Case Reports

Dose-Dependent Bronchospasm From Sulfites in Isoetharine

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ADVERSE reactions to sulfiting agents used as preservatives in foods and medications are being reported with increasing frequency. Many bronchodilator solutions contain sulfites as antioxidants. We have previously called attention to the fact that sulfate—preserved bronchodilator solutions will liberate sulfur dioxide when nebulized. Since the asthmatic airway has a heightened reactivity to sulfur dioxide, such exposure could place the asthmatic patient at risk. This article describes an asthmatic patient who experienced a paradoxical response to isoetharine containing sodium bisulfite as preservative.

Report of a Case

The patient was a 31-year-old aspirin-sensitive asthmatic woman whose condition was first diagnosed when she was 9 years of age. In addition to bronchodilators, she had been taking daily steroids since the age of 10 years. Between 1972 and 1975, the patient experienced four episodes of severe wheezing following the ingestion of dried apricots, wine, a restaurant salad, and guacamole dip. The wheezing was preceded by flushing, throat swelling, and palatal and generalized pruritus. She was hospitalized after each episode and, in addition, required mechanical ventilation after eating the apricots. Since sulfiting agents are commonly used in the processing of these foods, the patient strongly suspected that sulfites were responsible for her reactions.

The patient routinely used 1 mL of undiluted isoetharine in a hand bulb nebulizer for treatment of asthma. Each treatment consisted of three to four breaths, with symptomatic relief of dyspnea and wheezing. She did not use meter dose inhalers or nebulizers driven by compressed air because of pharyngeal irritation and cough when medications were given in this manner. In July 1988, she underwent routine pulmonary function testing to determine reversibility of airway obstruction. The patient was administered 0.5 mL of isoetharine and 0.5 mL of normal saline via a compressor-driven nebulizer. However, instead of bronchodilatation, a paradoxical decrease in expiratory flow rates was observed, accompanied by symptoms of throat irritation, chest tightness, and wheezing.

Based on her history, the 0.3% bisulfite preservative in the isoetharine solution was suspected of causing the paradoxical response experienced by this patient. The patient was studied by measuring results of complete pulmonary function tests using a variable-pressure, constant-volume body plethysmograph and a wedge spirometer at baseline and after each of the following challenges. Informed consent was obtained from the patient before each of the challenges. On successive days, following saline controls, the patient inhaled varying concentrations of isoetharine from a nebulizer and compressor or increasing inhalations from her hand bulb nebulizer containing undiluted isoetharine. The results are shown in the Figure. The maximum changes occurred five to ten minutes following baseline and reversed spontaneously after 30 minutes. The first set of bar graphs shows what occurred when the number of inhalations was kept constant and the concentration was varied. As the concentration of isoetharine increased, the percent change in forced expiratory volume in 1 s (FEV,) decreased instead of increasing as expected. The second set of bar graphs demonstrates what occurred when 1 mL of undiluted isoetharine was inhaled from the patient's hand bulb nebulizer. When the concentration of isoetharine was kept constant and the number of breaths varied, a similar dose response was seen. Four inhalations produced bronchodilatation, as would be expected. However, when the patient took 20 breaths, a paradoxical decrease in FEV,
CHAGAS' disease (American trypanosomiasis) is an infection caused by the protozoan parasite *Trypanosoma cruzi*. Despite the presence of the parasite in *Triatoma* insects (the vector of *T. cruzi*) and mammals across the southern United States, only two patients with indigenous Chagas' disease have been described; both were infants from Texas in 1955. We report herein the first recognized case of indigenous Chagas' disease in California and the first case reported in the United States since 1955.

### Report of a Case

In August 1982, a 56-year-old woman from Lake Don Pedro, Calif, 120 miles east of San Francisco, was admitted to the hospital after 16 days of fever. The patient had lived in east-central California for 19 years. She had traveled outside the United States only once, when she visited the California-Mexico border town of Mexicali for an afternoon in 1978. She had never received blood transfusions, nor did she...