DISCUSSION

Postoperative sore throat (POST) is considered as the 8th most undesirable postoperative complaint after general anaesthesia; it may be caused due to either direct trauma of airway instrumentation or laryngeal oedema, with variability in incidences ranging from 14% to 50% after tracheal intubation and 5% to 34% after laryngeal mask airway (LMA) insertion. Avoiding POST is a major priority for the patients as it may contribute to their dissatisfaction. However fortunately it resolves within 3 days.[11,16]

The present study was carried out in Alexandria Main University Hospitals on one hundred and fifty patients. The patients aged between 30-40 years old, ASA physical status I and II, of both sexes, scheduled for elective surgery with general anaesthesia and endotracheal intubation in the supine position.

Patients were randomly allocated into three equal groups (50 patients each) according to the drug administrated. Group I patients were intubated after application of 4 ml of benzydamine hydrochloride gel 5% on the endotracheal tube cuff used, group II patients were intubated after application of 4 ml of lignocaine gel 5% on the endotracheal tube cuff used, and group III patients were intubated after inhalation of 500 mcg of fluticasone before induction of general anaesthesia and application of 4 ml of plain (K-Y) gel on the endotracheal tube cuff used.

Comparison between the three groups as regard the demographic data showed no significant differences.

Haemodynamic changes were assessed by frequent monitoring and recording of the heart rate, blood pressure and pulse oximetric oxygen saturation (S_pO_2).

Changes in the heart rate and mean arterial blood pressure showed significant decrease in the post-induction measurements compared to the pre-induction measurements only in the lignocaine group, and comparison between the three studied groups revealed significant difference between the lignocaine group and the two other groups with the least post-induction heart rate and mean arterial blood pressure measurements in the lignocaine group.

This was in agreement with many studies e.g. Deok and Sang study, and Michele et al study, which showed the effectiveness of topical administration of lignocaine to the upper airway mucosa in attenuating the haemodynamic stress responses after laryngoscopy and endotracheal intubation. In Deok et al study sixty patients with American Society of Anaesthesiologists physical status I patients aged between 20-65 years, scheduled for laryngeal microscopic surgery with laryngoscopy were randomly divided into two groups and intubated without 10% lignocaine spray (control group) or given 1.5 mg/kg of 10% lignocaine, sprayed onto the upper airway sites 2 minutes prior to intubation (10% lignocaine group). Mean arterial pressure (MAP) and heart rates (HR) during laryngoscopy and coughing incidence during extubation were recorded, MAP at 2.5 and 5 min and HR at 2.5 min after laryngoscopy were significantly greater in the control group than in the 10% lignocaine group. In Michele et al study the authors evaluated the cardiovascular (MAP) effect of blind nasotracheal intubation in four randomized groups of 25 patients each after induction of anaesthesia with intravenous thiopentone 4 mg/kg, patients in group A

received no pretreatment, patients in group B received 1.5 mg/kg lignocaine intravenously, while patients in group C received 0.25 percent phenylephrine nasal spray (0.2 mg) in each nostril, those in group D receive 10% lignocaine spray (30 mg) in each nostril. Mean of MAP measurements in group D patients was significantly less than the control group and the other two groups.[71,72]

Comparison between the three studied groups according to S_pO_2 measurements showed slight differences of statistical significance, in the post-induction measurements between groups I and II patients, and between groups II and III patients, and in the values measured postextubation between the three studied groups patients.

However, there was no reading of S_pO_2 below the critical point (94%) in any of the three groups at any period.

Changes in the observed upper airway obstruction (UAO) score showed significant decrease in the incidence of UAO one hour and six hours post-extubation compared to its incidence immediately post-extubation in the three studied groups.

The most observed incidence of UAO was in group II (lignocaine group), there was no significant difference in UAO incidence between groups I (benzydamine group) and III (fluticasone group) at any period.

There was no observed incidence of UAO score of 3 (cyanosis) between the three studied goups patients at any period, and no observed incidence of POST score of 3 in group III patients at any period.

The highest incidence of POST was observed at the 6 hours post-extubation period in the three studied groups. This was in agreement with Hung study which demonstrated that spraying benzydamine hydrochloride on the endotracheal tube cuff was a simple and effective method to reduce both incidence and severity of POST in comparison with 2% and 10% lignocaine spray. In that study three hundred and seventy-two patients were randomly allocated into 4 groups. The ETT cuffs in each group were sprayed with benzydamine hydrochloride, 10% lignocaine hydrochloride, 2% lignocaine hydrochloride, or normal saline before endotracheal intubation. After insertion, the cuffs were inflated to an airway leak pressure of 20 cm H_2O. Anaesthesia was maintained with propofol. The patients were examined for sore throat (none, mild, moderate, or severe) at 1, 6, 12, and 24 hours after extubation. The highest incidence of POST occurred at 6 hours after extubation in all groups. There was a significantly lower incidence of POST in the benzydamine group than 10% lignocaine, 2% lignocaine, and normal saline groups. There were no significant differences among groups in local or systemic side effects.[62]

Comparison between the three studied groups showed that the most POST incidence observed at all period was in group II (lignocaine group). This was in agreement with Soltani and Aghadavoudi study which showed that the use of lignocaine lubricant gel on the endotracheal tube cuff doesn't decrease the POST incidence following extubation. In that study 204 patients of ASA status I and II were randomized to six groups according to lignocaine application method. Before endotracheal intubation in groups one and two 10% lignocaine was sprayed on the distal endotracheal tube end (group one) and on laryngopharyngeal structures (group two), in (group three) the distal end of the endotracheal tube was lubricated with 2% lignocaine gel. Intravenous lignocaine was used

in (group four), intracuff lignocaine was used in (group five) and the distal end of the endotracheal tube was lubricated with normal saline in (group six). At the end of the surgery and after extubation patients were observed to record the number of coughs. At 1 and 24 hours postextubation sore throat incidence was evaluated. The authors concluded that the use of intracuff or intravenous lignocaine at the end of the surgery -among other methods of lignocaine application- decreases the incidence of postoperative sore throat and cough and would provide better outcome for patients.[73]

However, this was not in agreement with Sumathi et al who showed that lignocaine gel reduced the incidence of some degrees of postoperative sore throat but not hoarseness of voice, that study compared the incidence of postoperative sore throat, cough, and hoarseness of voice after general anaesthesia with endotracheal intubation when applying betamethasone gel (betamethasone group) or lignocaine jelly (lignocaine group) on the tracheal tube, it was carried on one hundred and fifty, ASA class I and II, patients undergoing elective surgeries under general anaesthesia with orotracheal intubation. Patients were randomized into the three groups: Betamethasone gel, lignocaine gel, and control groups. In the post anaesthesia care unit, a blinded anaesthesiologist interviewed all patients on postoperative sore throat, cough, and hoarseness of voice at 1, 6, 12, and 24 h after operation.[61]

There was statistically significant slight difference between groups I and III in the POST incidence observed at the one hour postextubation period, with more POST incidence observed in group I (benzydamine group) compared to group III (fluticasone group), and the two groups (groups I and III) showed reduced incidence of POST compared to the lignocaine group.

The effectiveness of both benzydamine hydrochloride application on the endotracheal tube cuff, and fluticasone propionate inhalation to attenuate POST was shown in the following studies: First Yuan et al study which showed that spraying benzydamine hydrochloride (BH) on the endotracheal tube cuff decreases the incidence and severity of POST without increased BH-related adverse effects, three hundred and eighty patients were included in that study, all patients were scheduled for elective surgery under general anaesthesia with endotracheal intubation. Patients who had head and neck surgery, cervical spine surgery, or thyroid surgery, and had a history of preoperative sore throat were excluded. Patients with first attempt failed laryngoscopy, postoperative endotracheal intubation or reintubation, and nasogastric tube insertion were also excluded from further analysis. Patients were randomized into 4 groups: group A, 5 puffs of 0.15% benydamine hydrochloride (total 0.75 mg,) were sprayed into the oropharyngeal cavity and 5 puffs of distilled water were sprayed on the endotracheal tube cuff (5 puffs containing approximately 0.5 ml distilled water), group B, the oropharyngeal cavity and the ETT cuff were both sprayed with 5 puffs of BH(benzydamine hydrochloride), group C, the ETT cuff was sprayed with 5 puffs of BH and the oropharyngeal cavity was sprayed with 5 puffs of distilled water, and group D, the oropharyngeal cavity and the ETT cuff were both sprayed with 5 puffs of distilled water. All medications were sprayed 5 minutes before induction of anaesthesia by a nurse anaesthetist blinded to the treatment. The treatments were prepared by a pharmacist in their institution pharmacy department blinded to the medication so that the different treatments had the same external appearance. No patient received premedication, the patients were examined for sore throat (none, mild, moderate, severe) at 0, 2, 4, and 24 hours postextubation. Results of that study indicated that spraying

BH on the ETT cuff decreases the incidence and severity of POST without increased BH-related adverse effects. However, in that study 5 puffs of 0.15% BH spray (total 0.75 mg) was used, in our present study we used 4 ml of 5% benzydamine hydrochloride gel was applied on the endotracheal tube cuff.[54]

The second study is Faridi et al study which showed that inhaled fluticasone propionate decreases the incidence and severity of postoperative sore throat, cough, and hoarseness in patients undergoing caesarean delivery under general anaesthesia, in Faridi et al study 120 women with ASA physical status I or II and full term pregnancy who were scheduled for elective caesarean delivery under general anaesthesia were randomized into 2 groups; group F patients received 500 micrograms of inhaled fluticasone propionate via a spacer device during 2 deep inspirations, after arrival in the operating room, and group C had no treatment. The patients were interviewed by a blinded investigator for postoperative sore throat, cough, and hoarseness at 1 and 24 hours after surgery. There were no significant differences in age, height, weight, and body mass index, duration of surgery, intubation, and grade of laryngeal exposure between the 2 groups. The incidence of sore throat, cough, and hoarseness was significantly lower in group F compared with the control group, not only in the first postoperative hour but also 24 hours after surgery.[12]

One of the drawbacks of our study was that the duration of surgery (endotracheal intubation) was not mentioned clearly, also the type and the size of the endotracheal tube used.

SUMMARY

Postoperative sore throat is a common complication which may contribute to postextubation patient's morbidity and dissatisfaction; it may affect the patient's activities postoperatively. POST may occur even after a smooth endotracheal intubation. Immediate POST may be owing to the action of extubation.

The aim of this work was to compare the efficacy of application of benzydamine hydrochloride gel 5%, lignocaine gel 5% on the endotracheal tube cuff and inhaled 500 mcg of fluticasone propionate for prevention of the postoperative sore throat and upper airway obstruction.

This study was carried out in Alexandria Main University Hospitals on one hundred and fifty patients. The patients aged between 30-40 years old, ASA physical status I and II, of both sexes, scheduled for elective surgery with general anaesthesia and endotracheal intubation in the supine position.

Patients were divided randomly using closed envelopes into 3 equal groups:

Group I: Was intubated after application of 4 ml of benzydamine hydrochloride gel 5% on the endotracheal tube cuff used.

Group II: Was intubated after application of 4 ml of lignocaine gel 5% on the endotracheal tube cuff used.

Group III: Was intubated after inhalation of 500 mcg of fluticasone before induction of general anaesthesia and application of 4 ml of plain (K-Y) gel on the endotracheal tube cuff used.

Patients were placed under standard monitoring. The following parameters were measured: Haemodynamic measurements including heart rate, mean arterial blood and pulse oximetric oxygen saturation (S_pO_2).

A four point scale for assessment of presence and severity of post-extubation upper airway obstruction (UAO) was used immediately, one hour and six hours postextubation.

A four point scale for assessment of presence and severity of postoperative sore throat was used one, 6, 12 and 24 hours post-extubation.

There were significant differences between the lignocaine group and the two other groups in the heart rate and the mean arterial blood pressure measured post-induction, with the lowest measurements in the lignocaine group.

S_pO_2 was never recorded to be below the critical point (94%) in any of the three groups at any period.

Comparison between the three studied groups showed significant differences in the UAO incidence observed immediately and one hour post-extubation, between groups I and II, and between groups II and III with the most observed incidence of UAO in group II (lignocaine group) patients. There was no significant difference in the observed UAO

incidence between groups I (benzydamine group) patients and III (fluticasone group) patients at any period.

There was no observed incidence of UAO score of 3 (cyanosis) in any of the three groups at any period.

Comparison between the three studied groups showed significant differences, between groups I and II, and between groups II and III, in the POST incidence observed at all periods, with the most POST observed incidence in group II (the lignocaine group) patients.

There was a slight significant difference between groups I and III, in the POST score of 1 and 2 incidence observed at the one hour postextubation period, with more POST incidence observed in group I (the benzydamine group) compared to group III (the fluticasone group).

There was no observed incidence of POST score of 3 in group III (the fluticasone group) patients at any period.

Conclusion:

The use of 4 ml benzydamine hydrochloride gel 5% application on the endotracheal tube cuff and fluticasone propionate 500 mcg inhalation before induction of anaesthesia are considered better as methods for attenuation of postoperative laryngeal complications (upper airway obstruction and sore throat) than 4 ml lignocaine gel 5% application on the endotracheal tube cuff.

CONCLUSION

The use of 4 ml benzydamine hydrochloride gel 5% application on the endotracheal tube cuff and fluticasone propionate 500 mcg inhalation before induction of anaesthesia are considered better as methods for attenuation of postoperative laryngeal complications (upper airway obstruction and sore throat) than 4 ml lignocaine gel 5% application on the endotracheal tube cuff.