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Original Article

Ondansetron versus Ramosetron in controlling propofol‑induced pain

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ABSTRACT:

Background: Propofol is becoming the intravenous anesthetic of choice for ambulatory surgery in outpatients. The present study compared efficacy of Ondansetron and Ramosetron in controlling propofol‑induced pain. **Materials & Methods:** 60 patients of both genders were divided into 2 groups of 30 each. Group I received 4 mg of Ondansetron and group II received 0.3 mg of Ramosetron. Pain was assessed with a four‑points scale. **Results:** There were 16 males and 14 females in group I and 15 males and 15 females in group II. Pain score 1 was seen in 5 in group I and 8 in group II, score 2 was seen in 9 in group I and 14 in group II, score 3 was seen in 12 in group I and 7 in group II and score 4 was seen in 4 in group I and 1 in group II. The difference was significant (P< 0.05). **Conclusion:** 0.3 mg of ramosetron found to be effective than 4 mg of ondansetron in controlling propofol induced pain.

Key words: Ramosetron, Ondansetron, Propofol

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INTRODUCTION

The number of major emergencies surgeries is on rise. Due to urbanization and fast life style, road accidents are common demanding immediate hospitalization and ICU admission.[1] 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.[2] 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 GABAA receptors. Due to its high lipid-solubility, propofol was initially formulated as a solution with the surfactant Cremophor EL, but the occurrence of pain on injection and anaphylactoid reactions prompted to search for alternative formulations. This can be conducive to bacterial growth, but addition of the chelating agent disodium edetate has reduced this.[3]

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.[4,5] Ondansetron has been proved to have a local anaesthetic effect, other than antiemetic property. Ramosetron is one of the potent 5‑HT3 antagonist commonly used as an antiemetic and has been

found to be effective in prevention of early PONV compared to ondansetron.[6] The present study was compared efficacy of Ondansetron and Ramosetron in controlling propofol‑induced pain.

MATERIALS & METHODS

The present study consisted of 60 patients of both genders. All were informed regarding the study. Ethical approval was obtained from institute prior to the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 30 each. Group I received 4 mg of Ondansetron and group II received 0.3 mg of Ramosetron. 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 minute. This was followed by administration of 1% propofol after release of venous occlusion. Pain was assessed with a four‑points scale. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Drug	**Ondansetron**	**Ramosetron**

M:F	16:14	15:15

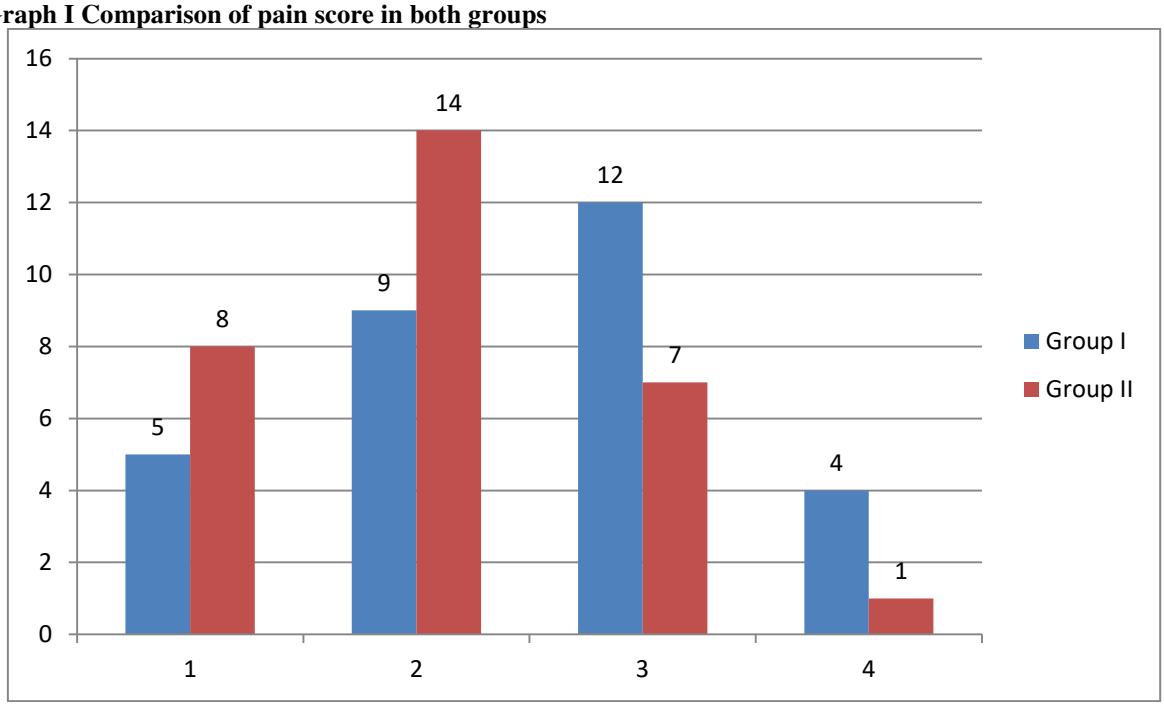
Table I shows that group I received Ondansetron and group II received Ramosetron. There were 16 males and 14 females in group I and 15 males and 15 females in group II.

Table II Comparison of pain score in both groups

Pain score	Group I	Group II	P value
1	5	8	0.05
2	9	14	0.02
3	12	7	0.03
4	4	1	0.01

Table II, graph I shows that pain score 1 was seen in 5 in group I and 8 in group II, score 2 was seen in 9 in group I and 14 in group II, score 3 was seen in 12 in group I and 7 in group II and score 4 was seen in 4 in group I and 1 in group II. The difference was significant (P< 0.05).

Graph I Comparison of pain score in both groups



DISCUSSION

Propofol is a 2,6-diisopropylphenol and is a lipophillic weak acid (pKa¼). 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. It has a short initial distribution half-life. Propofol is rapidly metabolized in the liver by conjugation to glucuronide and sulphate, producing water-soluble compounds which are excreted mainly by the kidneys. Clearance of propofol is extremely high.[7,8] The present study compared efficacy of Ondansetron and Ramosetron in controlling propofol‐induced pain.

We found that there were 16 males and 14 females in group I and 15 males and 15 females in group II. Hwang et al[9] conducted a study on 150 adult patients posted for various elective surgical procedures under general anaesthesia which 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. Pain was assessed with a four-point scale. The overall incidence and intensity of pain were significantly less in Groups L and R compared to Group O (P ≤ 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%).

We observed that pain score 1 was seen in 5 in group I and 8 in group II, score 2 was seen in 9 in group I and 14 in group II, score 3 was seen in 12 in group I and 7 in group II and score 4 was seen in 4 in group I and 1 in group II. Swaika et al[10] compared the antiemetic efficacy of intravenous (iv) ondansetron 8 mg, ramosetron 0.3 mg, and palonosetron 0.075 mg for prophylaxis of PONV in high-risk patients undergoing LC. 87 female patients, 18 to 70 years of age (ASA I and II) and undergoing elective LC under general anesthesia were randomly allocated into three equal groups, the ondansetron group (8 mg iv; n=29), the ramosetron group (0.3 mg iv; n=29), and the palonosetron group (0.075 mg iv; n=29), and the treatments were given just after completion of surgery

before extubation. The incidence of complete response (patients who had no PONV and needed no other rescue antiemetic medication), nausea, vomiting, retching, and need for rescue antiemetics over 24 hours after surgery were evaluated. The number of complete responders were 19 (65.5%) for ramosetron, 11 (37.9%) for palonosetron, and 10 (34.5%) for ondansetron, representing a significant difference overall (P=0.034) as well as between ramosetron and ondansetron (P=0.035). Comparison between ramosetron and palonosetron also showed a clear trend favoring the former (P=0.065). Ramosetron 0.3 mg iv was more effective than palonosetron 0.075 mg and ondansetron 8 mg in the early postoperative period, but there was no significant difference in the overall incidence of nausea suffered.

Takenaka et al[11] concluded that ramosetron had been the most effective in comparison with granisetron and ondansetron in reducing chemotherapy-induced nausea and vomiting. Fuji et al[12] showed that the complete response during the first 24 hours after anesthesia was 85% with granisetron and 93% with ramosetron.

The limitation of the study is small sample size.

CONCLUSION

Authors found that 0.3 mg of ramosetron found to be effective than 4 mg of ondansetron in controlling propofol induced pain.

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