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COMPARISON OF KETAMINE GARGLE WITH TRAMADOL GARGLE IN ATTENUATING POSTOPERATIVE SORE THROAT FOLLOWING ENDOTRACHEAL INTUBATION

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ABSTRACT

Background- Postoperative sore throat (POST) is a common complaint in individuals undergoing general anaesthesia. It has the potential to not only diminish patient satisfaction, but also increase the need for adjunct pain therapy in the post anaesthesia care unit. Aim of this study to assess the effectiveness of preoperative oral ketamine gargle and tramadol gargle in reducing the incidence of postoperative sore throat following endotracheal intubation.

Material and method- The study was observational, hospital based analytical study conducted on 42 patients undergoing elective surgery under general anaesthesia with oral endotracheal intubation. Patients aged between 18 to 60 years belonging to ASA class I and Class II, divided into 2 groups of 21 patients each. Patients were given 30 ml of study solution to gargle for 30 seconds, 5 minutes prior to induction of Anaesthesia. Group K received gargle solution contains 50mg ketamine in 30ml sterile water and Group T received gargle solution contains 100mg tramadol in 30ml sterile water

Results- In Group K the incidence of POST at 0, 2, 4, 24 hours was 19%, 14.3%, 9.5%, 0% and in Group T the incidence of POST was 28.6%, 28.6%, 19%, 9.5% respectively. The incidence of POST with Group T was marginally more but statistically not significant.

Conclusion- Preoperative Tramadol gargle is comparable with Ketamine gargle in reducing the incidence and severity of POST in patients following surgery under General Anaesthesia with endotracheal intubation.

KEYWORDS : POST, Ketamine gargle, Tramadol gargle, endotracheal intubation, sore throat

INTRODUCTION

Postoperative sore throat is a common complaint in patients after extubation and can be distressing to the patients, is considered the 8th most undesirable postoperative complaint in patients undergoing general anaesthesia[1] It has an incidence of 21-65%[2,3]. Postoperative sore throat has the potential to not only diminish patient satisfaction, but also increase the need for adjunct pain therapy in the post anaesthesia care unit. It has been postulated that the POST is due to mucosal injury in the trachea[4] and other factors like oropharygeal suctioning, intra cuff pressure, use of throat pack, size of the endotracheal tube, duration of surgery, difficult in intubation, also contribute as risk factors for postoperative sore throat[5,6,7].To overcome this problem many studies have been conducted using various nonpharmacological and pharmacological methods to attenuate POST but with variable success.

Ketamine a phencyclidine derivative is a noncompetitive antagonist of N –Methyl D Aspertic acid (NMDA) receptor. NMDA receptors are found not only in the central nervous system (CNS) but also in the peripheral nerves[8,9]. Experimental studies show that peripherally administered NMDA receptor antagonists are involved with anti-nociception and anti-inflammatory cascade, thus many studies been shown to preventing POST following ketamine gargle[10,11,12,13].

Tramadol hydrochloride is a synthetic analogue of codeine. It is an opioid receptor agonist, it inhibits reuptake of monoamines (noradrenaline and serotonine), it is an NMDA receptor antagonist and has local anaestheticeffect[14]. We hypothesize that preoperative tramadol gargle would be effective in reducing sore throat because of its NMDA receptors antagonist effect and its local anaesthetic effect.
Aim of this study to assess the effectiveness of preoperative oral ketamine gargle and tramadol gargle in reducing the incidence of postoperative sore throat following endotracheal intubation.

METHODS AND MATERIALS

The study was purposive sampling method, Observational, hospital based, analytical study conducted 42 patients aged between 18 to 60 years belonging to ASA 1 & 2 of either sex patients getting admitted in Father Muller Medical College Hospital, Mangalore from October 2019 to November 2019 scheduled for elective surgery under general anaesthesia with oral endotracheal intubation lasting upto 2 hours were included. Patients with history of sensitivity and contraindications to study drugs, History of significant co-morbidities seizure disorder, severe hypertension, Preoperative sore throat, upper respiratory tract disease or asthma, patients who refused to participate were excluded from study, patients with anticipated airway difficulty, recent intake of anti-inflammatory medication, patients requiring more than two attempts for endotracheal intubation&ENT & Head and neck surgeries were excluded from study. During statistical analysis, the study subjects who have been administered the drugs was observed, considered in two groups of 21 each, according to the study drug administered:

Group K: The gargle solution contains 50mg ketamine in 30ml sterile water.

Group T: The gargle solution contains 100mg tramadol in 30ml sterile water.

The study was initiated after obtaining clearance from institutional ethical committee. All the patients were evaluated on the previous day of the surgery.Basic Lab investigations like Haemoglobin (Hb)%, Random Blood Glucose, Blood urea, serum creatinine and electrocardiogram(ECG) was done routinely in all patients. Chest X-Ray was asked for when indicated.Informed and written consent was taken from selected patients.

All patients were kept nil per oral from midnight and premedicated with Tab. Diazepam 5mg and Tab. Ranitidine 150mg orally the night before surgery.On the day of surgery Anaesthesia machine, emergency drugs, equipment and monitor was checked before starting the case. Patient was shifted into the operation theatre, standard ASA monitors was connected and IV line was secured and started on Ringer lactate solution,patients was given 30 ml of study solution to gargle for 30 seconds by Anaesthesiologist. After 5 minutes, patients werepremedicated with Injglycopyrrolate 0.2mg IV and Inj fentanyl 2mcg/kg, preoxygenated for 3 minutes. Patient was induced with Injpropofol 2mg/kg. Tracheal intubation was facilitated by injvecuronium bromide 0.1 mg/kg using Macintosh laryngoscope with sterile disposable polyvinyl chloride endotracheal tubes of same company (Portex) was used for all the patients. Endotracheal tubes of size 7-7.5 for adult females, 8-8.5 for adult male was used without lubricant and secured after confirmation of tube position. Cuff pressure was maintained between 20 to 25 cm of water throughout the procedure and anesthesia was maintained with 33% oxygen, 66% nitrous oxide and isoflurane 0.6% on controlled ventilation. Heat moisture exchanger (HME) filter was used to prevent mucosal dryness.Injvecuronium bromide was used as maintenance top-ups of 0.02mg/kg and the particular procedure was carried out under general anaesthesia.

Observations was made during the study like number of intubation attempts, trauma during intubation, duration of surgery, duration of

ETT in situ, head and neck movement after intubation, any change in the position of tube, presence of blood during throat suctioning at extubation.At the end of surgery patient wasreversed from neuromuscular blockade withInj Neostigmine 0.05mg/kg &glycopyrrolate 0.01mg/kg and extubatedafter thorough oro-pharyngeal suction under vision after extubation criteria were met and shifted to post operative ICU.

On arrival to the post operative ICU care unit (0 h), and at 2 h, 4 h, and 24 h thereafter, thepatients were interviewed in a standard fashion by a blinded investigator whether he/she has experiences sore throat. POST was graded on a four-point scale (0-3)[10]:

0: No sore throat;
1: Mild sore throat (complains of sore throat only on asking)
2: Moderate sore throat (complains of sore throat on his/ her own)
3: Severe sore throat (change of voice or hoarseness, associated with throat pain)

STATISTICALANALYSIS

Data was entered in Microsoft Excel 2007 & analyzed using SPSS version 22.A sample size of 42 with 21 in each group will be included in the study with 95% confidence interval & 80% power.Collected data was analyzed by frequency, percentage, Mean, standard deviation. Independent t test for comparison of the two groups.Significance was assessed using ANOVA for repeated measures, chi-square test. The results were considered significant statistically, if *P* value was less than 0.05.

RESULTS

The study population consisted 42 patients, 21 gargled ketamine Group K and 21 gargled Tramadol Group T. The age, weight, intubation attempts of the patients were comparable both groups(Table 1). In Group K the incidence of POST at 0, 2, 4, 24 hours was 19%, 14.3%, 9.5%, 0% and in Group T the incidence of POST was 28.6%, 28.6%, 19%, 9.5% respectively(Figure1). The incidence of POST with Group T was marginally more but statistically not significant(Table 2). Among the Group K at 0, 2, 4, 24 hours mild sore throat was 19%, 14.3%, 9.5%, 0% and no incidence of moderate sore throat. In Group T at 0, 2, 4, 24 hours mild sore throat was 28.6%, 23.8%, 19%, 9.5% and moderate sore throat was 0%, 4.8%, 0%, 0% respectively(Table 2). No statistical significance was noted among the two groups. Both group patients did not have severe sore throat at any time interval. No local or system effects were noted in both groups.

Table 1: Independent t test for comparison of the two groups

	Group K(n=21)	Group T(n=21)	T	P VALUE
	Mean ± sd	Mean ± sd		
AGE	42.19±11.79	37.86±12.2	1.171	0.249
WEIGHT	61.05±6.64	58.43±8.65	1.1	0.278
INTUBATION ATTEMPTS	1.33±0.48	1.29±0.46	0.326	0.746

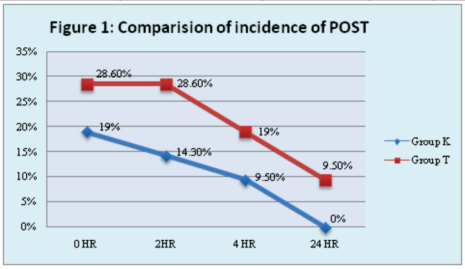

Table 2: Inter group comparison of incidence and severity of POST

	0 HR		2 HR		4 HR		24HR	
Group	K	T	K	T	K	T	K	T
n	21	21	21	21	21	21	21	21
No POST	17(81%)	15(71.4%)	18(85.7%)	15(71.4%	19(90.5%)	17(81%)	21(100%)	19(90.5%)
Mild	4(19%)	6(28.6%)	3(14.3%)	5(23.8%)	2(9.5%)	4(19%)	0(0%)	2(9.5%)
Moderate	0(0%)	0(0%)	0(0%)	1(4.8%)	0(0%)	0(0%)	0(0%)	0(0%)
Severe	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Total POST	4(19%)	6(28.6%)	3(14.3%)	6(28.6%)	2(9.5%)	4(19%)	0(0%)	2(9.5%)
P value	0.469		0.412		0.378		0.147	

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DISSCUSSION

POST common complication of GA with overall incidence of 21% to 65% causing post operative morbidity in the patients[2,3]. Many studies have shown gargling ketamine preoperatively is one of the effective means of reducing overall incidence & severity of POST due to its pheripheral NMDA receptor antagonist action[10,11,12,13]. Few studies also have shown preoperative gargling with Tramadol reduced the incidence and severity of POST due to its NMDA receptor antagonist and local anaesthesiceffect[15].Our study is done to compare the effectiveness of preoperative oral ketamine gargle and tramadol garglein reducing the incidence of postoperative sore throat following endotracheal intubation.

POST is found to be peak at 2 to 4 hours[16]. In our study incidence of POST at 2 hours was 14.3% and 28.6% in Group K and Group T respectively and at 4 hours it was 9.5% and 19% in Group K and Group T respectively. These data shows more than 50% reduction in incidence of POST from recorded incidence of 21% to 65%. The incidence of POST is less in Group K than Group T. There was no statistical significant difference between the groups, also we observed that among the patients having POST most were mild degree than moderate. At any time duration patients did not have severe sore throat. In our study the gargle solutions were divided into two parts to make up to 30ml volume to avoid the chance of aspiration of accidentally swallowed.

CONCLUSION

Preoperative Tramadol gargle is comparable with Ketamine gargle in reducing the incidence and severity of POST in patients following surgery under General Anaesthesia with endotracheal intubation.

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