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RESEARCH ARTICLE
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TO STUDY COMPARISON OF EFFICACY OF NEBULIZED KETAMINE VERSUS LIGNOCAINE FOR POSTOPERATIVE SORETHROAT

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Abstract

Background & Methods: The aim of the study is to compare efficacy of Nebulized ketamine versus lignocaine for postoperative sorethroat. Parameters monitored include postoperative sorethroat immediately after extubation, 2hrs, 4hrs, 8hrs, 12hrs and 24hrs. General anesthesia was given 10 minutes after nebulization. Standard monitors like blood pressure, ECG and SPO2 were monitored.

Results: The severity of postoperative sorethroat was less in lignocaine and ketamine group compared to control group. On follow up for 24 hours, ketamine group provided relief for longer duration as compared to lignocaine group. Hemodynamic parameters were comparable in all three groups.

Conclusion: Preoperative nebulized ketamine is helpful at reducing the occurrence and severity of postoperative sore throat without causing any adverse effects and also effective for longer duration as compared to lignocaine . This technique helps anaesthetist in management of the 'little big problem' of post-operative sore throat.

Keywords: efficacy, nebulized, ketamine, lignocaine & sore throat.

Introduction

The phrase "sore throat" describes a group of symptoms that arise during endotracheal intubation under general anesthesia, including coughing, hoarseness, laryngitis, tracheitis, and odynophagia [1]. Even though postoperative sore throat (POST) is a mild side effect and a self-limiting symptom, it makes the patient's suffering worse. According to estimates, the prevalence of sore throat following surgery ranges from 21% to 66%.

POST is brought on by aseptic inflammation of the pharynx as a result of localized damage to the upper airway mucosa during laryngoscopy and intubation.2 To date, a number of pharmacological and non-pharmacological therapies have been tried, such as the use of steroids, NSAIDs, ketamine and benzydamine gargles, lignocaine-inflated cuffs, and small-sized endotracheal devices [2].

Thirty to seventy percent of individuals experience hoarseness and postoperative sore throat (POST)

following tracheal intubation and general anesthesia. Patients ranked postoperative sore throat as one of the top 10 most undesired surgical outcomes, despite the fact that it typically resolves on its own [3]. The pathogenesis is most likely one or more of the following: dehydration of the mucosa, pressure from the endotracheal (ET) tube cuff, and mechanical injury during intubation. The cost of care goes up the longer a patient stays in the post-anesthesia care unit (POST) or maybe the entire hospital. Compared to individuals who did not complain of POST, patients with POST were discharged from the facility 51 minutes later and spent 14 minutes longer in the post-anesthesia care unit and 25 minutes longer in the ambulatory care unit. Improving patient happiness and lowering the intensity and incidence of POST should also shorten hospital stays and save healthcare costs [4-5].
Because of its anti-nociceptive and anti-inflammatory properties, ketamine, an N-methyl-D-aspartate (NMDA) receptor antagonist, has been administered in gargle form to lessen the occurrence and intensity of POST.[8] Ketamine nebulization has several advantages over gargling, including avoiding the bitter taste, being simple to administer, requiring a lesser amount, and reducing the chance of aspiration in the event of unintentional swallowing. 1As a result, it increases patient cooperation.

Lignocaine blocks the initiation and conduction of nerve impulses by decreasing the ionic flux by blocking certain channels, which results in local anesthesia[8]. It ultimately elicits its numbing activity by blocking sodium channels so that the neurons of local tissues that have the medication applied on are transiently incapable of signaling the brain regarding sensations
With a reported prevalence of 6.6–90%, postoperative sore throat is a well-known consequence that is still present in patients having tracheal intubation for general anesthesia (GA). Additionally, it lengthens hospital stays, particularly for day care surgery [6].

With varying degrees of success, a variety of pharmacological and non-pharmacological methods have been employed to attenuate POST. The incidence of POST has been reported to be reduced by a number of non-pharmacological techniques, including smaller tracheal tubes, careful airway instrumentation, fewer laryngoscopy attempts, intubation after the larynx has fully relaxed, gentle oropharyngeal suctioning, filling the cuff with an anesthetic gas mixture, minimizing intracuff pressures <20 mm Hg, and extubation when the tracheal tube is fully deflated [7].

Material and Methods

Patients were randomly allocated to Group A, Group B and Group C each group consists of 25 participants by computer generated random numbers. The anesthesiologist taking up the case was blinded to type of nebulization given to the patients.

Group A: Lignocaine Group B: Ketamine Group C: Saline Inclusion Criteria

1. ASA physical status I, II, age group between 20-60 years of either sex, duration of surgery less than 2 hrs taken under general anaesthesia.

Exclusion Criteria

1. Head and neck surgeries, surgery in prone position, difficult airway and intubation attempts more than one.

Premedication was given just before induction, 0.2 mg of glycopyrolate and 1 mg of midazolam intravenously.GA was induced by intravenous injections of propofol (2 mg/kg), fentanyl (2 microgram/kg), atracurium (0.5 microgram/kg) and intubation was performed using an endotracheal tube that was 7–7.5 mm in diameter for women and 8–8.5 mm in diameter for men. Auscultation and capnography were used to check the endotracheal tube's position. The endotracheal tube cuff is a low pressure, high volume cuff that was inflated with air until the stethoscope detected no air leak. A cuff pressure monitor was attached, and the cuff's pressure is kept between 20 and 22 cm H20.

50% nitrous oxide, 1.5% isoflurane, and end tidal CO2 kept between 30 and 35 mmHg are used to maintain anesthesia. At the beginning of the surgery, dexamethasone is administered intravenously. The pressure in the tracheal tube cuff is kept between 20 and 22 cm H2O and is checked every 20 minutes. Following surgery, suctioning was performed, and reversal injections of glycopyrolate (10mic/kg) and neostigmine (50mic/kg i.v.) were administered. When the patients were completely aware and had strong muscles, they were extubated. Paracetamol was infused every six hours to treat post-operative discomfort. Scores for postoperative sore throat and hoarseness of voice were evaluated as soon as the patient was extubated and then again two, eight and twenty-four hours later.

Result

Table No. 1:

Period	Group A - Lignocaine		Group B - Ketamine		Group C - Saline		P Value
	Mean	SD	Mean	SD	Mean	SD	
Base	121	6.9	122	9.1	124	8.7	
Pre Induction	120	3.2	121	2.6	125	4.4	**0.69**
Post induction	118	4.6	119	11.4	131	13.2	

Table No. 2: Comparison of sore throat between groups at immediate

Sore throat Level	Group A - Lignocaine		Group B - Ketamine		Group C - Saline		P Value
	No.	%	No.	%	No.	%	
Nil	23	92	22	88	03	12	
Mild	02	08	03	12	10	40	**0.31**
Moderate	00	00	00	00	08	32	
Severe	00	00	00	00	04	16	
Total	25	100	25	100	25	100	

Table No. 3: Comparison of sore throat between groups at 2 hours

Sore throat Level	Group A - Lignocaine		Group B - Ketamine		Group C - Saline		P Value
	No.	%	No.	%	No.	%	
Nil	17	68	23	92	00	00	
Mild	08	32	02	08	14	56	**0.22**
Moderate	00	00	00	00	07	28	
Severe	00	00	00	00	04	16	
Total	25	100	25	100	25	100	

Table No. 4: Comparison of sore throat between groups at 8 hours

Sore throat Level	Group A - Lignocaine		Group B - Ketamine		Group C - Saline		P Value
	No.	%	No.	%	No.	%	
Nil	23	92	25	100	06	24	
Mild	02	08	00	00	16	64	**0.047**
Moderate	00	00	00	00	02	08	
Severe	00	00	00	00	01	04	
Total	25	100	25	100	25	100	

Table No. 5: Comparison of sore throat between groups at 24 hours

Sore throat Level	Group A - Lignocaine		Group B - Ketamine		Group C - Saline		P Value
	No.	%	No.	%	No.	%	
Nil	23	92	25	100	06	24	
Mild	02	08	00	00	17	68	**.032**
Moderate	00	00	00	00	02	08	
Severe	00	00	00	00	00	00	
Total	25	100	25	100	25	100	

The Severity of postoperative sore throat was less in lignocaine and ketamine group as compared to control group. On follow up for 24 hours, ketamine group provided better relief for longer duration as compared to lignocaine group. Hemodynamic parameters were comparable in all three groups.

Discussion

In a study it is found that the total incidence of POST was 48%. In contrast to earlier trials where the prevalence of POST ranged from 21 to 65%, POST only happened in 18% of the individuals in the ketamine group[9]. Since the patients are usually awake, attentive, and more willing to engage in the study by this point, which is also supported by previous research, the study's main endpoint was the incidence of POST at two, four and eight hours after surgery.

Our primary motivation for employing the nebulized version of ketamine instead of its oral, intravenous, or gargle forms was to ensure patient safety and convenience during the immediate pre-operative phase. Because nebulized ketamine has a topical analgesic effect, aerosol deposition in the mouth and upper airway most likely reduces POST.[10]. When it comes to reducing sore throats, Amingad B et al. found no statistically significant difference between ketamine nebulization and ketamine gargle. The reported incidence was reduced by more than 50% in both groups.

While ketamine decreased painful throat in the early postoperative period, Mehrotra S et al. found that nebulization with lignocaine was effective in lowering cough, while budesonide produced greater long-term results.[11]According to Jian Yu et al.'s meta-analysis, nebulized corticosteroid seemed to be the best modality overall and a safe substitute for nebulized ketamine.

Similarly, research by Ahuja et al. [12] revealed that lignocaine nebulization is more successful than ketamine and magnesium sulfate nebulization in lowering cough following extubation, but nebulized ketamine offers superior alleviation and a longer duration of action. The ketamine group saw a significantly lower incidence of POST at 4 hours compared to the magnesium sulfate and dexamethasone groups, with the peak incidence occurring between 2 and 4 hours. After four hours, magnesium sulfate nebulization relieves sore throats without altering sedation. Ranjana et al.[13] Patel N. et al. came to the conclusion that ketamine, magnesium sulfate, and lignocaine nebulization caused the greatest reduction in POST.[14]

Our study has a few limitations, including the fact that we did not measure the blood plasma level of ketamine and lignocaine. Different anesthetists performed laryngoscopies, and we did not measure the incidence of POST after 24 hours.

Conclusion

Preoperative nebulized ketamine is helpful at reducing the occurrence and severity of post operative sore throat for longer duration of time without causing any adverse effects. This technique helps anaesthetist in management of the ‘little big problem’ of post-operative sore throat.

Study Design: Comparative Study.

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