To the Editor:

It is important to examine the basic premises of cost reduction as well as statistical analysis of sensitivity and specificity in the use of laboratory tests to answer the questions raised by Drs. Sbarbaro and Gangadharam. If, in an area of diagnosis, disease prevalence is low and/or declining rapidly (as in the case with tuberculosis), the chances that a test will generate false positives climbs proportionately. If in the same population one first uses a screening procedure to increase the prevalence of disease in the population at risk, then the test will have a greater yield when applied. As a result, a good, inexpensive screening procedure can both increase the rate of positives in the index population tested and reduce the number of definitive tests conducted. The latter, of course, may save considerable amounts of money.

The criticisms offered seem to ignore these basic considerations on the use of screening by chest x-ray examination and skin test prior to the performance of expensive confirmatory testing by sputum culture study and acid-fast stain. In our original paper, other potential clinical screening variables including cough, prior TB exposure and other components of the history and physical examination were described and their screening sensitivity and specificity reviewed. As noted, the chest x-ray examination and skin test were the most predictive single screening variable. Far from ignoring the patients with newly diagnosed tuberculosis who may have negative or insignificant tuberculin tests, we emphasized this in the articles. We also emphasized, however, that in many cases, sputum culture was being utilized to complete the work-up in instances where the chances of a patient having tuberculosis were vanishingly small. This approach, possibly common in a medical school teaching institution, is extremely wasteful and to be deplored. What is needed is an orderly and thoughtful selection of diagnostic strategies designed to best fit the patient. This should result in a sequence of tests designed to select from progressively more likely possibilities to confirm a diagnosis. The investigators involved in this study did indeed have evidence showing that physicians were indiscriminately ordering excessive specimens, as witnessed by the low level of positives initially found. Thus, the requirement that a chest x-ray examination and skin test be performed (and as emphasized, not necessarily have positive information) is used as a teaching tool to emphasize the appropriate approach to a patient suspected of tuberculosis. The fact that this minimal but logical road block to indiscriminant ordering resulted in rapid decline in the use of such a test without any loss of diagnostic precision was the point of the article, apparently missed by Dr. Gangadharam.

Finally, we take great exception to the contention that physicians are the only arbiters of what procedures need be carried out on patients. Many studies have already indicated that this indiscriminate shot-gun approach in which the physician exercises his rights to the utmost, results in expensive and inappropriate medical care. Physicians must have the economic impact of their actions brought to their attention, so that the use and abuse of laboratory facilities in lieu of more thoughtful diagnostic efforts may be altered and excessive hospital costs reduced.

REFERENCES


Occlusion of the Endotracheal Tube

To the Editor:

We recently observed two patients with Pneumocystis pneumonia and respiratory failure who developed partial occlusion of the distal endotracheal tube due to inspissated secretions. As the alveolar filling process continues in this group of patients, progressive decrease in lung compliance and progressively increasing airway pressure are expected. Both patients were noted to have peak airway pressures of 80 to 90 cm H2O when receiving tidal volumes of 0.8 to 0.9 L, and both patients had minute volumes of 25 to 32 L/min.

The first patient underwent fiberoptic bronchoscopy and was found to have yellow, thickened secretions adherent to the distal 4 to 5 cm of the ETT, preventing passage of the bronchoscope through the 9 mm ETT. With vigorous manipulations of the scope, the tube was eventually cleared and peak pressures fell to the 40 to 50 range.

A second patient (with pneumocystis) was noted to be difficult to suction due to difficulty passing the suction catheter through the 9 mm ETT, and peak airway pressures were in the same range as the first patient. With the use of large suction catheters and aggressive suctioning, pieces of up to 1 cm of dried secretions were removed from the ETT, with subsequent reduction in the peak pressure to S5.

We report these two cases so as to alert physicians caring for this group of patients to the increases in airway pressure that may be secondary to endotracheal tube occlusion and not solely due to decreased lung compliance. Although adherence of secretions to the ETT can occur in any patient, we have observed this in two of ten patients with AIDS and Pneumocystis pneumonia, in one year, that have been mechanically ventilated. Both of these patients were intubated for less than one week before this problem occurred.

These patients typically have respiratory alkalosis prior to intubation, due to their interstitial disease, and we have observed that this respiratory pattern continues, even after intubation and mechanical ventilation. The patient with Pneumocystis who requires ventilatory support usually has extremely high minute volume, frequently greater than 30 L/min, which is at the upper limit of the minute volume that many ventilators can deliver. When we have bronchoscopically examined these patients, they usually have minimal amounts of clear secretions.

It is hypothesized that the high minute volume of these patients contribute to the inspissation of secretions in these patients. It is also possible that some characteristic of the Pneumocystis organism in secretions causes altered adherence characteristics of the sputum, resulting in this problem.

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Fibronectin Concentration in Pleural Effusions

To the Editor:

Fibronectin (FN) is an opsonizing glycoprotein found in plasma.
Table 1—Fibronectin Concentration in Pleural Effusions

<table>
<thead>
<tr>
<th>Etiology of pleural effusion</th>
<th>No. of Patients</th>
<th>Concentration of fibronectin (µg/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuberculous</td>
<td>45</td>
<td>211±11.6</td>
</tr>
<tr>
<td>Neoplastic</td>
<td>40</td>
<td>190±25.9</td>
</tr>
<tr>
<td>Metapneumonic</td>
<td>27</td>
<td>81±10.3</td>
</tr>
<tr>
<td>Cardiac failure</td>
<td>23</td>
<td>43±7.7</td>
</tr>
<tr>
<td>Idiopathic</td>
<td>13</td>
<td>131±9.6</td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td>8</td>
<td>91.5</td>
</tr>
<tr>
<td>Empyema</td>
<td>5</td>
<td>94</td>
</tr>
<tr>
<td>Connective tissue diseases*</td>
<td>5</td>
<td>134.8</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>10</td>
<td>85.4</td>
</tr>
</tbody>
</table>

*Three cases of systemic lupus erythematosus and 2 rheumatoid arthritis.
†Three cases of thoracic traumatism, 2 pancreatitis, 1 subphrenic abscess, 1 amyloidosis, 1 postirradiation pleuropneumonitis, 1 Dressler syndrome and 1 lymphoplasmyocitary interstitial pneumonitis.

and in the extracellular matrix of most tissues. It is synthetized and secreted by a variety of cells such as macrophages, fibroblasts, hepatocytes and neoplastic cells in culture.1 Recently, Schölmerich et al2 and Deverbizer et al3 communicated that the concentration of FN in ascitic fluid allows us to differentiate neoplastic from non-neoplastic ascitis. We have studied the utility of FN as tumoral marker in pleural effusions (PE).

We studied the concentration of FN in 176 patients with PE distributed as shown in Table 1. The concentration of FN was assessed by single radial immunodiffusion (LC-Partigen-Fibronectin, Beringwerke Ag, Marburg, FRG). Student's t-test was used for statistical evaluation of the data. The results are expressed as mean values plus standard error of the mean.

The concentrations of FN are shown in Table 1. The highest levels of FN were found both in tuberculous as well as neoplastic PE. No significant statistical difference was found between these two groups, but there was a large significant difference between any of these two groups and the rest of the others. Our results disagree with those of Klockars et al,4 who reported the highest concentration of FN in PE associated with connective tissue diseases.

Contrary to what happens in ascitis,1,3 from our results we conclude that the concentration of FN in PE is not an appropriate tumoral marker since it does not differentiate between tuberculous and neoplastic PE. This fact decreases its diagnostic utility in countries such as ours (Spain) with a high incidence of tuberculous pleurisy. Perhaps in other countries with a low incidence of tuberculous pleurisy the concentration of FN may be useful due to the significant statistical differences between neoplastic PE and any of the other non-tuberculous manifestations.

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REFERENCES

Gag Reflex in Disease

To the Editor:

In six patients of 12 who were followed after a severe episode of asthma resulting in near death, gag reflex was absent upon examination of their throats for evidence of oral Candidiasis from high-dose beclomethasone therapy. Because absence of this reflex could predispose patients to aspiration, gag reflex status may be a useful clinical clue in identifying asthmatic patients at risk for severe episodes. A higher prevalence of impaired gag reflexes would then be expected among this group compared to patients with or without other respiratory problems.

We have compared the prevalence of palatal and pharyngeal reflexes among 127 adult patients. The gag reflexes were tested by gently stroking the mucosa of the soft palate and posterior pharynx, respectively, with a cotton swab stick. We excluded patients with a history of stroke or other neurologic disease and patients with a recent history of administration of local anesthetics or opiates. Near-miss asthma death patients (n = 12), other respiratory patients (including patients with asthma, chronic obstructive airways disease and other chronic lung disease, n = 72), as well as patients without respiratory disease (n = 43) did not differ markedly in the prevalence and strength of gag reflexes. An overall prevalence of 31 percent absent palatal reflex and 33 percent absent pharyngeal reflex was found. Gag reflex response was unrelated to patient age and sex. Our sample includes too few patients who experience a near-miss asthma death to draw firm conclusions, but this phenomenon warrants further observation.

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