

Nebulized lidocaine before nasogastric tube insertion reduced patient discomfort but increased risk for nasal bleeding

Cullen L, Taylor D, Taylor S, Chu K. Nebulized lidocaine decreases the discomfort of nasogastric tube insertion: a randomized, double-blind trial. *Ann Emerg Med.* 2004;44:131-7.

QUESTION

Does administration of nebulized lidocaine before nasogastric tube (NGT) insertion reduce patient discomfort?

METHODS

Design: Randomized placebo-controlled trial.

Allocation: Concealed.*

Blinding: Blinded {patients, clinicians, data collectors, outcome assessors, data analysts, and manuscript writers}†.*

Follow-up period: After NGT was secured.

Setting: Emergency departments (EDs) of 2 large metropolitan university hospitals in Australia.

Patients: 50 patients > 18 years of age (50% men) who required an NGT as part of ED treatment. Exclusion criteria were inability to assess pain (altered mental state, language barrier, or dementia), systolic blood pressure < 100 mm Hg, emergency indication for NGT insertion (e.g., major trauma), allergy to lidocaine, concurrent administration of intravenous lidocaine, pregnancy, weight < 50 kg, preexisting gag reflex impairment, or reactive airway disease.

Intervention: Lidocaine, 400 mg, 4 mL of 10% solution ($n = 29$, median age 67 y), or normal saline solution ($n = 21$, median age 55 y), administered using a face mask and a compressed gas-powered jet nebulizer (Hudson Respiratory Care Inc, Temecula, CA) with an oxygen flow rate of 6 L/min.

COMMENTARY

NGT insertion is one of the most uncomfortable procedures for ED patients (1). Local anesthetics, administered topically or by aerosol, are a logical and safe means of alleviating patient discomfort during NGT insertion.

Cullen and colleagues reported a decrease in “discomfort” during NGT insertion of 22 mm on a 100-mm VAS in adult patients who received nebulized lidocaine compared with those who received nebulized normal saline. The patients in the 2 study groups were similar with respect to all important characteristics, including estimated difficulty of NGT placement, but may not have been equally distributed among the individual nurses passing the tubes. If more patients in either group were assigned to nurses who had better (or worse) skills or used different techniques, the outcomes might have been systematically affected.

The observed difference in VAS scores seems to be clinically important. Differences in VAS scores of 13 to 20 mm have been reported to constitute a threshold for patient-important analgesia in pain studies (1, 2). These thresholds have not, however, been validated for patient perception of “discomfort.” The confidence interval around the observed difference of 22 mm includes clinically unimportant values. Among the adverse effects considered, only increased epistaxis emerged as a statistically

significant difference between groups. Immediately after nebulization, the nurse removed the mask and inserted the NGT (18F Salem sump tube, Sherwood Medical, St. Louis, MO) with KY Jelly lubrication gel. Tube placement was confirmed by auscultation, aspiration of gastric contents, or radiographic identification.

Outcomes: Patient discomfort during insertion of NGT (100-mm visual analogue scale [VAS]), difficulty of NGT insertion as assessed by the nurse (5-point Likert scale ranging from minimal to extreme), and complications (e.g., nasal or oropharyngeal bleeding, vomiting, or incorrect placement or failed passage of tube).

Patient follow-up: 100% (intention-to-treat analysis).

MAIN RESULTS

Patients who received nebulized lidocaine reported less discomfort during NGT insertion than did patients who received placebo (Table). Nurses’ perceived difficulty of tube

insertion did not differ between the groups (Table). More patients who received nebulized lidocaine had nasal bleeding (Table), but the groups did not differ for vomiting, inability to pass the NGT, or chest tightness and dyspnea.

CONCLUSIONS

Nebulized lidocaine reduced patient discomfort more than placebo during nasogastric tube insertion in the emergency department, with no difference in nurse-assessed ease of tube insertion. Patients who received nebulized lidocaine were more likely to have nasal bleeding than were those who received placebo.

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*See Glossary.

†Information provided by author.

Nebulized lidocaine vs placebo before nasogastric tube insertion in the emergency department‡

| Outcomes | Lidocaine | Placebo | Difference (95% CI) |
|--|-----------|---------|---------------------|
| Patient discomfort (mean visual analogue scale score in mm) [§] | 37.7 | 59.3 | 21.6 (5.3 to 38.0) |
| Nurses’ perceived difficulty of tube insertion (median score) | 2 | 2 | 0 (–1 to 1) |
| Nasal bleeding | 17% | 0 | 17% (3.5 to 31) |

‡CI defined in Glossary.

§100-mm scale, where 0 = no discomfort and 100 = severe discomfort.

||5-point Likert scale, where 1 = minimal difficulty and 5 = extreme difficulty.

cally significant difference between groups.

An editorial accompanying Cullen and colleagues’ study summarizes the 5 trials that have assessed the effectiveness of topical anesthetics during NGT passage (1). 3 placebo-controlled trials reported statistically significant benefits in the anesthetic group, and 2 other trials found that anesthetic agents administered through several routes simultaneously resulted in greater relief than did administration via a single route. Nebulized lidocaine is convenient to administer and seems to be effective. Further research is required to determine if the effectiveness of lidocaine administered by nebulizer is comparable to administration by other routes or to multiple routes of administration, if lidocaine is superior to other anesthetic agents, and if the addition of vasoconstrictors limits epistaxis. ED clinicians may reasonably recommend the use of topical anesthesia via a conveniently available route to decrease patient discomfort during NGT insertion.

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References

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