



*Blue Ridge Parkway, Virginia*

## PIC QUESTION OF THE WEEK: 9/27/10

Q: Can lidocaine be used as a nebulized solution for the treatment of chronic cough?

A: Lidocaine is one of the most frequently used topical anesthetics and is available in multiple dosage forms. It is also routinely administered by infiltration prior to a number of procedures and by various techniques for peripheral and epidural anesthesia. One of the more unusual uses of lidocaine is in the management of cough. Lidocaine has been evaluated in numerous trials as a spray or gel to suppress acute cough associated with bronchoscopy, lung biopsy, laryngoscopy, and the administration of short acting opioids during anesthesia. It has also been used to reduce the incidence of postoperative sore throat, cough, and hoarseness of voice. This anesthetic has also been given via nebulizer for intractable cough in terminal patients. More commonly, lidocaine inhalation has been utilized to reduce the frequency of chronic cough in patients with asthma and chronic obstructive lung disease (COPD). This route of administration appears to produce low serum levels and a reduced frequency of adverse effects compared to gel or spray formulations. It produces rapid cough suppression via bronchial anesthesia without affecting blood oxygenation. A study published in 2001 evaluated the benefit of a nebulized solution of lidocaine (1 mL of a 1% solution diluted in 4 mL of saline) in twenty-one patients with chronic cough and a diagnosis of asthma or COPD. Each of the subjects was pre-treated with a bronchodilator to prevent bronchospasm. Patients were reported to receive “almost instantaneous relief of cough.” If necessary, the treatment was repeated every 4 to 6 hours. No adverse effects were reported in any of these patients. In another trial, approximately 130 patients with COPD and intractable cough received either terbutaline (2 mL of a 1 mg/mL injection plus 2 mL saline) or lidocaine (1 mg/kg plus a sufficient volume of saline to yield 4 mL). The cough severity score was significantly reduced one hour after inhalation with both agents. The only adverse effects reported included oropharyngeal numbness and bitter taste. These were mild in nature and abated over time. Dizziness and dyspnea were reported with equal frequency in both groups. The authors concluded that these nebulized solutions were equally effective for suppressing cough in patients with COPD. It should be noted that aerosolized lidocaine does not reduce the potential for bronchospasm, thus patients with asthma or allergic bronchospasm should be pre-treated with a beta-agonist and/or inhaled corticosteroid. Although not a labeled route of administration, nebulized lidocaine may be quite effective in managing persistent cough, especially in patients with COPD.

### References:

- Chong CF, Chen CC, Ma HP et al. Comparison of lidocaine and bronchodilator inhalation treatments for cough suppression in patients with chronic obstructive pulmonary disease. *Emerg Med J* 2005;22:429-32.
- Udezue, E. Lidocaine inhalation for cough suppression. *Am J Emerg Med* 2001;19:206-7.
- Peleg R, Binyamin L. Practice tips: treating persistent cough. *Can Fam Physician* 2002;48:275.

Photo by D.L. Ennis: used under Creative Commons License; <http://www.flickr.com/photos/dlennis/2137857392/>  
(Accessed September 21<sup>st</sup>, 2010)

Ryan M. Walkovich and Stephen A. Novicki, Pharm.D. Clerkship Students

**The PIC Question of the Week is a publication of the Pharmaceutical Information Center, Mylan School of Pharmacy, Duquesne University, Pittsburgh, PA 15282 (412.396.4600).**