

Editorial:

Lignocaine for Topical Anesthesia in Fiberoptic Bronchoscopy

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Fiberoptic bronchoscopy is widely employed by pulmonologists around the world and with safety in a broad spectrum of patients with a variety of clinical problems. Whether the bronchofiberscope is introduced transorally or transnasally, topical anesthesia is well tolerated. Cocaine, benzocaine, tetracaine, and lignocaine (lidocaine) can be equally effective, but lignocaine has the widest margin of safety and is most commonly used. Ease of administration and low toxicity permit effective diagnostic and therapeutic applications of this important procedure.

Lignocaine is an aminoethylamide that is distributed in the circulation and metabolized almost exclusively in the liver. In patients with normal liver function, the half life of the drug is 100–120 min¹. Clearance may also be decreased in patients with congestive heart failure.

Lignocaine instilled endoscopically rapidly enters the circulation, and a correlation has been reported between plasma levels and the total dose administered during bronchoscopy.² Alternatively, nebulization has been shown to produce equivalent anesthetic effects compared to endobronchial administration while resulting in significantly lower lignocaine plasma levels.³ Furthermore, patient preference seems to favor the nebulized route.^{3, 4} There are many studies that compare nebulization with other methods of topical anesthesia in relieving clinical symptoms. Some studies are in favor while others show no added benefit of using lignocaine in nebulized form.

In a study published in this issue⁵ the authors have demonstrated that nebulized Lignocaine provided adequate anesthesia and such patients required less topical Lignocaine during bronchoscopy. They also showed that the patient tolerance of procedure showed a trend towards improved tolerance towards nebulized group although the differences in these were statistically insignificant. They also demonstrated that the amount of Midazolam used in Lignocaine pre nebulized patients was less.

Foster and Hurewitz⁶ also demonstrated that nebulized lignocaine can reduce the requirement for supplemental topical anesthesia administered via injection through the bronchoscope. Similarly, Gjonaj et al⁷ reported that 50% of the patients receiving aerosolized lignocaine did not require supplemental lignocaine. Stolz et al⁸ demonstrate no additional benefit of nebulized lignocaine in reducing the total dose of topical anesthetic administered for flexible bronchoscopy in patients receiving combined sedation with Midazolam and hydrocodone. Indeed patients treated with

nebulized lidocaine received overall greater amounts of lidocaine than the placebo group. Furthermore in this study, the administration of aerosolized lignocaine prior to bronchoscopy did not significantly improve patient comfort or prevent cough. Operating conditions, inferred from the duration of the procedure and the amount of Midazolam required, were not improved either in this study.

Although lignocaine has an enviable safety record, toxic reactions have been reported, usually associated with higher delivered doses or impaired clearance. Wu et al⁹ reported that in a seriously ill 30-year-old woman with acquired immunodeficiency syndrome (AIDS) and chronic renal failure, seizures developed after a total dose of lignocaine of 300–320 mg. Day et al¹⁰ reported on the use of lignocaine in a previously healthy 19-year-old female student who was a volunteer in a research investigation into the function of lung cells. She subsequently had a seizure followed by cardiac arrest and died 2 days later. Bronchospasm is uncommon during bronchoscopy, but bronchoconstriction was found in 5 of 20 asthmatic patients who received inhalation of nebulized 4% lignocaine solution¹¹.

There is a debate since many decades as to which route is ideal for topical anesthesia during bronchoscopy; still no consensus. As with all procedures, safety for patients is of paramount importance. Physicians must be aware of the side effects of all the drugs they use and seek to avoid complications whenever possible while being prepared to deal with those that may occur. Bronchoscopist should be sensitive to the amount of topical agent administered and expected clearance rate in individual patients. Monitoring dosage and limiting to minimum amounts required for patient comfort will assure continued safe outcomes.

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