



Question: What is the evidence to support the use of nebulised lidocaine to treat an intractable cough?

April 2017

Summary

Lidocaine hydrochloride is an intermediate-acting local anaesthetic of the amide type.¹ Nebulised local anaesthetics have been used as antitussives in patients with chronic cough and also cancer.² They likely act locally by inhibiting the sensory nerves in the airways involved in the cough reflex but there could be a central effect as well.² However, their use, as an anti-tussive, has not been formally evaluated; thus they should be considered only when other possibilities have failed.² Inhalation of lidocaine to suppress troublesome cough is an extension of its use in bronchoscopy, which has been found to be very safe.³ Lidocaine nebulised solutions vary in concentrations from 1-4%.³ The use of nebulised lidocaine is largely anecdotal, but case reports have been published.^{3,4} The advice of respiratory specialists should be considered before treatment is commenced. Lidocaine is not licensed for administration via nebuliser.

Use:

- Ensure that the patient does not have an **allergy** to lidocaine. Hypersensitivity is very rare but it can be fatal.³
- Lidocaine may reduce the **gag reflex**.³ Patients should maintain head elevation for at least 30 minutes post treatment and refrain from eating and drinking for 40-60minutes after nebulization is complete to reduce the risk of aspiration.^{2,4}
- Cardiac monitoring may need to be considered.³

Palliative Meds Info: Terms and Conditions

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- Lidocaine can cause **bronchospasm** in asthmatic patients, the use of a standard dose of **bronchodilator** (e.g. salbutamol) should be considered in all patients to prevent lidocaine-induced bronchospasm.^{2,3} Bronchospasm may have delayed onset and may occur after repeated doses. The first dose should be given in a supervised setting where medical or nursing intervention is available if necessary. Patients should be counseled about the possibility of bronchospasm occurring. The treatment should be reviewed regularly.⁵

Dose:

- Nebulised solutions vary in concentrations from 1-4% (10-20mg).³ The use of larger doses (up to 572mg) have been studied and found to be quite safe.³
- The Palliative care Formulary (PCF) recommends a dose of lidocaine 2% solution 5mL as required up to four times daily.⁶
- Udezue recommends the administration of an initial dose of 1mL of Lidocaine hydrochloride 1% solution for injection diluted to 4mLs with saline to give 0.25% solution with oxygen 4 to 6 L/min until nebulisation is complete.³ Dose may be increased as appropriate.³
- This usually produces almost instantaneous relief of cough, and can be repeated every 4-6 hours (with more concentrated solutions if necessary up to 4%) as needed.³
- It has a short duration of action; 10-30min.²
- Both ultrasonic and jet nebulisers have been used in studies.

Adverse Effects

- Unpleasant taste^{2,7}
- Throat or mouth irritation^{2,7}
- Oropharyngeal numbness²
- Risk of bronchoconstriction²
- Other dose-related adverse effects including drowsiness, muscle twitching, convulsions, disorientation, decreased hearing, paraesthesia, and agitation are manifestations of toxicity³

Published Evidence for Use:

- In a case series of 100 patients with chronic cough given nebulized lidocaine, only 20% of patients considered their cough much improved and would definitely recommend it to other patients.²
- In an observational study, nebulised lidocaine was administered to 99 patients with chronic cough, only 34% of patients reported being satisfied with the treatment and less than 30 percent chose to continue it beyond three months.⁷
- Slaton et al conducted a literature search to summarize the efficacy and safety data for use of nebulised lidocaine in intractable cough and asthma. A review of the available literature found that overall the available evidence does not appear to preclude the use of lidocaine as a treatment option for intractable cough after failure of traditional cough suppressants. Study limitations, including design, small sample size, and inconsistencies in method and adjunctive therapies, should be considered. Nebulised lidocaine is well tolerated; however, reports of initial bronchoconstriction have occurred.⁸
- Udezue outlined a study observing the effectiveness of lidocaine in suppressing cough. Nebulized lidocaine, preceded by standard nebulised albuterol inhalation driven by oxygen was given to suppress cough in a selected group of patients (n=21) with intractable cough severe enough to disrupt daily life activities, especially sleep. Patients included those with asthma, reactive airways disease, and chronic obstructive pulmonary disease (COPD). In these selected patients, nebulised lidocaine was very effective in suppressing cough, and thus buying time for more definitive therapies to work. This observation merits further study and confirmation for the benefit of patients.³
- Lingerfelt et al reviewed the charts of four patients who received nebulised lidocaine for intractable cough. An improvement in cough was seen in two of our four patients. The lidocaine nebulised treatments were well tolerated with only transient topical side effects, including oropharyngeal numbness and bitter taste.⁴ The authors concluded that although the pilot study population was small, the results show possible benefit from nebulised lidocaine and justify proceeding to a larger randomized trial comparing lidocaine to placebo.⁴

References

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