To the Editor:

Exacerbations of chronic bronchitis are commonly characterized by increases in dyspnea, cough, and purulent sputum production. The role of bacterial infection in this disease is unclear because of the heterogeneity of the patients studied and the inaccuracy of routine expectorated sputum cultures in characterizing the tracheobronchial microflora in these patients. We recently conducted a prospective study of quantitative culture of the distal bronchial microflora in acute exacerbations of chronic bronchitis.

In 20 patients who required hospital admission because of an acute exacerbation of chronic bronchitis, written consent was obtained to perform fiberoptic bronchoscopy and culture of bronchial secretions obtained with a protected brush catheter. None of the patients had received antimicrobial therapy in the preceding 15 days, and their chest roentgenograms did not show alveolar infiltrates. The brush specimens were placed on agar plates for aerobic culture and were incubated for 48 h in a 5 percent CO₂ atmosphere.

The results of quantitative cultures of the protected brush specimens are shown in Table 1. In 18 of the 20 samples (90 percent) some organisms were isolated, and in 15 (75 percent) the concentration was equal to or greater than 10⁴ colony-forming units (CFU) per specimen. In 14 of the 20 samples (70 percent), Streptococcus pneumoniae, Haemophilus influenzae, or Moraxella catarrhalis organisms were isolated. In 10 cases (55 percent of the positive specimens), more than one organism grew (2.2 ± 1.3 organisms per sample). Haemophilus influenzae and M catarrhalis organisms were always isolated as part of a mixed flora, while 5 of 9 strains of S pneumoniae were obtained in pure culture (0 vs 55 percent; p = 0.04, Fisher test). The common respiratory pathogens (S pneumoniae, H influenzae, and M catarrhalis) grew in concentrations equal to or greater than 10⁴ CFU per specimen more frequently than the other microorganisms (77 vs 13 percent; p < 0.001, χ² test).

In our experience, bronchial secretions from the majority of patients with an acute exacerbation of chronic bronchitis show bacterial densities equal to or greater than 1 million organisms per milliliter (> 10⁵ CFU per specimen). We have also observed that S pneumoniae, H influenzae, and M catarrhalis are present in concentrations more elevated than those of other organisms, which would support their pathogenic role in the exacerbation, according to other authors.

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References

Iatrogenic Aspiration Follow-Up

To the Editor:

This letter is a follow-up to my previous article entitled Iatrogenic Aspiration of Components of Respiratory Care Equipment, which was published in the March, 1993 issue of Chest (Chest 1993; 103:964-165). It has come to my attention that Ballard Medical Products has modified the configuration of their Trach Care Suction catheter such that the washer is now contained within a glued cartridge. This modification seems to have avoided the potential hazard we have previously described from its improper disassembly in the previous configuration while the Ballard closed system catheter has always been a useful tool in the ICU, this improved product modification will prevent improper disassembly of the catheter unit and thus the possibility of an aspirated washer is very unlikely to occur.

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Table 1 — Frequency and Count of Organisms Recovered From Protected-Brush Specimens*

<table>
<thead>
<tr>
<th>Organism</th>
<th>Concentration, CFU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Streptococcus pneumoniae</td>
<td>9</td>
</tr>
<tr>
<td>Haemophilus influenzae</td>
<td>5</td>
</tr>
<tr>
<td>Moraxella catarrhalis</td>
<td>3</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>1</td>
</tr>
<tr>
<td>Neisseria Meningitis</td>
<td>1</td>
</tr>
<tr>
<td>Others†</td>
<td>22</td>
</tr>
</tbody>
</table>

*Values are numbers of hafteat strains isolated in the 20 specimens obtained. CFU = colony-forming units.
†Streptococcus viridans, 12 specimens; Neisseria sp., 5; diphtheroids, 2; coagulase-negative Staphylococcus organisms, 1; Streptococcus agalactiae, 1; Pasteurella multocida, 1.