Effect of Lidocaine on Incidence of Sore Throat and Cough During Extubation After Elective Surgeries

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Abstract

Background: The incidence of postoperative sore throat is one of the most undesirable morbidities that occur in more than 50% of patients undergoing surgery under general anesthesia intubation. On one hand the occurrence of cough during extubation can lead to complications like bronchospasm, hemorrhage, open surgical wounds and increase in intrathoracic, intraabdominal, intracranial pressures. The occurrence of sore throat postoperatively is also troublesome. Various studies have shown the use of IV/Intratracheal lidocaine, IV opioids, dexmedetomidine can blunt the responses during extubation. The mechanism of lidocaine could be due to suppression of airway sensory C fibers, reduction of neural discharge of peripheral nerve fibers. **Objective**: Aimed to compare the effect of intratracheal lidocaine and saline on the incidence of sore throat and cough during extubation. **Material & Method:** This randomized single blinded clinical trial, conducted among the patients undergoing elective surgery under general anaesthesia at R. L. Jalappa Hospital and Research centre, Tamaka, Kolar during the period from August 1ST TO December 31st 2023. Patients aged 18-55yrs with ASA grade 1& 2 were included. Patients allergic to local anaesthesia, with acute of chronic respiratory disease, abnormalities of airway, smokers, Mallampati 3 and 4 grade, Cormack score of 3 or 4, surgery lasted more than 2hrs and not willing were excluded from the study. The participants included after obtaining the informed consent. The incidence of cough was noted as score 0-3, and presence of sore throat in the first and sixth hour after elective surgerywas assessed by Numerating rating scale with a scale of 0-10. Participants were divided into two groups of 16. Group (A) 4 ml of 2% lidocaine intratracheally through glottis installation before extubation and group (B) 4ml of saline intratracheally just before extubation. **Results**: A total of 32 patients included in present study, with mean age of 19.2±3.66yrs among them 10 were female and 22 were male patients.

Keyword: Sore throat, Intra-Tracheal, Lidocaine, Cough, Extubation.

Introduction:

The incidence of postoperative sore throat is one of the most undesirable morbidities that occur in more than 50% of patients undergoing surgery under general anesthesia intubation.[1,2]In addition to coughing, postoperative sore throat is another common adverse event after general anaesthesia with an incidence ranging from 21% to 72%.[3,4] The mechanism of postoperative sore throat is likely mediated by mucosal trauma, erosion, and inflammation attributable to irritation by the TT.[5,6] Postoperative sore throat is an important factor for patient dissatisfaction and delayinreturningtonormalactivities.[7]

On one hand the occurrence of cough during extubation can lead to complications like bronchospasm, hemorrhage, open surgical wounds and increase in intrathoracic, intraabdominal, intracranial pressures. The occurrence of sore throat postoperatively is also troublesome.[8,9] Various studies have shown the use of

IV/Intratracheal lidocaine, IV opioids, dexmedetomidine can blunt the responses during extubation. The mechanism of lidocaine could be due to suppression of airway sensory C fibers, reduction of neural discharge of peripheral nerve fibers.[9–11]

Aim: Present study aimed to compare the effect of intratracheal lidocaine and saline on the incidence of sore throat and cough during extubation.

Objective:

1) To evaluate cough scores between Treatment group and the Control group.

2) To compare the incidence of sore throat 1st and 6th hourly postoperatively in the two groups.

Material & Method:

This randomized single blinded clinical trial, conducted among the patients undergoing elective surgery under general anaesthesia at R. L. Jalappa Hospital and Research centre, Tamaka, Kolar during the period from August 1ST to December 31st 2023.

Inclusion Criteria

1 Age 18 to 55 yrs
2 ASA 1 and 2

Exclusion Criteria

1 Not willing to participate in the study.
2 Allergic to Local anaesthetics
3 With acute or chronic respiratory disease.
4 Abnormalities of airway
5 Smoker
6 Mallampati 3 or 4
7 Cormack score of 3 or 4
8 If surgery lasted > 2hours.

The study was conducted after obtaining approval by the Institutional Ethical Committee and an informed written consent was obtained from all participants posted for elective surgery under general anaesthesia. Pre-anaesthetic evaluation was done for all participants of the study. In the operation theatre routine monitors like pulse oximeter, ECG, NIBP, temperature monitoring were connected and monitored throughout. In this study, administered, Inj Glycopyrollate 0.2mg and Inj Fentany 2mg/kg as premedication. Induction with propofol 2mg/kg, and muscle relaxant with succinylcholine 2mg/kg was used, after this intubation was done using laryngoscope and ET tube of appropriate size were fixed after confirming bilateral air entry.

Participants were divided into two groups of 16. Group (A) 4 ml of 2% lidocaine intratracheally through glottis installation before extubation and group (B) 4ml of saline intratracheally just before extubation. The participants included after obtaining the informed consent. The incidence of cough was noted as score 0-3, and presence of sore throat in the first and sixth hour after elective surgery was assessed by Numerating rating scale with a scale of 0-10.

Statistical analysis: All the data were entered in excel sheet and analysed using SPSS v23.0 operating on windows 10. The data were summarised as mean. Standard deviation, frequency and percentage. The summarised data were represented using tables. The mean difference between the continuous data were analysed using students unpaired t-test, considered $p<0.05$ as statistically significant.

Funding: Nil

Conflict of interest: Nil

Result: A total of 32 patients included in present study, with mean age of 19.2±3.66yrs among them 10 were female and 22 were male patients.

Table 1: Showing demographic characteristics of patients			
	Group A (Mean ± SD)	Group B (Mean ± SD)	p-value
Age	19.8±2.22	20.11±3.31	0.56
Height (cm)	168.2±2.22	169.4±2.83	0.66
Weight (kg)	61.2±5.1	62.4±3.1	0.54
Duration of surgery (min)	38.2±3.8	41.0±2.6	0.68
Duration of anesthesia (min)	48.2±3.4	47.9±4.1	0.85

There is no significant difference in the basic demographic characteristics of the patients, including the duration of surgery and duration of anesthesia. (p>0.05)

Table 2: Comparison of the cough score and sore throat score between the groups			
	Group A (Mean ± SD)	Group B (Mean ± SD)	p-value
Cough score	1.01±0.7	2.34±0.55	0.01*
Sore throat score 1st hr	1.98±0.8	4.44±0.9	0.01*
Sore throat score 6th hr	1.62±0.68	3.99±0.81	0.01*

There is significant lower cough score and the sore throat score at 1st hr and 6th hour among the patient of group A compared to group B patients. (p<0.05)

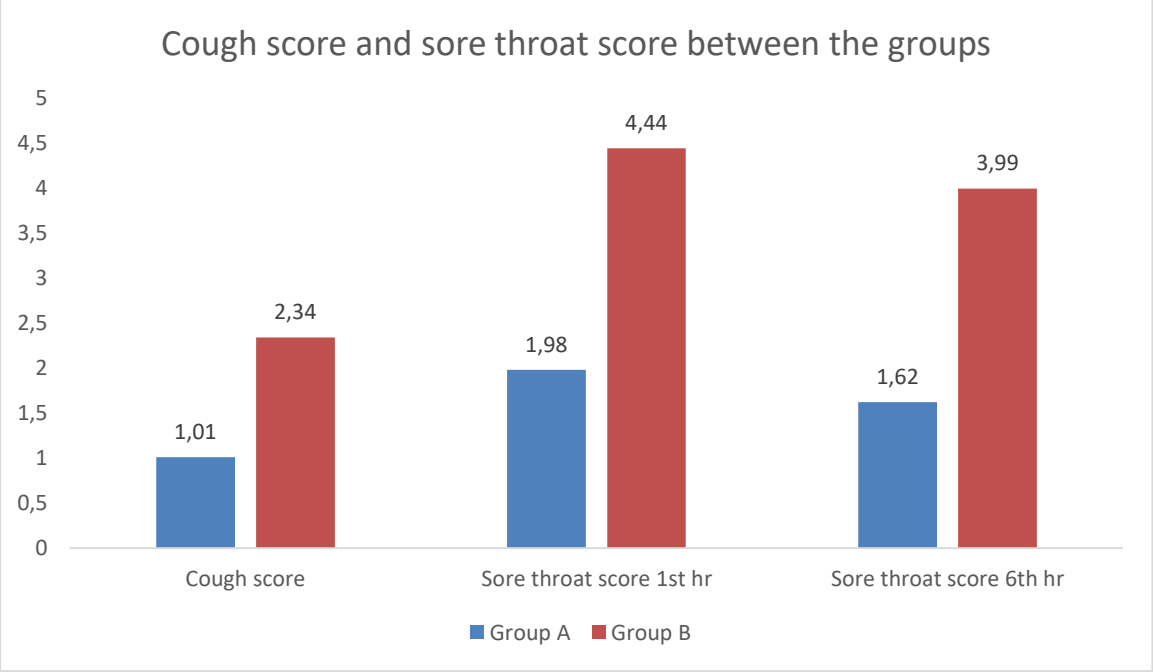

Figure 1: Cough score and sore throat score between the groups

Discussion:

Present study aimed to compare the effect of intratracheal lidocaine and saline on the incidence of sore throat and cough during extubation. Patients included in study with mean age of 19.2±3.66yrs among them 10 were female and 22 were male patients. There is no significant difference in the basic demographic characteristics of the patients, including the duration of surgery and duration of anesthesia.

(p>0.05) There is significant lower cough score and the sore throat score at 1st hr and 6th hour among the patient of group A compared to group B patients. (p<0.05)

Similar to present study, Artawan I et al., documented a significant lower incidence of sore throat and cough score among the patients receiving lidocaine compared to controls.[12] In line, another study by Suryaningrat et al., documented significant reduction in incidence of post-extubation cough in lidocaine group.[13] Concordance to present study, Tung et al., found that intratracheal lidocaine administration was one of the effective ways to reduce the incidence of post-extubation cough by 59.2%, compared with placebo.[14] Lidocaine has several beneficial effects such as analgesia, antihyperalgesic, and anti-inflammatory. In addition, lidocaine can suppress spike activity, amplitude, and conduction time in both myelinated and unmyelinatednerve fibers. Several studies have shown that lidocaine can reduce the incidence and severity of cough during the onset of anesthesia by various methods, including intracuff, tube lubrication, intratracheal, or slow intravenous bolus prior to induction.[15] In the study of Shabnum et al.,[16] in 2017, it was found that the incidence of cough during extubation was lower in the intravenous lidocaine group and the intratracheal lidocaine group when compared with the control group. Postoperative sore throat is an important factor for patient dissatisfaction and delay in returning to normal activities. The mechanism of postoperative sore throat is probably mediated by mucosal trauma, erosion, and inflammation caused by irritation of the endotracheal tube.[4] Many interventions are suggested to reduce the incidence of airway complications after surgery such as extubation under deep general anesthesia, intravenous opioids, intravenous dexmedetomidine, administration of intravenous lidocaine, intracuff or topical, and topical methylprednisolone.[4,17] In this study, it was found that there was a significant difference between the throat pain scores 1 and 6 h postoperatively between the treatment group and the control group,

Limitation: of study include its small sample size and done in single tertiary care hospital. The findings can be strengthened by conducting in larger sample size.

Conclusion: Study concludes that administration of 4 ml of 2% lidocaine intratracheally through glottis installation before extubation significantly reduced the incidence of cough during extubation and sore throat on 1st and 6th hour postoperatively compared to the placebo in post-operative period.

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