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Original Research

Ketamine nebulisation versus ketamine gargle in attenuating post-operative sore throat

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ABSTRACT:

Background: Postoperative sore throat is a common occurrence following general anaesthesia and, although clinicians often regard it as a relatively minor complication, patients perceive avoidance as being of great importance. The present study was conducted to compare ketamine nebulisation with ketamine gargle in attenuating post-operative sore throat. **Materials & Methods:** 74 patients age ranged 20-60 year were divided into 2 groups of 37 each was done. Group I patients received preservative free ketamine 50mg in 29 ml of saline, gargled for 30 seconds and group II patients received ketamine 50 mg in 4ml of normal saline via nebulisation for 15 min. Postoperatively sore throat was assessed at 0, 4, 24 hrs using four- point scale (0-3). **Results:** The mean age in group I was 40.2 years and in group II was 40.5 years. There were 20 males and 17 females in group I and 198 males and 19 females in group II. Mean weight was 57.2 Kgs in group I and 55.4 Kgs in group II. Duration of anesthesia was 124.2 minutes in group I and 125.3 minutes in group II. The difference was non- significant (P> 0.05). POST was seen in 10 and 7, 7 and 4 and 4 and 2 at 0 hours, 4 hours and 24 hours in group I and II respectively. The difference was non- significant (P> 0.05). **Conclusion:** Pre-operative ketamine nebulisation is comparable with ketamine gargle in reducing the incidence and severity of post-operative sore throat.

Key words: Anesthesia, ketamine gargle, post-operative sore throat

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INTRODUCTION

Postoperative sore throat is a common occurrence following general anaesthesia and, although clinicians often regard it as a relatively minor complication, patients perceive avoidance as being of great importance.[1] Instrumentation of the airway is an inherent risk factor for the development of this common complication, yet a number of techniques can reduce the incidence.[2]

Post-operative sore throat (POST) is ranked as the 8th most undesirable subjective complaint following general anaesthesia.[3] It has an incidence of 21-65%. In this era of quality care, factors responsible for post-operative morbidity and patient dissatisfaction have to be taken care of.[4] It has been postulated that the POST is due to mucosal injury in the trachea 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 post-operative sore throat. In adults undergoing tracheal intubation, female sex, younger age, pre-existing lung disease, prolonged duration of anaesthesia and the presence of a blood-stained tracheal tube on extubation are associated with the greatest risk.[5] Tracheal intubation without neuromuscular blockade, use of double-lumen tubes, as well as high tracheal tube cuff pressures may also increase the risk of postoperative sore throat. The expertise of the anaesthetist performing tracheal intubation appears to have no influence on the incidence in adults, although it may in children. Ketamine a phencyclidine derivative is a non-competitive antagonist of N –Methyl D Aspertic acid (NMDA) receptor.[6] The present study was conducted to compare ketamine nebulisation with ketamine gargle in attenuating post-operative sore throat.

MATERIALS & METHODS

The present study was conducted on 74 patients age ranged 20-60 year of either sex belonging to ASA I/II, scheduled for elective surgery under general

anaesthesia. The consent for participation in the study was obtained beforehand.

Detailed pre-operative anaesthetic check-up was done a day before the surgery and patients were pre-medicated with tab diazepam 10 mg orally at night. Assignment into 2 groups of 37 each was done. Group I patients received preservative free ketamine 50mg in 29 ml of saline, gargled for 30 seconds and group II patients received ketamine 50 mg in 4ml of normal saline via nebulisation for 15 min. General anaesthesia was induced 5 minutes later in both the groups. Postoperatively sore throat was assessed at 0, 4, 24 hrs using four- point scale (0-3). 0=no sore throat, 1= mild sore throat (upon asking patients complains of sore throat), 2= moderate sore throat (patient himself complains of sore throat). 3=severe sore throat (hoarseness of voice). Results were analysed statistically. P value <0.05 was regarded significant.

RESULTS

Table I Demographic profile

Groups	Group I	Group II	P value
Age (years)	40.2	40.5	0.82
Male: Female	20:17	18:19	0.94
Weight (Kgs)	57.2	55.4	0.95
Duration of anaesthesia (min)	124.2	125.3	0.71

Table I, graph I shows that mean age in group I was 40.2 years and in group II was 40.5 years. There were 20 males and 17 females in group I and 198 males and 19 females in group II. Mean weight was 57.2 Kgs in group I and 55.4 Kgs in group II. Duration of anesthesia was 124.2 minutes in group I and 125.3 minutes in group II. The difference was non- significant (P> 0.05).

Graph I Demographic profile

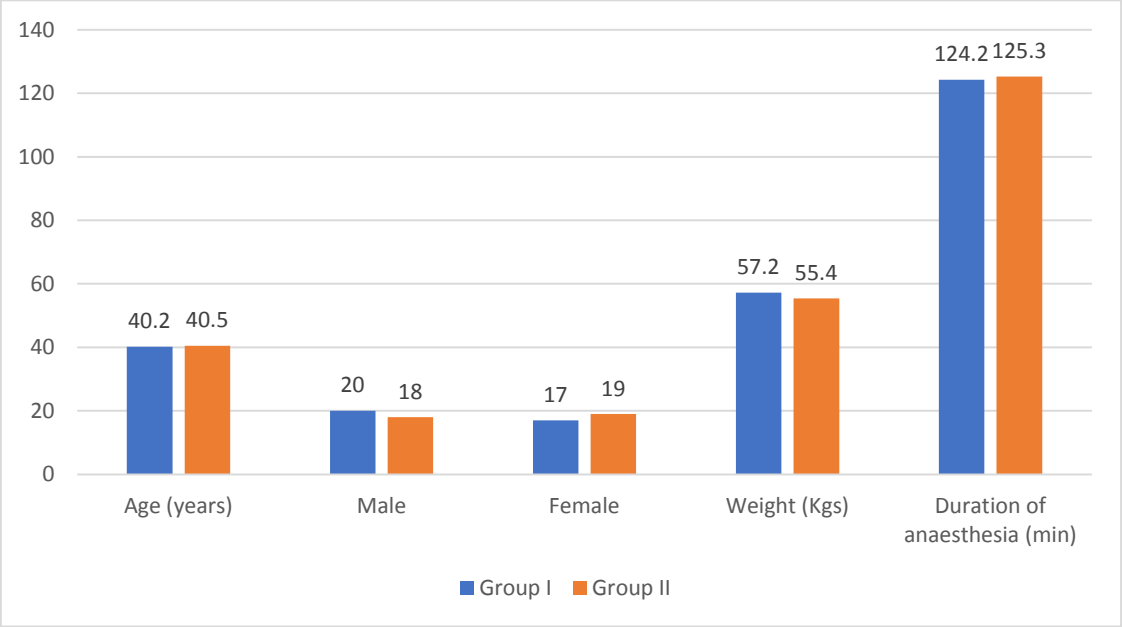


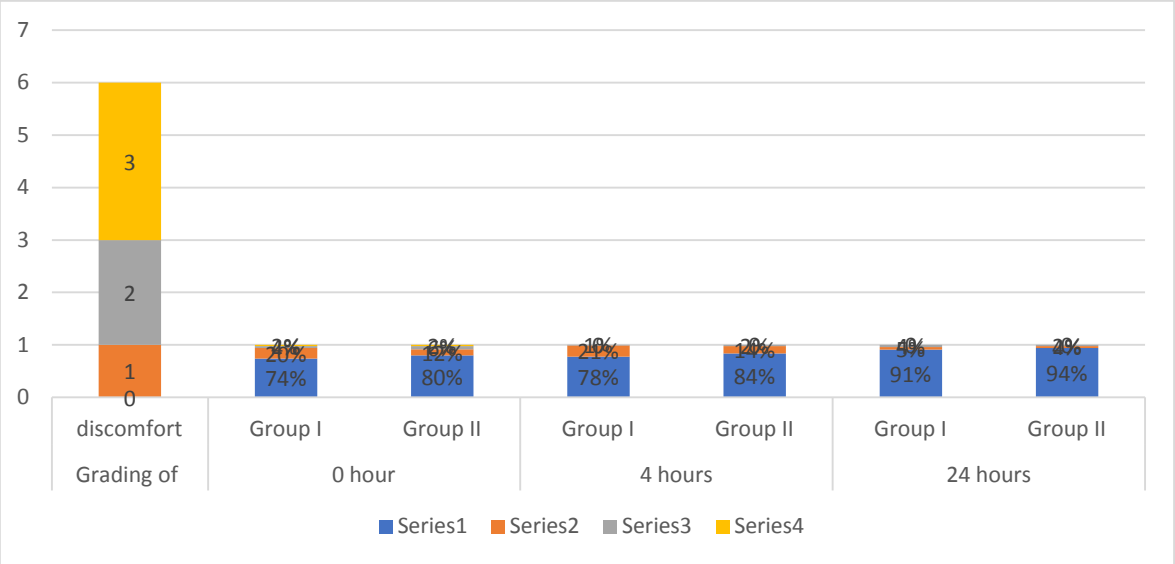
Table II Comparison of incidence and severity of post-operative sore throat (POST)

Grading of discomfort	0 hour		4 hours		24 hours		P value
	Group I	Group II	Group I	Group II	Group I	Group II	
0	74%	80%	78%	84%	91%	94%	0.12
1	20%	12%	21%	14%	5%	4%	0.17
2	4%	6%	1%	2%	4%	2%	0.35
3	2%	2%	0	0	0	0	0.47
POST	10	7	7	4	4	2	0.08
P value	0.15		0.16		0.21		

Table II, graph I shows that POST grade 0 was seen in 74% in group I and 80% in group II at 0 hour, 78% and 84% at 4 hours and 91% and 94% at 224 hours. Grade 1 was seen in 20% and 12%, 21% and 14% and 5% and 4% at 0 hours, 4 hours and 24 hours in group I and II respectively. Grade 2 was seen in 4% and 6%, 1% and 2% and 4% and 2% at 0 hours, 4 hours and 24 hours in group I and II respectively. Garde 3 was seen in 2% each at

0 hours in group I and II respectively. POST was seen in 10 and 7, 7 and 4 and 4 and 2 at 0 hours, 4 hours and 24 hours in group I and II respectively. The difference was non- significant (P> 0.05).

Graph II Comparison of incidence and severity of post-operative sore throat (POST)



DISCUSSION

Post- operative sore throat, a common complication of general anaesthesia contributes to postoperative morbidity in the patients.[7] Along with causing discomfort to the patient, it prolongs the post-operative stay by 14 minutes compared with people who did not complain of POST. Studies show that peripherally administered NMDA receptor antagonists are involved with anti-nociception and anti-inflammatory cascade, thus preventing POST.[8] Many studies have been conducted, showing the effectiveness of ketamine gargle in reducing sore throat, however the larger volume used may carry the risk of aspiration if accidentally swallowed and the bitter taste of ketamine is unpleasant, for the patients. Nebulisation is another mode of delivering ketamine which can overcome the bitter taste and large volume used for gargling.[9] The present study was conducted to compare ketamine nebulisation with ketamine gargle in attenuating post-operative sore throat.

In present study, mean age in group I was 40.2 years and in group II was 40.5 years. There were 20 males and 17 females in group I and 198 males and 19 females in group II. Mean weight was 57.2 Kgs in group I and 55.4 Kgs in group II. Duration of anesthesia was 124.2 minutes in group I and 125.3 minutes in group II. Amingad et al[10] compared ketamine nebulisation with ketamine gargle to see the effectiveness of nebulisation over gargle in reducing the incidence and severity of post- operative sore throat (POST). Group GK received preservative free ketamine 50mg in 29 ml of saline, gargled for 30 seconds and Group NK received ketamine 50 mg in 4ml of normal saline via nebulisation for 15 min. General anaesthesia was induced 5 min later in both the groups. Postoperatively sore throat was assessed at 0, 2, 4, 24 hrs using four- point scale (0-3). The incidence of POST at 0, 2, 4, 24 hrs was 27%, 25%, 20% and 17% respectively in GK group and 20%, 17.5%, 12.5% and 7.5% in NK group respectively with no statistical difference between the two. Both the groups showed more than 50% reduction from the reported incidence of 21-65% of POST. None of the patients in either group experienced severe sore throat.

We observed that POST grade 0 was seen in 74% in group I and 80% in group II at 0 hour, 78% and 84% at 4 hours and 91% and 94% at 224 hours. Grade 1 was seen in 20% and 12%, 21% and 14% and 5% and 4% at 0 hours, 4 hours and 24 hours in group I and II respectively. The mechanism of attenuating the sore throat was possibly due to the tropical effect of ketamine either given by gargle or by nebulisation which attenuated the local inflammation of the airway. Literature supports the peripheral effect of ketamine, and its use via nasal route, gargle and rectal route. Studies have supported anti-inflammatory action of ketamine in an experimental study with rats. Besides, experimental studies with animal have pointed out that peripherally administered ketamine was capable of activating the L-arginine/Nitric oxide (NO)/cyclic guanosine monophosphate (CGMP) pathway, thus eliciting peripheral anti-nociception.[11]

It was found that grade 2 was seen in 4% and 6%, 1% and 2% and 4% and 2% at 0 hours, 4 hours and 24 hours in group I and II respectively. Garde 3 was seen in 2% each at 0 hours in group I and II respectively. POST was seen in 10 and 7, 7 and 4 and 4 and 2 at 0 hours, 4 hours and 24 hours in group I and II respectively. Tracheal intubation is associated with a greater risk of postoperative sore throat than when either a supraglottic airway device or a facemask is used and several risk factors have been identified. A prospective study of 809 patients found a 40%

incidence. Subsequent logistic regression analysis demonstrated that female sex, pre-existing lung disease (OR 3.12), duration of anaesthesia (OR 1.27) and the presence of a blood-stained tracheal tube on extubation were all associated with the greatest risk of postoperative sore throat.[12]

CONCLUSION

Authors found that pre-operative ketamine nebulisation is comparable with ketamine gargle in reducing the incidence and severity of post-operative sore throat.

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