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Ondansetron versus ramosetron in controlling propofol induced pain

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***Abstract*---**Background: Propofol, a widely used drug for induction, often causes local pain when administered into a peripheral vein. The present study compared the efficacy of ondansetron and ramosetron in controlling propofol-induced pain in 80 patients. Materials & Methods: 80 patients of both genders posted for surgery under general anaesthesia were randomized using lottery method and divided into 2 groups of 40 each. Group I received 4 mg of ondansetron and group II received 0.3 mg of ramosetron. Each group had 40 patients. All the pre-treatment drugs were made into 2 ml volume with normal saline and given 1 minute before injection of propofol and applying manual occlusion at midarm level. Pain during injection of propofol was recorded in a four point pain rating scale. Results: Group I received ondansetron and group II received ramosetron. Both the groups were comparable in relation to demographic profile and ASA status.The difference was not significant (P> 0.05). The pain score 1 was seen in 6 in group I and 12 in group II, score 2 was seen in 10 in group I and 15 in group II, score 3 was seen in 12 in group I and 6 in group II and score 4 was seen in 12 in group I and 7 in group II. The difference was significant (P< 0.05). Conclusion: Ramosetron is found to be better than ondansetron in controlling propofol induced pain.

***Keywords*---**ondansetron, ramosetron, propofol, pain.

Introduction

Propofol, a widely used drug for induction of general anaesthesia often causes local pain when administered into a peripheral vein. Many patients experience mild to moderate pain or even excruciating pain during propofol injection. Several methods have been described to reduce this pain, of which most effective and common are the use of a larger vein and mixing with lignocaine.[1] In various studies, efficacy of various drugs such as lignocaine, tramadol, ketorolac and ketoprofen have been compared in reducing the propofol-induced pain. The analgesic efficacy of drugs such as ketamine and combination of clonidine-ephedrine has been studied by various investigators. Dexmedetomidine a newer α adrenergic agonist has been used to alleviate propofol injection pain.[2]

Many patients experience mild to moderate pain or even excruciating pain during propofol injection. Numerous studies have been conducted to know the better among them for prevention of post operative nausea and vomiting (PONV) but less for reducing propofol induced pain.[3] Ondansetron ,a 5HT3 antagonist has been proved to have a local anaesthetic effect, other than antiemetic.It produces local anesthetic effect by blocking Sodium channels and also has opioid mu receptor agonist properties. Ramosetron is one of the potent 5HT3 antagonist commonly used as an antiemetic and has been found to be effective in prevention of early PONV compared to ondansetron.[5] The present study compare the efficacy of ondansetron and ramosetron in controlling propofol induced pain in 80 patients.

Materials and Methods

After approval from institutional ethics committee the present study was conducted in Department of Anaesthesiology & Critical Care, SCB Medical College, Cuttack. It comprised of 80 patients of both genders undergoing surgery under general anaesthesia.All were informed regarding the study and after getting their written consent the study was conducted. Demographic profile such as name, age, gender etc. was recorded. Patients were randomly divided into 2 groups using lottery method. Group I received 4 mg of ondansetron and group II received 0.3 mg of ramosetron. Each group had 40 patients. All the pre-treatment drugs were made into 2 ml volume with normal saline. After intravenous (IV) pre-treatment of study drug, manual occlusion of venous drainage was done at mid-arm for 1 min. Administration of propofol (1%) after release of venous occlusion was performed. Pain was assessed with a 4 point scale. Pain Score 1 is no pain, 2 is mild , 3 is moderate and 4 is severe pain. Results thus obtained were subjected to statistical analysis using student's unpaired t test and Chi- square test. P value less than 0.05 was considered significant.

Results

Table I
Gender Distribution of patients

Groups	Group I	Group II
Drug	Ondansetron	Ramosetron
M:F	18:22	19:21

Table I shows that group I received ondansetron and group II received ramosetron. There were 18 males and 22 females in group I and 19 males and 21 females in group II.

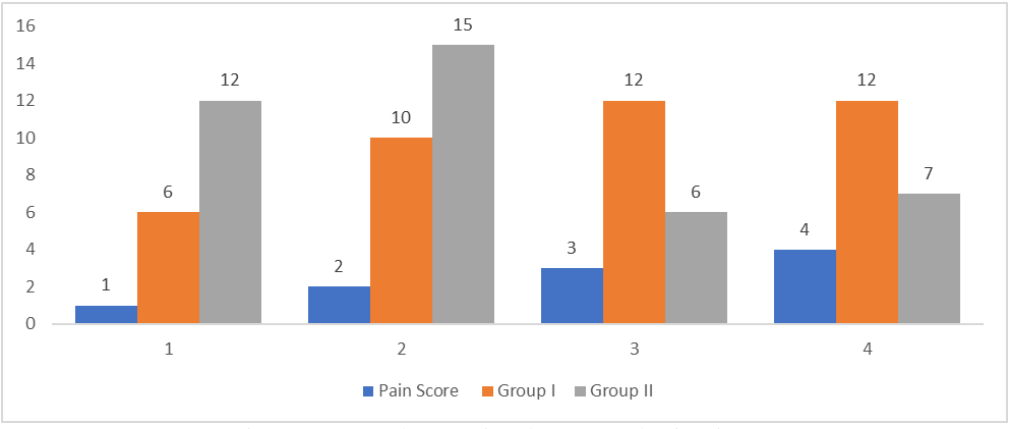
Table II
Demographic profile

Groups	Group I	Group II	P value
Mean Body weight (kgs)	63.2	64.1	0.92
ASA (I/II)	26/14	21/19	0.84

Table II shows that mean body weight in group I patients was 63.2 kgs and in group II was 64.1 kgs. ASA grade I was seen in 26 in group I and 21 in group II and grade II in 14 in group I and 19 in group II. The difference was not significant (P> 0.05).

Table III
Comparison of pain score in both groups

Pain score	Group I n (%)	Group II n (%)	P value
1	6(15)	12(30)	0.01
2	10(25)	15(37.5)	0.03
3	12(30)	6(15)	0.02
4	12(30)	7(17.5)	0.03



Graph I. Comparison of pain score in both groups

Table III and graph I shows that pain score 1 was seen in 6(15%) in group I and 12(30%) in group II, score 2 was seen in 10(25%) in group I and 15(37.5%) in group II, score 3 was seen in 12(30%) in group I and 6(15%) in group II and score 4 was seen in 12 (30%) in group I and 7 (17.5%) in group II. The difference was significant (P< 0.05).

Discussion

Propofol is becoming the intravenous anesthetic of choice for ambulatory surgery in outpatients. It is extensively metabolized, with most of the administered dose appearing in the urine as glucuronide conjugates.[6,7] Propofol is a 2,6-diisopropylphenol and is a lipophillic weak acid (pKa¼11). It is very insoluble in water, so is formulated as 1% aqueous solution in an oil-in-water emulsion containing soya bean oil, glycerol, and egg lecithin.[8] Favorable operating conditions and rapid recovery are claimed as the main advantages in using propofol, whereas disadvantages include a relatively high incidence of apnea, and blood pressure reductions. The action of propofol involves a positive modulation of the inhibitory function of the neurotransmitter gama-aminobutyric acid (GABA) through GABA-A receptors.[9] The present study compare the efficacy of ondansetron and ramosetron in controlling propofol induced pain in 80 patients. We found that group I received ondansetron and group II received ramosetron. There were 18 males and 22 females in group I and 19 males and 21 females in group II.

We observed that mean body weight in group I patients was 63.2 kgs and in group II was 64.1 kgs. ASA grade I was seen in 26 in group I and 21 in group II and grade II in 14 in group I and 19 in group II.Both the groups were comparable in relation to demographic profile and ASA status.Sumalatha GB e1al [10] compared the efficacy of ondansetron, ramosetron and lignocaine in terms of attenuation of propofol-induced pain during induction of anaesthesia. Hundred and fifty adult patients, aged 18–60 years, posted for various elective surgical procedures under general anaesthesia were randomly assigned to three groups of 50 each. Group R received 0.3 mg of ramosetron, Group L received 0.5 mg/kg of 2% lignocaine and Group O received 4 mg of ondansetron. After intravenous (IV) pre-treatment of study drug, manual occlusion of venous drainage was done at mid-arm with the help of an assistant for 1 min. This was followed by administration of propofol (1%) after release of venous occlusion. Pain was assessed with a four-point scale. Unpaired Student's t-test and Chi-square test/Fisher's exact test were used to analyse results.

The overall incidence and intensity of pain were significantly less in Groups L and R compared to Group O ($P \leq 0.001$). The incidence of mild to moderate pain in Groups O, R and L was 56%, 26% and 20%, respectively. The incidence of score '0' (no pain) was significantly higher in Group L (76%) and Group R (72%) than Group O (34%).In our study we found that pain score 1 was seen in 6 in group I and 12 in group II, score 2 was seen in 12 in group I and 15 in group II, score 3 was seen in 11 in group I and 6 in group II and score 4 was seen in 11 in group I and 7 in group II. Incidence and intensity of pain was lower in patients received ramosetron than those received ondansetron. In a study conducted by Singh D et al 11, they found that pretreatment with ramosetron 0.3mg and lignocaine 40 mg are equally effective in preventing pain on propofol injection. Ahmed et al[12] found the incidence of propofol injection pain was reduced from 60% to 15% after granisetron pre treatment.

Conclusion

Authors found that Ramosetron found to be better than ondansetron in controlling propofol induced pain.

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