Effect of Nicotine Gum on Gastric Emptying

To the Editor:

The rate of gastric emptying (GE) may affect the absorption of digoxin, penicillin and other drugs of importance to the pulmonologist.1 Aware that nicotine gum (NG) is often used in smoking cessation therapy,2 we looked at its effect upon GE. We measured GE times (GET1/2) using a Tc-99m-sulfur colloid-labelled meal3 in ten habitual cigarette smokers (36 to 76 years of age, mean 56 years) free of significant gastrointestinal history or recent complaints. Subjects fasted and refrained from smoking for eight to ten hours, then chewed gum containing 2 mg of nicotine (N) during one test and an identical gum devoid of N in the other. All were aware of a local sensation while chewing the NG, but no tests were interrupted because of these effects.

The difference in emptying times between NG and placebo gum was not statistically significant. There was no correlation between GE rate with NG and high vs low N cigarette use or pack-year history. We believe that this pilot study confirms the safety of using NG therapeutically, even in patients who are coincidentally taking medication which could be affected by significantly altered gastric motility.

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Postural Management of Bronchopleural Fistula

To the Editor:

The presence of bronchopleural fistula with a significant air leak poses a challenge during mechanical ventilation. I describe a ventilator-dependent patient who developed bronchopleural fistula with persistent large air leaks following thoracostentesis. By simply placing the patient in a decubitus position with the affected side down, we were able to temporarily seal the leak and thus maintain ventilation.

CASE REPORT

A 64-year-old man was brought to our hospital after being found unresponsive in his apartment. On admission, the patient was hypothermic and semiconscious. There was evidence of rhabdomyolysis, acute renal failure, myocardial ischemia with congestive heart failure, and severe hypoxemia. The patient was intubated. On the 24th hospital day he developed a parapneumonic effusion on the right side. Thoracostentesis was performed and a liter of exudative fluid was removed. Unfortunately, pneumothorax developed following thoracostentesis. The right lung reexpanded after a chest tube was inserted. Two days later, there was a recurrence of the pneumothorax requiring a second chest tube. On the respirator, it was noted that the exhaled spirometric volume was less than one-half of the set tidal volume, and that the chest tube bottle was bubbling vigorously. Bronchopleural fistula with a large air leak had developed. However, when the patient was placed in a right decubitus position, the chest tube bottle ceased bubbling and the exhaled volume approximated set tidal volume. Bubbling increased when the patient was turned to the left decubitus position. Thereafter, the patient was kept in the right decubitus position most of the time. Despite persistence of the fistula, we were able to ventilate the patient and maintain reasonable arterial blood gas levels until he succumbed to multiple organ failure one month later.

DISCUSSION

Bronchopleural fistulae may occur in any of three ways: 1) direct blunt or penetrating trauma, 2) complication of diagnostic or therapeutic procedures such as thoracostentesis, central intravenous line placement or thoracic surgery; and 3) barotrauma occurring as a complication of mechanical ventilation.1 Complications may be serious and include incomplete lung expansion, infection of the pleural space, and loss of tidal volume resulting in inadequate ventilation. Management of bronchopleural fistula in patients requiring mechanical ventilation is often difficult. These patients frequently have severe underlying parenchymal disease and multiple leaks, so that healing is difficult. Various techniques and devices to reduce the volume of the leak have been described.4,5 However, these are cumbersome, difficult to install and not always available. Surgical intervention may not be successful because of the underlying lung disease. Furthermore, these patients are usually poor surgical candidates. Thus a conservative approach is often desirable.

Postural management for treatment of bronchopleural fistula has not been well described in the medical literature. During mechanical ventilation, air movement is determined by positive pressure from the respirator rather than from negative pleural pressure due to contraction of the diaphragm. The positive pressure applied to the airway is opposed by the hydrostatic pressure gradient of the abdominal contents. As a result, the applied positive pressure displaces the diaphragm preferentially in the nondependent lung zones where the abdominal pressure is least.4 Since mechanical ventilation favors the nondependent lung, airflow through the bronchopleural fistula decreases when the side with the fistula is placed in the dependent position. This not only decreases air leakage through the bronchopleural fistula and helps maintain alveolar ventilation, but may also allow the fistula to heal.

Since postural manipulation can be easily carried out, I suggest that this should be tried in every patient with a persistent bronchopleural fistula.

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