Plasmalyte as a Cause of False-Positive Results for Aspergillus Galactomannan in Bronchoalveolar Lavage Fluid

The detection of galactomannan (GM) in the serum of immunocompromised patients is widely used for the early diagnosis of invasive aspergillosis (6). The test may also be useful when applied to bronchoalveolar lavage (BAL) fluid specimens for clinical diagnosis (5), though not FDA approved for this use. One important limiting factor for GM testing is the potential for false-positive results. Most notably, concomitant administration of piperacillin-tazobactam (1, 8) or amoxicillin clavulanate (4) antibiotics can cause false-positive results. This confounder is clinically important as many patients at risk for invasive aspergillosis receive these antibiotics.

Applying antigen detection strategies to BAL fluid diagnostics can be a potentially powerful tool (3, 5). However, it was unclear if a BAL specimen would have inherent problems with measurement of GM as bronchoscopy is not a sterile technique and contaminating fungal elements are often captured as the bronchoscope passes through the upper airway.

As part of an off-label investigation, we recently noted highly positive Aspergillus galactomannan (Platelia aspergillus kit; Bio-Rad) antigen results in 19 consecutive BAL specimens from a single institution from 19 different patients who were treated at a single institution (Table 1). Samples were collected and banked according to institutional review board guidelines for research. The galactomannan index (GMI) was uniformly high (4.1 to 8.2) in these specimens. The BAL fluids were collected for posttransplant surveillance from lung transplant recipients with no evidence of infection, mostly to monitor for allograft rejection. Serum specimens were not tested, however. Fungal cultures yielded no fungal growth in 17 specimens, 1 Aspergillus fumigatus growth from one specimen, and 2 Paecilomyces sp. growth from another. This pattern of positivity was not seen with BAL samples from other institutions tested at this laboratory (MiraVista Diagnostics, Indianapolis, IN); about 10% of these specimens are positive, and GMIs are about 10% of these specimens are positive, and GMIs are required to address these issues.

In conclusion, Plasmalyte contains small amounts of Aspergillus galactomannan and can cause false-positive results in BAL specimens. Although not demonstrated, intravenous administration of Plasmalyte should also be considered a potential cause for false antigenemia.

REFERENCES


TABLE 1. Samples tested for GM

<table>
<thead>
<tr>
<th>Test specimen</th>
<th>No. positive/no. tested</th>
<th>Galactomannan index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human BAL fluid with Plasmalyte for lavage</td>
<td>19/19</td>
<td>4.1–8.2</td>
</tr>
<tr>
<td>Human BAL fluid with normal saline for lavage</td>
<td>0/5</td>
<td>0.24–0.34</td>
</tr>
<tr>
<td>Plasmalyte solution (four different lots)</td>
<td>4/4</td>
<td>5.4–5.6</td>
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