Sputum Induction for Diagnosis of Pulmonary Tuberculosis

Ready for Prime Time?

To the Editor:

In his review of the clinical applications of induced sputum, Dr. Brightling states "sputum induction provides a real alternative to bronchoscopy and BAL in the diagnosis of pulmonary tuberculosis." However, it is the clinical utility of serial sputum induction as a primary diagnostic modality for pulmonary tuberculosis (TB) that should be emphasized.

In the diagnosis of pulmonary TB, sputum induction has been shown to have a better diagnostic yield than spontaneous sputum and gastric aspirates. Sputum induction fell into disuse, though, with the advent of fiberoptic bronchoscopy, which has become the primary method in many institutions. However, several studies have demonstrated that the diagnostic yield of one induced sputum is at least equivalent to that of one bronchoscopy with BAL, both in terms of acid-fast smear and mycobacterial culture. The diagnostic yield of induced sputa is further increased when multiple (three or more) specimens are obtained, with reported detection rates by smear of 91 to 98% and by culture of 99 to 100%, significantly higher than with bronchoscopy alone. Induced sputum is a very well-tolerated procedure, with extremely low rates of adverse events (most commonly, headache, and bronchospasm/cough). Bronchoscopy has the inherent risks of an invasive procedure requiring a sedative. Both procedures must be performed in an airborne infection isolation room with respiratory protective equipment to minimize the risk of nosocomial transmission. Cost analysis studies also favor sputum induction over bronchoscopy.

Sputum induction can also be used effectively to diagnose other infections, such as Pneumocystis jiroveci pneumonia, and for assessment of other pulmonary conditions, including malignancy, interstitial lung diseases, and granulomatous diseases. Thus, the rationale of performing bronchoscopy with BAL because of the perceived improved diagnostic yield in noninfectious pulmonary conditions may not always be valid. Rather than an "alternative" test, as described by Dr. Brightling, serial induced sputa should be considered as an inexpensive, and safe, primary diagnostic modality.

The authors have reported to the ACCP that no significant conflicts of interest exist with any companies/organizations whose products or services may be discussed in this article. Reproduction of this article is prohibited without written permission from the American College of Chest Physicians (www.chestjournal.org/misc/reprints.shtml).

Christopher E. Brightling, PhD, FCCP
Glenfield Hospital
Leicester, UK

The authors have no financial or other potential conflicts of interest.

REFERENCES

1 Brightling CE. Clinical applications of induced sputum. Chest 2006; 129:1344–1348

Christopher E. Brightling, PhD, FCCP
Glenfield Hospital
Leicester, UK

I would like to thank Drs. Vinh and Menzies for their comments on the recent review in CHEST (May 2006) of the clinical applications of induced sputum testing.

The review was focused on the added value that sputum induction provides the clinician when managing patients with airways disease; in particular, that the presence of a sputum eosinophilia is important in the diagnosis of nonasthmatic chronic cough and is beneficial in guiding corticosteroid therapy in asthma patients. The value of sputum induction in the setting of other respiratory diseases such as the diagnosis of pulmonary tuberculosis (TB) and lung cancer, and its potential role in interstitial lung disease were highlighted but were given less prominence in the review.

Drs. Vinh and Menzies championed the role of induced sputum in the diagnosis of pulmonary TB. I agree that, compared to bronchoscopy, repeated induced sputum testing offers many advantages in terms of safety and cost with at least comparable if not greater diagnostic yield. Induced sputum testing in the diagnosis of pulmonary TB carries a risk of nosocomial TB; therefore, it is important to reiterate that it needs to be performed under conditions of respiratory isolation.

Therefore, induced sputum testing has a role in the management of several respiratory conditions and should be a technique that is widely available to respiratory physicians.

The Clinical Applications of Induced Sputum

To the Editor:

In his review of the clinical applications of induced sputum, Dr. Brightling states "sputum induction provides a real alternative to bronchoscopy and BAL in the diagnosis of pulmonary tuberculosis." However, it is the clinical utility of serial sputum induction as a primary diagnostic modality for pulmonary tuberculosis (TB) that should be emphasized.

In the diagnosis of pulmonary TB, sputum induction has been shown to have a better diagnostic yield than spontaneous sputum and gastric aspirates. Sputum induction fell into disuse, though, with the advent of fiberoptic bronchoscopy, which has become the primary method in many institutions. However, several studies have demonstrated that the diagnostic yield of one induced sputum is at least equivalent to that of one bronchoscopy with BAL, both in terms of acid-fast smear and mycobacterial culture. The diagnostic yield of induced sputa is further increased when multiple (three or more) specimens are obtained, with reported detection rates by smear of 91 to 98% and by culture of 99 to 100%, significantly higher than with bronchoscopy alone. Induced sputum is a very well-tolerated procedure, with extremely low rates of adverse events (most commonly, headache, and bronchospasm/cough). Bronchoscopy has the inherent risks of an invasive procedure requiring a sedative. Both procedures must be performed in an airborne infection isolation room with respiratory protective equipment to minimize the risk of nosocomial transmission. Cost analysis studies also favor sputum induction over bronchoscopy.

Sputum induction can also be used effectively to diagnose other infections, such as Pneumocystis jiroveci pneumonia, and for assessment of other pulmonary conditions, including malignancy, interstitial lung diseases, and granulomatous diseases (eg, sarcoidosis). Thus, the rationale of performing bronchoscopy with BAL because of the perceived improved diagnostic yield in noninfectious pulmonary conditions may not always be valid. Rather than an "alternative" test, as described by Dr. Brightling, serial induced sputa should be considered as an inexpensive, and safe, primary diagnostic modality.