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Effectiveness of intracuff instillation with alkalinized 2% Lidocaine versus Ketamine in attenuating post-operative sore throat

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Abstract

Various pharmacological and non-pharmacological methods have been used for attenuating post operative sore throat with varying results. The use of smaller tracheal tubes, supraglottic devices, careful airway instrumentation, gentle suction of the oropharynx, water-soluble jelly on the tracheal tube, lower Intracuff pressure etc. are some of the non-pharmacological methods which have been used to reduce the incidence of POST (15) and emergence coughing.

Keywords: Alkalinized 2% lidocaine, Ketamine, Post-operative sore throat

Introduction

Airway management with cuffed endotracheal intubation for General Anesthesia (GA) is an integral part of an anesthesiologist's. Tracheal intubation results in stretch stimuli in the trachea caused by the tube and its cuff may cause ischemia of the mucosal vessels followed by serious complications such as Ciliary loss, inflammation, ulceration, bleeding and tracheal stenosis. Coughing during emergence from General Anesthesia can result in hypertension, tachycardia, increased intraocular and intracranial pressures, myocardial ischemia, Broncho spasm and surgical bleeding.

Post-operative sore throat is a common complaint in patients receiving general anesthesia following endotracheal intubation, with incidence ranging from 21–65%. Which can be accompanied by cough, laryngitis, Tracheitis, dysphagia or Hoarsenes. Though considered as a minor complication, it may cause significant post-operative morbidity and patient dissatisfaction. This study tries to understand the better drug.

Various studies have been done to determine the efficacy of ketamine in attenuating Post due to its anti-nociceptive and anti-inflammatory effect. But no studies have been done so far with Intracuff instillation of ketamine to assess its effectiveness in reducing post-operative sore throat.

Therefore this study is designed to evaluate the comparative efficacy of intra cuff inflated Ketamine and Alkalinized 2%Lidocaine in reducing post operative sore throat.

Aims and objectives

To study, assess and compare the favorable effects of Ketamine and Alkalinized 2% Lidocaine instillation in the endotracheal tube cuff for reducing sore throat post-operatively in adult patients undergoing general anesthesia.

Methodology

The study was done in the Department of Anesthesia, Kanachur Institute of Medical Sciences, Mangalore from Feb 2018 to Jan 2019.

- Study Design: Double blind, parallel group, Randomized clinical trial.
- Study Population: Patients undergoing elective surgical procedures under general anesthesia with Endo tracheal intubation.
- Study Duration: 1 year
- Sample Size: 40 for each group.
- Sampling Method: Subjects will be selected by selecting 80 patients coming for elective surgery under GA with tracheal intubation, in a first come first served basis.

Subjects will be randomized into two groups by using a computer generated randomization technique.

Inclusion criteria

1. ASA physical status 1-2, aged between 18-60 years, undergoing general anesthesia with tracheal intubation, of duration greater than 1 hour lasting less than 3 hours.

G. Exclusion criteria

- i) Patients with
 - A history of pre-operative sore throat.
 - Oral and nasal surgeries.
 - Upper respiratory tract infection.
 - Chronic obstructive pulmonary disease.
 - Pregnant females.
 - Mallampati grade >2.
 - Known allergies to study drug.
 - Those who required more than one attempt at intubation
 - Tracheal intubation lasting more than 3 hours.

After shifting the patient to PACU, sore throat and cough will be assessed by the staff nurse in PACU, who is not aware of the study drug given, at 0, 2, 4, 6, 12, 24 and 36h post-operatively, from the time of extubation. Sore throat and cough will be monitored using a 4-point scale

Results

Table 1: Age (years)

Group 1	Group 2
47.87 ± 17.98	53.98 ± 11.87

Table 2: Weight

Group 1	Group 2
67.68 ± 3.36	59.17 ± 9.47

Table 3: Height

Group 1	Group 2
156.32 ± 8.17	163.83 ± 7.98

Table 4: Duration of anesthesia

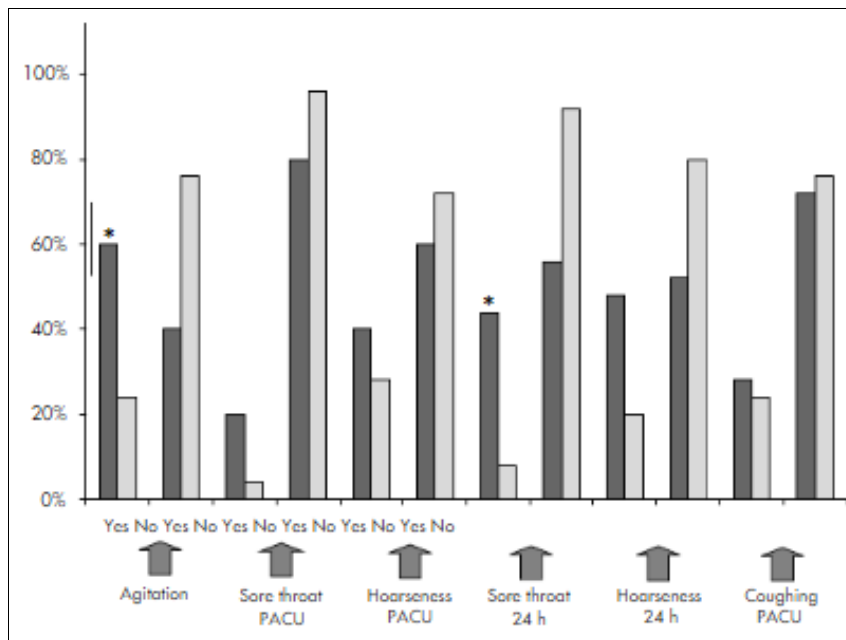
Group 1	Group 2
3 hrs 14 min	3 hrs 47 min

Table 5: Duration of spontaneous ventilation (min)

Group 1	Group 2
6.98 ± 6.1	11.19 ± 3.7

Table 6: Time until stopping anesthetic gases (min)

Group 1	Group 2
16.38 ± 1.1	14.38 ± 2.7



Graph 1: Alkalinized 2% Lidocaine Vs Ketamine instillation

Discussion

For a clinical effect large doses of lidocaine (200- 500 mg) were believed to be required. The ratio between the ionized and non-ionized species is a function of pK of the substance and the pH of the dissolving medium. The addition of soda bicarbonate to L-HCl alkalizes the solution. This provides the hydrophobic base and allows the diffusion of this uncharged form through the polyvinylchloride wall of the cuff more readily than L-HCl and allows for the best release profile observed with the lidocaine base. Porter NE, Sidou V *et al.*, lidocaine, air and saline had similar effects on post-operative sore throat. Various factors associated were ETT cuff design, ETT size, intubation technique, laryngoscopy blade, airway placement, suctioning technique. Hence these

factors could also affect the result. Tanaka Y *et al.*, published in the Cochrane library in 2009 (Issue 3) 15 various randomized controlled trials were studied for the outcome of interest *i.e.* post-operative sore throat. The review study concluded that topical and systemic lidocaine therapy reduces the prevalence and severity of sore throat after general anesthesia with endotracheal intubation. Mitchell et al and reader *et al.* found that there was a gradual rise in Intracuff pressure from 15 min after cuff inflation.

Conclusion

Alkalinized 2% lidocaine is slightly better for the procedure.

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