We agree that a 7 percent chest intubation rate for pneumothorax is not insignificant. However, this rate is comparable to that reported using other techniques. Moreover, we would like to point out that our threshold for chest intubation was low: regardless of whether or not there was respiratory distress, we inserted a chest tube whenever there was a 15 percent pneumothorax.

We believe that the size of the needle conventionally used for percutaneous needle aspiration is not the most important determinant of the incidence of pneumothorax. Instead, the condition of the patient’s lung is the most important determinant. The normal lung seems capable of sealing to prevent significant air leak following puncture by needles of varying caliber. However, even the fine needles are likely to cause air leak if they pass through blebs or bullae, which are frequently present in patients with emphysema.

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The Cost of Lavage

To the Editor:

In his editorial on clinical use of bronchoalveolar lavage (Chest 1987; 92:71-72), Dr. Springmeyer states: "Bronchoscopic examination without lavage is an incomplete evaluation in the diagnosis of diffuse lung disease." He enumerates a number of specific tests of lavage fluid that may be diagnostically useful, including cell count and differential, lymphocyte T4:T8 ratios and cell surface markers, special stains (GMS, iron), culture and viral cultures, electron microscopy and cytology.

Lavage is a simple procedure to perform but an expensive one to interpret. Taking a hypothetic patient with undiagnosed diffuse pulmonary infiltrates, we examined the cost of performing the above analyses individually at our institution. The total laboratory charge would be $465. This is apart from the cost of biopsy interpretation or any other costs associated with the performance of bronchoscopy. We will leave aside the issue of where this cost will fall in the current era of prospective payment. We will also assume that Dr. Springmeyer must not mean that every test should be performed in every patient. Clearly, discretion should be used in ordering lavage fluid analyses, just as in any other use of the laboratory. The real question is the utility of the tests. It is not enough to state, as Dr. Springmeyer does, that lavage is useful in the diagnosis of several diffuse lung diseases. Rather, we need to decide if it is cost effective to supplement or replace transbronchial lung biopsy with bronchoalveolar lavage.

In our opinion, sufficient data are not currently available to draw this conclusion. Lavage is clearly indicated in the circumstance where biopsy cannot be performed, i.e., in the patient with a bleeding diathesis. Perhaps in some patients with risks for opportunistic infection lavage may supplement biopsy. This seems to be particularly true in bone marrow transplant recipients, where transbronchial lung biopsy has been shown to often be unrevealing. However, in a prospective study of the utility of lavage in diffuse lung disease, Stoller et al showed that major diagnostic changes suggested by lavage results were always confirmed by transbronchial biopsy. In the important idiopathic interstitial diseases and in many infections, it is not clear that lavage results add important diagnostic information to biopsy.

Until prospective studies are available to support their utility, we should be judicious in ordering additional expensive tests on bronchoscopic specimens.

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REFERENCES


To the Editor:

Drs. Schiff and Palmer raise several legitimate issues. Every possible lavage test should not be performed on each sample. Tailoring the lavage analysis requires detailed communication between the ordering physician and an experienced technologist. The technologist should be working regularly with lavage fluid analysis and have the support of specialized laboratories including microbiology, hematology, cytology and immunohistochemistry. A central laboratory design that would accomplish these goals has been described.1

Certainly a cost-benefit analysis of bronchoalveolar lavage would be welcome. Unfortunately such studies are complex and the results may be outdated when completed. Until cost-benefit studies are done, these tests should be used judiciously. I disagree with Drs. Schiff and Palms’ statement about patients at risk for opportunistic infection. Most investigations of these patients have concluded that lavage, not transbronchial biopsy, is the preferred procedure for the initial evaluation of pulmonary infiltrates. Therefore, any patient that could be at risk for opportunistic infection should have bronchoalveolar lavage as part of diagnostc bronchoscopy. A bronchoscopic procedure for diffuse pulmonary infiltrates without lavage is an incomplete evaluation. There are certainly occasions when an incomplete evaluation is appropriate and I do not intend to imply that lavage should accompany every bronchoscopic procedure. However, in unusual or complex cases the clinician should realize that the addition of bronchoalveolar lavage (with proper analysis) may improve their diagnostic reasoning.

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REFERENCE


Pneumomediastinum or Auto-PEEP?

To the Editor:

I read with interest the article by Shennib et al describing surgical decompression of a tension pneumomediastinum complicating mechanical ventilation in status asthmaticus. The authors suggested that surgical decompression for mediastinal emphysema should be contemplated if an intubated asthmatic patient develops electromechanical dissociation without obvious hypovolemic or cardiogenic causes. I am surprised that the auto-PEEP effect was not considered in the discussion. The auto-PEEP effect has been
well described by Pepe and Marini and is an important cause of hypotension in mechanically ventilated patients. The lungs are unable to exhale to FRC at the start of the next mechanically initiated inspiration because of airway obstruction. Positive end expiratory intrathoracic pressure builds up, although this cannot be shown on the ventilator manometer. The patient described by Shennib et al could have had this cause for hypotension, rather than mediastinal emphysema. Restoration of blood pressure after sternotomy and recurrence of hypotension on closing the chest supports this view.

Auto-PEEP can be assessed by occluding the expiratory line at the end of the set exhalation period and delaying the next ventilator-delivered breath. Pressure in the tubings will equilibrate with intrathoracic pressure, and PEEP will be shown on the ventilator manometer. If this pressure is high, tidal volume or ventilatory rate needs to be decreased. Hypercapnea may result from this reduction of minute volume, but it is better to keep the patient hypoventilated and alive than risk the consequences of high auto-PEEP.

This should always be considered before proceeding to surgical decompression of any pneumomediastinum or laying the chest cavity open.

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REFERENCES

To the Editor:

Dr. Tse's comment on the role of auto-PEEP in the development of hypotension in ventilated, airway-obstructed patients is well taken. Auto-PEEP can result in electromechanical dissociation by both increasing intrathoracic pressure and by disruption of the alveoli. The latter can further compound the situation by resulting in pneumothorax, pneumomediastinum and systemic air embolism (including coronary air embolism). When changing tidal volumes and ventilatory rates fail to reverse the deleterious status of these patients, as in our case, surgical decompression (including sternotomy) can buy time and may be life-saving.

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The Newest Quinolone Antibacterial Agents and Theophylline

To the Editor:

We have described the effect of new quinolone antibacterial agents on the serum concentration of theophylline. In this issue, we report the interaction of theophylline and quinolone antibacterial agents newly developed or under development in Japan.

Quinolone antibacterial agents tested were NY-198 (Hokuriku Seiyaku Co, Ltd), T-3262 (Toyama Chemical Co, Ltd) and AM-833 (Ro23-6240, Kyorin Pharmaceutical Co, Ltd). Chemical structures of these antibacterial agent, five healthy male volunteers received a sustained-release preparation of theophylline orally (200 mg bid for four days), followed by oral antibacterial agents for five days. The doses of NY-198, T-3262 and AM-833 were 200 mg tid, 150 mg tid and 200 mg bid, respectively. Serum theophylline levels were monitored at three and five days after the start of concomitant administration of antibacterial agents.

NY-198 and AM-833 showed no interaction effect. T-3262 showed a significant increase in serum theophylline level with a 1.23 times increase in Cmax and a 1.24 times increase in AUC, but no adverse reaction due to this increased theophylline level was noted. This effect is identical with that of ciprofloxacin and pefloxacin, and care should be taken when the theophylline is concomitantly administered with T-3262.

Furthermore, it is considered that NY-198 and AM-833, like ciprofloxacin, may be used together with theophylline.

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NY-198

T-3262

AM-833

FIGURE 1. Chemical structure of the newest quinolone antibacterial agents.