

An Observational Study to Evaluate in General Anesthesia Effectiveness of Nebulized Ketamine in Different Doses to Decrease the Severity of Postoperative Sore Throat

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Abstract

Original Research Article

Objective and AIM: 21%–65% of patients suffers from Postoperative sore throat (POST). The aim of this study is to see the effectiveness of nebulized ketamine in different doses to decrease the severity of postoperative sore throat in general anesthesia patients. **Material and Method:** 150 patients of ASA physical status Classes I and II undergoing surgery under general anesthesia and who's age group of 18–60 years, of either sex were selected for this observational trial done at tertiary care teaching hospital in katihar, Bihar. Patients had nebulized with 5 ml solution (Group K1 – 1 ml of ketamine [50 mg/ml] +4 ml normal saline, Group K2 – 0.5 ml of ketamine [50 mg/ml] +4.5 normal saline, and Group S – 5 ml normal saline). Postoperative hemodynamic monitoring along with Preoperative, intraoperative were done. At 2, 4, 8, 12, and 24 h postoperatively, the POST monitoring was done. A four-point scale (0–3) was graded on POST. ANOVA test using INDOSTAT software and Chi-square test using MSTAT software for POST for hemodynamics were used in this study. **Results:** In the present study 29.33% was the overall incidence of POST. 46% (23/50) was observed to be the incidence of POST in Group S. Intraoperative vital signs were more stable at all time intervals where as in Group K2, it was 22% (11/50) ($P \leq 0.05$) and In Group K1, the incidence was 20% (10/50). **Conclusion:** In preventing POST, both doses (25 and 50 mg) of nebulized ketamine were almost equally effective with no adverse effects as observed in our study.

Keywords: Postoperative sore throat, pharyngitis, Ketamine nebulization.

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INTRODUCTION

To control respiration and to protect airway, endotracheal intubation is necessary in general anesthesia (GA) [1]. Almost all patients who were intubated for long term or short-term operation had some degrees of airway injury resulting in Postoperative sore throat (POST), hoarseness of voice, cough and pain [2, 3]. Larynx and trachea are the most common sites of injury during intubation and usually manifested as local irritation, inflammation, and even necrosis. Although most of the injuries to the trachea are minor and reversible, however, may become severe [4, 5]. Due to edema and granuloma formation, injury to the trachea after extubation may manifest as POST and may increase in severity as acute or chronic obstruction of the airway that may be severe enough to necessitate surgical intervention [6].

Postoperative sore throat is one of the most common complications after endotracheal intubation,

which usually lingers for 12-24 hours after the operation. The incidence is estimated to be of 18-65% in different studies [7]. Factors contributing to development of POST include trauma to pharyngolaryngeal mucosa from laryngoscopy, placement of nasogastric tube or oral suctioning. The cuff design and pressure may affect tracheal mucosal capillary perfusion [8]. Contact of tracheal tube with vocal cords and posterior pharyngeal wall result in edema and mucosal lesion. Postoperative nausea and vomiting and harsh intubation [9].

The aim of this study is to see the effectiveness of nebulized ketamine in different doses to decrease the severity of postoperative sore throat in general anesthesia patients.

MATERIAL AND METHOD

150 patients of ASA physical status Classes I and II undergoing surgery under general anesthesia and

who's age group of 18–60 years, of either sex were selected for this observational trial done at tertiary care teaching hospital in katihar, Bihar. Patients had nebulized with 5 ml solution (Group K1 – 1 ml of ketamine [50 mg/ml] +4 ml normal saline, Group K2 – 0.5 ml of ketamine [50 mg/ml] +4.5 normal saline, and Group S – 5 ml normal saline). Postoperative hemodynamic monitoring along with Preoperative, intraoperative were done. At 2, 4, 8, 12, and 24 h postoperatively, the POST monitoring was done. A four-point scale (0–3) was graded on POST. ANOVA test using INDOSTAT software and Chi-square test using MSTAT software for POST for hemodynamics were used in this study.

The data was initially captured in a customized proforma, then transferred to Microsoft excel spreadsheet. The online statistical software was used for analysis of the data. Proportional comparison between the two groups was done using Fisher's Exact test/Z-test for two sample proportion. Mean comparisons between the two groups was done using unpaired 't' test. A p-value of <0.05 was taken as statistically significant. The final data was presented in the form of tables and graphs.

RESULT

In the present study 29.33% was the overall incidence of POST. 46% (23/50) was observed to be the incidence of POST in Group S. Intraoperative vital signs were more stable at all time intervals where as in Group K2, it was 22% (11/50) ($P \leq 0.05$) and In Group K1, the incidence was 20% (10/50).

At postoperatively 2 h, incidence of POST occurred in 13 patients (7 patients had score 1 of POST and 6 patients had score 2 of POST), 3 patients in Group K2 (POST score 1), n Group S while 3 patients in Group K1 (POST score 1) which was statistically significant ($p=0.002$).

DISCUSSION

The artificial maintenance of airway is the essence of general anaesthesia (GA). The airway is often established during GA by endotracheal intubation [10]. It has advantages including the provision of the reliable airway, prevention of aspiration and smooth delivery of the anaesthetic gases [11]. But, all the patients who were intubated for long term or short term operations, experience some degrees of airway injury [12, 13]. The usual complications of the airway include airway trauma, physiological reflexes like tachycardia and hypertension, malposition, laryngospasm, narrowing and increased airway resistance as well as negative pressure pulmonary oedema.

Intracuff pressure, use of throat pack, and size of the endotracheal tube, POST is due to mucosal injury in the trachea and other factors such as oropharyngeal

suctioning. Prone position, use of stylet, difficult in intubation and duration of surgery, also contribute as risk factors for POST. To overcome this problem, pharmacological nonpharmacological methods to attenuating POST but with variable success as observed in various studies [14].

There were few limitations with our study. We did not record incidence of coughing or bucking on extubation. Another drawback in our study was lack of measurement of plasma drug levels. We cannot rule out the contribution of the systemic effect of the drugs in our results. The safety and dosage of the drugs used for inhalation need further investigation even though we did not find any adverse effects after their use as doses which were used in the study were quite less compare to those causing adverse effects.

Preoperative nebulization with clonidine and ketamine mixture compared to ketamine is more effective in dealing with postoperative sore throat with no adverse effects. This technique adds to the armamentarium of the anaesthetist in management of the 'little big problem' of POST.

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