LIDOCAINE-INDUCED MYOCARDIAL INJURY

To the Editor:

I read with great interest the article "Ventricular Tachycardia, Myocardial Infarction, and Prolonged QT Interval: A Complication of Bronchoscopy" (*Hospital Physician* 1999;35[11]:41–45) by Hussain et al. The authors explained the most important mechanisms that can lead to myocardial injury during bronchoscopy. Lidocaine-induced methemoglobinemia is another mechanism that has the potential to induce myocardial injury, which was not reviewed in the article.

Methemoglobinemia is caused by impaired oxygen delivery to the myocardium from the methemoglobin that may be formed when lidocaine is used for topical anesthesia. Methemoglobinemia can cause arrhythmias, hypotension, and cyanosis. The diagnosis of methemoglobinemia should be suspected in a patient with a normal oxygen tension and generalized cyanosis or measured oxygen saturation that is much lower than that calculated for the alveolar tension. Measurement of the methemoglobin level confirms the diagnosis.

Patients who are undergoing bronchoscopy are prone to myocardial ischemia from hypoxia that is caused by pre-existing lung disease, methemoglobinemia, or atropine-induced tachycardia. Nonintubated patients who are undergoing bronchoscopy are at greater risk for myocardial ischemia than intubated patients because lidocaine is required in slightly higher quantities and the risk of hypoxia exists in nonintubated patients. Lidocaine can cause hypotension by myocardial depression and formation of methemoglobin (and thus methemoglobinemia); both of these conditions can precipitate myocardial infarction. To prevent the cardiac complications, it is important to know that routine use of atropine is not necessary in all patients undergoing bronchoscopy. In addition, I believe that routine postbronchoscopy electrocardiograms may not be necessary in all patients.

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In reply:

I thank Dr. Chittivelu for his letter. He appropriately suggests another mechanism of myocardial injury in the case that we presented. It is known that elevated methemoglobin levels induced by nitrates as well as by lidocaine (as was probable in our case) can impair the oxygen-carrying capacity of blood and potentially exacerbate ischemia, which may lead to myocardial injury.

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