Anesthesiology
1999; 91:319

In Reply:—We greatly appreciate Dr. Zemenick's interest in our recent work. He is concerned that lidocaine only attenuates bronchial hyperreactivity in a subpopulation of patients who respond to a histamine challenge and that lidocaine might cause bronchoconstriction. His hypothesis is based on studies that describe bronchoconstriction after lidocaine inhalation.

We agree that lidocaine administered as an aerosol can initially induce bronchoconstriction in asthmatic patients, as is shown in another recent study from our laboratory.[1] Nevertheless, lidocaine inhalation subsequently attenuates the response to several different challenges such as methacholine, hyperosmolar saline, destilled water, or exercise.[2–5]

However, our study[6] addressed intravenous, not inhalational, lidocaine. Airway irritation was only described after lidocaine inhalation. In contrast, after intravenous lidocaine administration, we saw only a variation in individual measurements of forced expiratory volume in 1 s compared with the respective baseline of less than 3% of 15 subjects. In general, we have never observed airway irritation after intravenous lidocaine administration; it is not reported in the literature, and it is not likely to occur.

In fact, in dogs with hyperreactive airways, intravenous lidocaine completely blocks initial airway irritation by lidocaine aerosol as demonstrated by high-resolution computed tomography scans.[7] Furthermore, intravenous lidocaine also abolishes the response to mechanical stimulation (suctioning) in patients during general anesthesia without any report of adverse effects.[8,9]

Finally, the aim of our study[6] was not only to report the protective effect of intravenous lidocaine on hyperreactive airways (this has already been performed, and the use of intravenous lidocaine is recommended in review articles and standard textbooks), but to compare the magnitude of this effect under standardized conditions with an inhaled sympathomimetic drug (salbutamol) and to evaluate the effect of combined lidocaine and salbutamol administration. With respect to both our results and the literature, it is fully justified to recommend the combined use of intravenous lidocaine and salbutamol to prevent reflex bronchoconstriction.

Harald Groeben, M.D.
Oberarzt
Abteilung für Anästhesiologie
Universität Essen
D-45122 Essen, Germany
harald.groeben@uni-essen.de
Jürgen Peters, M.D.
Professor of Anesthesiology and Intensive Care Therapy Chairman
Abteilung für Anästhesiologie und Intensivmedizin
Universität Essen
D-45122 Essen, Germany

References

1. Groeben H, Silvanus MT, Beste M, Peters J: Both intravenous and inhaled lidocaine attenuate reflex bronchoconstriction but at different plasma concentrations. Am J Respir Crit Care Med 1999; 159:530–5
2. Weiss EB, Patwardham AV: The response to lidocaine in bronchial asthma. Chest 1977; 72:429–38
3. Loehning RW, Waltemath CL, Bergman NA: Lidocaine increased respiratory resistance produced by ultrasonic aerosols. ANESTHESIOLOGY 1976; 44:306–10
4. Makker HK, Holgate ST: The contribution of neurogenic reflexes to hypertonic saline-induced bronchoconstriction in asthma. J Allergy Clin Immunol 1993; 92:82–8
5. Enright PL, McNally JF, Souhrada JF: Effect of lidocaine on the ventilatory and airway responses to exercise in asthmatics. Am Rev Respir Dis 1980; 122:823–8
6. Groeben H, Silvanus MT, Beste M, Peters J: Combined intravenous lidocaine and inhaled salbutamol protect against bronchial hyperreactivity more effectively than lidocaine or salbutamol alone. ANESTHESIOLOGY 1998; 89:862–8
7. Bulut Y, Hirshman CA, Brown RH: Prevention of lidocaine aerosol-induced broncho-constriction with intravenous lidocaine. ANESTHESIOLOGY 1996; 85:853–9
8. Steinhaus JE, Gaskin L: A study of lidocaine as a suppressant of cough reflex. ANESTHESIOLOGY 1963; 24:285–90
9. Nishino T, Hiraga K, Sugimori K: Effects of i.v. lignocaine on airway reflexes elicited by irritation of the tracheal mucosa in humans anaesthetized with enflurane. Br J Anaesth 1990; 64:682–7

(Accepted for publication February 18, 1999.)