

Ketamine Gargling and Postoperative Sore Throat

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ABSTRACT

Introduction: Tracheal intubation is a foremost cause of trauma to the airway mucosa, resulting in postoperative sorethroat (POST). The aim of the study was to compare the effectiveness of ketamine gargle with placebo in preventing POST after endotracheal intubation.

Methods: Forty patients scheduled for elective surgery under general anaesthesia were enrolled in this randomized, control trial. Patients were randomly allocated into two groups of 20 patients each: Group C, gargling with drinking water 30 ml; Group K, gargling with ketamine 50 mg in drinking water 30 ml for 30 s, 5 min before induction of anaesthesia. POST was graded at 4, 8, and 24 hours respectively after operation on a four- point scale (0-3).

Results: POST occurred more frequently in Group C, when compared with Group K at 4, 8, and 24 hours.

Conclusions: Ketamine gargle reduces the incidence of POST after endotracheal intubation.

Keywords: complication, endotracheal intubation, ketamine gargle, sorethroat

INTRODUCTION

Post operative sore throat is the common complication of general anaesthesia with endotracheal intubation. The reported incidence of POST varies between 21 to 65 %.¹⁻³ POST had been rated by patients as the eighth most adverse effect in the postoperative period.⁴ Numerous pharmacological and non- pharmacological methods have been used for attenuating POST with variable success. Among the non- pharmacological methods, small sized endotracheal tubes, lubricating the tubes with water soluble jelly, light airway manipulation, minimizing cuff pressure, gentle oropharyngeal suctioning and extubation when the cuff is fully deflated have been reported to decrease

the incidence of POST.⁵ The pharmacological methods include beclomethasone inhalation, intravenous injection of dexamethasone prior to intubation and gargling with azulene sulphonate.⁶⁻⁸

This study was done to compare effectiveness of ketamine gargle with drinking water for prevention of POST after endotracheal intubation.

METHODS

A prospective comparative study was conducted at Dhulikhel Hospital, Kathmandu University Hospital from

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July 2009 to December 2009. Institutional approval was taken. A written informed consent was received from 40 ASA I- II, elective patients undergoing abdominal and orthopedics surgery under general anaesthesia. Patients with a history of preoperative sore throat and asthma, Mallampati grade > 2, known allergies to study drug, recent NSAID (non steroidal anti inflammatory drugs) medication, and those who required more than one attempt at intubation were excluded from the study.

Premedication consisted of tablet diazepam 10 mg orally at night and 6 hours prior to surgery. Patients were randomly assigned into one of two groups according to the agent used for gargle. Group C received drinking water 30 ml and Group K received ketamine 50 mg (1 ml) in 30 ml drinking water for gargling for 30 seconds, 5 minutes before the induction of anaesthesia.

Monitoring consisted of electrocardiography, non-invasive arterial pressure, pulse oximetry, and end tidal carbon dioxide. Anaesthesia was induced with pethidine 1mg/kg and thiopentone 5 mg/kg. Tracheal intubation was facilitated by vecuronium bromide 0.1 mg/kg, and the trachea was intubated with appropriate sized soft seal sterile polyvinyl chloride endotracheal tube. Anaesthesia was maintained with O₂ 40 % in air, supplemented with isoflurane. The endotracheal tubecuff was filled with air based on cuff manometer reading. At the end of the procedure residual neuromuscular relaxation was reversed with neostigmine and atropine. Oropharyngeal suction was performed under direct vision before extubation.

At 4, 8, 24 hours after the surgery the patients were interviewed in a standard fashion by a blind investigator. POST was graded on a four point scale (0-3): 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). Other side effects, if any were also noted.

The patients were also compared for demographic profile and duration of surgery. POST was compared in both the group using student t- test and p value of <0.05 was considered to be statistically significant. Statistical analysis was done by statistical package for social sciences (SPSS) version 10.0 for windows.

RESULTS

There were 20 patients in each group (Group C and Group K). There were no significant differences in demographic profile between two groups (Table 1). There were no significant differences between the duration of surgery in both the groups (Table 2).

Table 1. Demographic profile of patient in both the groups (Mean \pm SD).

Variable	C (n = 20)	K (n = 20)
Male : Female (n)	6:14	5:15
Age (years)	32.9 \pm 7.7	36.8 \pm 12.3
Weight	55.1 \pm 9.2	54.9 \pm 9.7

Table 2. Comparison of POST at 4, 8 and 24 hrs. Data are presented as number (%) of patients.

Groups	4 Hr		8 hrs		24 hrs	
	C(n = 20)	K(n = 20)	C(n = 20)	K(n = 20)	C(n = 20)	K(n = 20)
Grading of discomfort						
No Sore throat	5(25%)	13(65%)	8(40%)	14(70%)	10(50%)	17(85%)
Mild	12(60%)*	7(35%)	10(50%)*	6(30%)	9(45%)*	3(15%)
Moderate	3(15%)		2(10%)		1(5%)	
Severe	0	0	0	0	0	0
Total no. of patients having POST	15(75%)*	7(35%)	12(60%)†	6(30%)	10(50%)†	3(15%)

*p > 0.05 between group comparison. † p < 0.05 between group comparison.

In Group C 15(75%) patients complained of POST at 4 hours, out of them 12 (60 %) patients had POST at 8 hours, which remained for 24 hours in 10 (50%) patients (Table 3). However in Group K, 7 (35%) patients complained of POST at 4 hours. Out of them 6 (30%) patients complained of POST at 8 hours and which remained in 3 (15%) patients for 24 hours, P > 0.05. The Duration of surgery was 2.4 \pm 0.6 and 2.1 \pm 0.6 in group C and K respectively.

The overall incidence of POST in our study in the control group at 4, 8 and 24 hours was 75%, 60% and 50% respectively which is less than in patients having ketamine gargle (35%, 30%, 15%). There was significantly lower incidence of POST in K group at 8 and 24 hours.

No significant differences in mild sore throat at 4, 8 and 24 hours were noted among the groups. No severe sore throat was noted in either group in our study. No local or systemic side effects were observed.

DISCUSSION

The highest incidence of sore throat tends to occur in patients who have undergone endotracheal intubation. In a series of 1325 patients there was an incidence of POST of 14.4%.²

Several contributing factors for sorethroat after surgery have been reported, including patient age, sex, large tracheal tube, cuff design, and intracuff pressure.⁹⁻¹¹

Christensen² had showed significantly higher incidence of sorethroat in women (17%) than in men (9%) which was attributed to the tube fitting tighter in women.

Loeser³ found that the use of uncuffed tubes resulted in a significantly higher incidence of sore throat than the use of cuffed tubes, even when the patients breathed warmed and humidified gases.

It has been clearly demonstrated that the use of a smaller tracheal tubes reduces the incidence of sorethroat, presumably because of decrease pressure at the tube mucosal interface.¹⁰ We had used cuff manometer to regulate the cuff pressure and to reduce the pressure at tube mucosa surface. Mandoe found that POST in patients with intubating with new Brandt Anaesthesia tube was significant lower than the intubation with standard Mallinckrodt tube.¹¹

The overall incidence of POST in our study in the control group at 4, 8 and 24 hours was 75%, 60% and 50% respectively which is less than in patients having ketamine gargle (35%, 30%, 15%).

Similar study conducted by Rudra showed higher incidence of POST in the control group at 4, 8 and 24 hours of 85%, 75% and 60 % respectively.¹²

In our study no cases of severe sore throat in the control group was noted in contrast to our finding Rudra¹² and Canbay¹³ had showed significantly lower incidence of severe sore throat in the ketamine group.

The cause of sore throat related to endotracheal intubation might be due to localized trauma, leading to aseptic inflammation of pharyngeal mucosa. It may also be associated with edema, congestion, and pain.¹⁴ Reduction of this inflammation by ketamine may be the reason for decreased POST in our study.

Ketamine have shown to play a protective role against lung injury, by means of its anti-inflammatory properties.¹⁵ Additionally, ketamine has been shown to attenuate symptoms of endotoxemia in rat model of sepsis, by reducing NF- kappa B activity and TNF-alpha production.¹⁶ In a recent animal study for asthma, Zhu and colleagues have shown that nebulized ketamine attenuated many of the central components of inflammatory changes.¹⁷

The contribution of the systemic effect of ketamine cannot be excluded in our study because of the absence of measurement of plasma ketamine level. So, the systemic or topical antiinflammatory and antihyperalgesic effect might have contributed to this outcome.

The limitation of our study was systemic level of plasma ketamine level was not done. Another limitation was the incidence of POST among different age group, gender and duration of surgery and intubation was not studied.

In this study, we identified POST as common complication associated with endotracheal intubation which is important to avoid for improving patient satisfaction.

CONCLUSION

Gargling with ketamine decreases the incidence and severity of POST after endotracheal intubation for general surgical procedures.

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