Nebulised lidocaine before nasogastric tube insertion reduced patient discomfort but increased risk of nasal bleeding


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

**METHODS**

**Design:** randomised, 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 university hospitals in Australia.

**Patients:** 50 patients >18 years of age (50% men) who required a NGT as part of their 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 (eg, major trauma), allergy to lidocaine, concurrent administration of intravenous lidocaine, indication for NGT insertion (eg, major trauma), allergy to lidocaine, concurrent administration of intravenous lidocaine, pregnancy, weight <50 kg, pre-existing gag reflex impairment, or reactive airways disease.

**Intervention:** lidocaine, 400 mg, 4 ml of 10% solution (n = 29) or normal saline solution (n = 21) administered using a face mask and a compressed gas powered jet nebuliser (Hudson Respiratory Care Inc, Temecula, CA) with an oxygen flow rate of 6 l/min. Immediately after nebulisation, 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), difficulty of NGT insertion as assessed by the nurse (5 point Likert scale), and complications (eg, nasal bleeding, vomiting, or failed passage of tube).

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

*Information provided by author.

**MAIN RESULTS**

Patients who received nebulised lidocaine reported less discomfort during NGT insertion than patients who received placebo (table). Nurses’ perceived difficulty of tube insertion did not differ between groups (table). More patients who received nebulised lidocaine had nasal bleeding, but the groups did not differ for vomiting, inability to pass the NGT, or chest tightness and dyspnoea (table).

**CONCLUSIONS**

Nebulised 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 nebulised lidocaine were more likely to have nasal bleeding.

**Commentary**

Patients report that NGT insertion is a very painful procedure, even worse than abscess drainage or urethral catheterisation. The trial by Cullen et al investigated the use of nebulised lidocaine before NGT insertion and found significant reductions in patient discomfort during tube insertion. This double blind, randomised, placebo controlled trial was well designed overall. The authors highlighted some limitations, such as the unit of analysis error, which would have required cluster analysis to determine if outcomes differed by the nurse doing the insertion. However, they did not discuss the potential effect of the 14 year median age difference between the 2 groups.

More patients who received nebulised lidocaine developed nasal bleeding, and 10% vomited after lidocaine administration (although the latter was not significantly different from placebo). Caution is therefore advised when using this method for delivering topical lidocaine. Atomised lidocaine and lidocaine gel before NGT placement have been shown to reduce discomfort without these unwanted side effects.

What is standard practice? None of 10 major nursing journals surveyed (eg, Nurs Stand) recommend topical lidocaine in their NGT insertion guidelines. However, polling of experienced practitioners revealed use of topical lidocaine gel sometimes but not as standard practice. Practitioners also describe using various comfort strategies when preparing and inserting NGTs. Topical anaesthetics can complement these important comfort strategies. However, data from studies comparing lidocaine delivery by nebulisation or atomisation or as a topical gel are needed before recommendations about mode of delivery can be included in practice guidelines.


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**Nebulised lidocaine v placebo before nasogastric tube insertion in the emergency department**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Lidocaine</th>
<th>Placebo</th>
<th>Difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient discomfort (mean visual analogue scale score in mm)</td>
<td>37.7</td>
<td>59.3</td>
<td>21.6 (5.3 to 38.0)</td>
</tr>
<tr>
<td>Nurses’ perceived difficulty of tube insertion (median score)</td>
<td>2</td>
<td>2</td>
<td>0 (–1 to 1)</td>
</tr>
<tr>
<td>Nasal bleeding</td>
<td>17%</td>
<td>0</td>
<td>17% (3.5 to 31)</td>
</tr>
<tr>
<td>Vomiting</td>
<td>10%</td>
<td>0</td>
<td>10% (–0.7 to 21)</td>
</tr>
<tr>
<td>Chest tightness and dyspnoea</td>
<td>3.4%</td>
<td>0</td>
<td>3.4% (–3.2 to 10)</td>
</tr>
<tr>
<td>Inability to pass tube</td>
<td>6.9%</td>
<td>9.5%</td>
<td>2.6% (–1.8 to 13)</td>
</tr>
</tbody>
</table>

*CI defined in glossary.

1100 mm scale, where 0 = no discomfort and 100 = severe discomfort.

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

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