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A STUDY ON THE EFFECTIVENESS OF INTRACUFF INSTILLATION WITH ALKALINIZED 2% LIDOCAINE VERSUS KETAMINE IN ATTENUATING POST OPERATIVE SORE THROAT

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ABSTRACT Airway management with cuffed endotracheal intubation for General Anaesthesia(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 Anaesthesia 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.

KEYWORDS : Alkalinized 2% Lidocaine, Ketamine, Post Operative Sore Throat.

INTRODUCTION:

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

A variety of pharmacological agents such as beclomethasone ,dexamethasone, fluticasone, lignocaine, azulene sulphonate, licorice, ketamine and magnesium sulphate have been studied extensively to assess their efficacy in reducing POST and emergence coughing following general anesthesia (1-7). Drugs administered intravenously, however, can produce sedation and prolong the process of awakening from anesthesia. Anaesthesia should be confined to the mucosa in contact with the cuff. The protective cough reflexes above the tube cuff and below the vocal cords would remain intact(8) . Lidocaine instilled in an ETT cuff diffuses slowly across the cuff membrane(9). The cuff would act as a potential reservoir for the local anaesthetic, allowing diffusion and subsequent anaesthesia of the underlying tracheal mucosa

The diffusion of the local anaesthetic depended on various factors such as the non-ionised fraction of the local anaesthetic, alkalinization, temperature, duration of procedure and concentration of local anaesthetic. The addition of sodabicarbonate to Lidocaine- HCl alkalinizes 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 Lidocaine- HCl and allows for the best release profile observed with the lidocaine base

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 sorethroat.

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

AIMS AND OBJECTIVES:

The primary objective of the study will be to assess and compare the favorable effects of Ketamine and Alkalinized 2% Lidocaine instillation in the endotracheal tube cuff for reducing sorethroat post-operatively in adult patients undergoing general anesthesia.

Methodology:

a. Study Design: Double blind,parallel group, Randomized clinical trial
b. Study Population: Patients undergoing elective surgical procedures under general anesthesia with endo tracheal intubation.
c. Study Duration: 1 year
d. Sample Size: 40 for each group
e. 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.

f. Inclusion Criteria:

1. Patients of 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

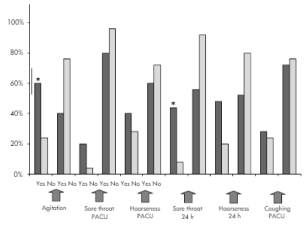
g. Exclusion criteria:

i) Patients with
1. A history of pre-operative sore throat
2. oral and nasal surgeries
3. upper respiratory tract infection
4. chronic obstructive pulmonary disease
5. pregnant females
6. Mallampati grade >2
7. known allergies to study drug
8. those who required more than one attempt at intubation
9. tracheal intubation lasting more than 3 hours

After shifting the patient to PACU, sorethroat 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:

Age (years) 48.85 ± 12.1 (Group 1) 47.85 ± 11.57 (Group 2)
Weight (kg) 71.37 ± 9.8 (Group 1) 62.27 ± 8.37 (Group 2)
Height (cm) 160.32 ± 6.12 (Group 1) 159.48 ± 7.92 (Group 2)
Total duration of anesthesia (min) 219.37 ± 19.84 (Group 1) 227.18 ± 18.84 (group 2)
Duration of spontaneous ventilation (min) 11.98 ± 6.1 3 (Group 1) 11.19 ± 3.7 (Group 2)
Time until stopping anesthetic gases (min) 16.12 ± 8.9 (Group 1) 14.17 ± 7.2 (Group 2)



Graph 1: Alkalinized 2% Lidocaine Vs Ketamine instillation

DISCUSSION:

Waters and Guedel in 1928 introduced the cuffed endotracheal tubes. The cuff of the endotracheal tube has got important functions like protecting the respiratory tract against aspiration by providing an air tight seal against gas leak and allowing adequate positive pressure ventilation. Singh *et al*., 2007 reported that use of saline or 2% lidocaine as a liquid media for filling the ETT cuff reduced postoperative sore throat and thereby tracheal morbidity. Fagan *et al*., 2000 suggested that inflating the ETT cuff with lidocaine rather than air can reduce the incidence of post-extubation cough. Jean Pierre Estebe *et al.,* demonstrated that alkalinization of intracuff lidocaine improves endotracheal tube induced emergence phenomenon. There was a decreased incidence of cough and other parameters like restlessness, Postoperative nausea and vomiting (PONV), dysphonia, hoarseness in the post extubation period. Huang CJ *et al.,* demonstrated that emergence coughing and the incidence of sore throat was significantly less than the control group when lidocaine 4% and alkalinized lidocaine were used. They suggested to use alkalinized and warmed lidocaine prestored in the ETT cuff for smoother emergence from general anaesthesia. Jean Pierre Estebe reported that lidocaine (i e lidocaine Hydochloride L- HCl) alone had a low diffusion rate across the ETT cuff. 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 sodabicarbonate to L- HCl alkalinizes 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 anaesthesia with endotracheal intubation. Mitchell et al and raeder et al found that found that there was a gradual rise in intracuff pressure from 15 min after cuff inflation.

CONCLUSION:

Alkalinized 2% lidocaine is slightly better than ketamine i

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