Serodiagnosis of Pulmonary Disease
Due to Mycobacterium avium
Complex Proven by Bronchial Wash Culture

To the Editor:

The diagnosis of *Mycobacterium avium* complex (MAC) pulmonary disease (MAC-PD) is often complicated and time consuming. MAC-PD is diagnosed according to the guidelines set forth by the American Thoracic Society in 2007, which include clinical and microbiologic criteria. ¹ Bronchoscopy to obtain bronchial wash for a bacterial culture is often considered in patients in whom MAC-PD is difficult to diagnose by routine sputum examination; however, it is difficult to perform bronchoscopy in all patients. A novel approach to help diagnose such cases has been needed.

We previously reported the usefulness of a serodiagnostic test to determine serum IgA antibodies against a mycobacterial glycopeptidolipid (GPL) core for diagnosing MAC-PD proven by sputum culture.² ³ The present study was conducted to assess the accuracy of this test by comparing the results with bronchial wash cultures in patients with MAC-PD and negative sputum culture.

 Bronchoscopy was performed in 56 patients suspected to have MAC-PD based on their symptoms and the presence of small nodular infiltrates with bronchiectasis on chest CT scans. None of the patients were known to be seropositive for HIV. The results of the bronchial wash cultures were positive for MAC in 28 patients (50%), who then received a diagnosis of MAC-PD. The culture results were negative for MAC in the remaining one-half, who were assigned to the non-MAC disease group. The levels of serum IgA antibody against the GPL core antigen of MAC were measured using an enzyme immunoassay kit (TAUNS Laboratory Inc; Shiznoku, Japan) before bronchoscopy, and the values were compared between the two groups.

Serum IgA antibody levels to GPL core antigen were significantly higher in the MAC-PD group (5.0 ± 4.7 U/mL) than in the non-MAC disease group (0.1 ± 0.3 U/mL) (P < .0001). With the cutoff value set at 0.7 U/mL according to a previous study,⁴ the number of patients with seropositivity and seronegativity with or without MAC-PD is summarized in Table 1. The sensitivity, specificity, and positive and negative predictive values for diagnosing MAC-PD were 78.6%, 96.4%, 95.7%, and 81.8%, respectively.

In conclusion, the serodiagnostic test can accurately predict MAC positivity when compared with the results of bronchial wash cultures and may be safe and useful as an adjunct to diagnose MAC-PD. In particular, we consider that this approach may be useful in elderly patients for whom bronchoscopy cannot be performed because of other underlying conditions or in patients who are reluctant to undergo such an invasive procedure for very mild signs and symptoms.

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References

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## REFERENCES


## Table 1—Results of the Serodiagnostic Test for Mycobacterium avium Complex Pulmonary Disease

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>Age, y</th>
<th>Sex, M (F)</th>
<th>Seropositive</th>
<th>Seronegative</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC-PD, n = 28</td>
<td>65.8 ± 8.8</td>
<td>0 (28)</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Non-MAC disease, n = 28</td>
<td>62.5 ± 13.7</td>
<td>10 (18)</td>
<td>1</td>
<td>27</td>
</tr>
</tbody>
</table>

The levels of serum IgA antibody to GPL core antigen were significantly higher in the MAC-PD group than in the non-MAC disease group ($P < .0001$). The sensitivity and specificity for diagnosing MAC-PD were 78.6% and 96.4%, respectively. GPL = glycopeptidolipid; MAC = Mycobacterium avium complex; MAC-PD = M avium complex pulmonary disease.

High Prevalence of *Pseudomonas aeruginosa* From Oropharyngeal Biofilm in Patients With Cerebrovascular Infarction and Dysphagia

To the Editor:

Aspiration pneumonia develops after the aspiration of colonized oropharyngeal contents. The elderly or patients with cerebrovascular disease (CVD) are often subjected to aspiration pneumonia because bacteria colonized in the oral cavity and oropharynx easily enter the lung during sleep and usually undergo repeated silent aspiration. Aspiration pneumonia is increasing in patients with dysphagia, and aspiration pneumonia-associated mortality is a most serious problem in elderly patients. Interestingly, it has been reported that oral health care for elderly patients in nursing homes reduces bacterial pneumonia. Therefore, it is very important to determine the characteristics of oropharyngeal microflora in patients with CVD to plan the optimum oral care to prevent aspiration pneumonia. From this standpoint, we investigated initial pharyngeal microflora in patients with CVD and dysphagia requiring daily nursing (Table 1). This study protocol was approved by the Ethics Committee of Chikamori Rehabilitation Hospital. We collected swab samples from the oropharynx of 55 patients with CVD (26 with dysphagia and 29 without dysphagia).

To count the colony-forming units, the swabs, which were diffused into sterile medium, were inoculated onto agar plate using the spiral system as described previously. In addition to bacterial culture, polymerase chain reaction with bacterial-specific primers was used for bacterial identification. A higher prevalence (38.5%; 10/26) of *Pseudomonas aeruginosa* was observed in patients with CVD and dysphagia than in patients with CVD and without dysphagia (3.4%; 1/29; $P < .01$). The prevalence of *Staphylococcus* spp (30.7% and 24.1%, respectively) and *Candida* spp (46.2% and 31.0%, respectively) in both groups was similar. Moreover, the bacterial number of *P aeruginosa* in patients with CVD and dysphagia was significantly higher than in the group without dysphagia. Ten (47.6%) of 21 patients with CVD and dysphagia who needed complete or some assistance in daily living had *P aeruginosa* in their oropharyngeal microflora. Regarding the mode of nutritional intake, seven (63.6%) of 11 patients with CVD and dysphagia who were administered nutrition through a catheter had *P aeruginosa* in their oropharyngeal microflora. Interestingly, four (25%) of 16 patients with CVD and dysphagia whose test results were negative for *P aeruginosa* in oropharyngeal microflora were also administered nutrition through a catheter, and only one (3.4%) of 29 patients with CVD and without dysphagia had positive test results for *P aeruginosa* in oropharyngeal microflora.

High prevalence of *Pseudomonas aeruginosa* from oropharyngeal microflora in patients with CVD is increased by the status of dysphagia, not catheter use. Our data highlight that the care of oropharyngeal microflora, especially *P aeruginosa*, may be important to prevent aspiration pneumonia in patients with CVD and dysphagia.