ± 4.79 years and in group B was 30.30 ± 4.87 years.

Out of these 120 patients, 63 (52.50%) were ASA I and 52 (47.50%) were ASA II . Efficacy of Group A

(placebo) was seen in 11 (18.33%) while in group B (ondansetron) was seen in 56 (93.33%) patients (p-value = 0.0001).

Table-I: Age distribution for both groups (n=120).

Age (years)	Group A (n=60)		Group B (n=60)		Total (n=120)	
	No. of patients	%age	No. of patients	%age	No. of patients	%age
18-30	28	46.67	25	41.67	53	44.17
31-40	32	53.33	35	58.33	67	55.83
Mean \pm SD	29.95 \pm 4.79		30.30 \pm 4.87		30.12 \pm 4.81	

Table-II: ASA Status for both groups (n=120).

ASA status	Group A (n=60)		Group B (n=60)		Total (n=120)	
	No. of patients	%age	No. of patients	%age	No. of patients	%age
I	32	53.33	31	51.67	63	52.50
II	28	46.67	29	48.33	57	47.50

Table III: Distribution of patients according to Efficacy in both Groups.

EFFICACY		Group A (n=60)		Group B (n=60)	
		No. of Patients	%age	No. of Patients	%age
EFFICACY	Yes	11	18.33	56	93.33
	No	49	81.67	04	6.67

P-value = 0.0001 which is statistically significant.

Table IV: Stratification of efficacy with respect to age groups in both groups.

Age of patients	Group A (n=60)		Group B (n=60)		p-value
	Efficacy		Efficacy		
	Yes	No	Yes	No	
18-30	06	22	23	02	0.0001
31-40	05	27	33	02	0.0001

Table V: Stratification of efficacy with respect to ASA in both groups.

ASA Status	Group A (n=60)		Group B (n=60)		p-value
	Efficacy		Efficacy		
	Yes	No	Yes	No	
I	04	28	28	03	0.0001
II	07	21	28	01	0.0001

DISCUSSION

Propofol has been commonly used for anaesthesia and sedation especially when quick recovery is required but pain during its injection is a concern for anaesthesiologist. In this study we used ondansetron and found that it is very effective in reducing pain along with PONV. Similarly the result of the study of Umar M et al favours my study results. They observe that severity of pain was lesser in ondansetron group compare with placebo group (2.5 % VS 37.5 %) ¹¹. Similarly in the study of Ambesh SP et al (1999) and Reddy MS et al (2001). They found that pre-treatment with Ondansetron is very effective for alleviate pain of propofol ^{12,13}.

Similarly in the study of zahedi H et al they compared ondansetron with lignocaine and found that ondansetron was more effective than lignocaine and pain reduction was 76 % ¹⁴. In the study of Memis et al they compared the ondansetron with tramadol and concluded that both have equal pain relief ¹⁵. In the study of Preetha R et al they reported that both lignocaine and ondansetron have pain relieving effect and there is no significant difference between two groups ¹⁶. In the study of Kant R et al they compare the lignocaine with palonosetron and found that lignocaine is better than palonosetron ¹⁷. Similarly in the study of Sumalatha GB et al they compared lignocaine, ondansetron and ranosetron and found that both lignocaine

and ramosetron have batter pain control than Ondansetron ¹⁸.

CONCLUSION

This study concluded that ondansetron pre-treatment in alleviating pain caused by propofol is very effective and can be safely used in patients during induction of general anaesthesia.

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