Response

To the Editor:

We appreciate the interest of Dr Barbarito and colleagues in our recent study comparing the total face mask (TFM) with oronasal mask (ONM) for the treatment of acute respiratory failure in patients receiving noninvasive ventilation (NIV). Our primary (mask comfort and time to apply) and secondary (vital signs and gas exchange parameters over time) endpoints showed no differences. In the interest of conserving space, we did not show the data for the time course of PaCO₂ in the two groups. Figure 1 shows that after purging of early discontinuers (ie, those who discontinued NIV while still requiring ventilatory assistance) to provide a better idea of evolution over time.

Dr Barbarito and colleagues also requested information on the total duration of mechanical ventilation. As they mention, the median duration of NIV use was longer with the ONM than the TFM, excluding the duration of use after switching to the alternative mask. However, when that duration is included, the median duration of NIV tended to be shorter in the ONM group (23 h; interquartile range, 4.6-51.3; n = 18) than in the TFM group (56.9 h; interquartile range, 15.7-98.4; n = 12). The reason for these disparities is that more patients discontinued NIV early with a shorter duration of use in the TFM than the ONM group (n = 16 vs 12, 0.7 vs 3.7 h), and patients using ONM were more apt to switch to the alternative mask (n = 8 of 16 patients using TFM vs 0 of 12 patients using ONM, P < .05).

This disparity in willingness to switch between the two groups is remarkable, and Barbarito and colleagues ask for more detail on the reasons. Of the 12 patients using ONM who discontinued NIV early, five required prompt intubation. Two other patients had do-not-intubate orders and died while using the mask. The other five patients were offered the TFM but declined. One was claustrophobic and refused any other masks; the other four were frightened by the large appearance of the TFM and declined. One of the patients using ONM compared with none of the patients using TNM had previously used NIV at home. As mentioned in the article, 1 respiratory therapists were instructed to apply every effort to encourage patients to use either mask type. However, since blinding was not possible, we cannot exclude the possibility that clinician bias played a role in this disparity in willingness to switch.


REFERENCES

Table 1—Functional and BALF Features in Patients With or Without Parenchymal Lung Disease

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sarcoidosis API Group (n = 9)</th>
<th>Sarcoidosis PI Group (n = 9)</th>
<th>P Values*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex, male (female)</td>
<td>7 (2)</td>
<td>7 (2)</td>
<td>...</td>
</tr>
<tr>
<td>Mean age at BAL, y</td>
<td>12 ± 1</td>
<td>12 ± 1</td>
<td>...</td>
</tr>
<tr>
<td>Lung functions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC, % predicted</td>
<td>89 ± 5</td>
<td>70 ± 9</td>
<td>...</td>
</tr>
<tr>
<td>Cl,dyn, % predicted</td>
<td>69 ± 6</td>
<td>45 ± 7</td>
<td>.03</td>
</tr>
<tr>
<td>BALF parameters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total cell, ×10^6/mL</td>
<td>2.1 ± 0.2</td>
<td>3.1 ± 0.4</td>
<td>...</td>
</tr>
<tr>
<td>Macrophages, %</td>
<td>65 ± 7</td>
<td>47 ± 6</td>
<td>...</td>
</tr>
<tr>
<td>Lymphocytes, %</td>
<td>27 ± 5</td>
<td>42 ± 7</td>
<td>...</td>
</tr>
<tr>
<td>Neutrophils, %</td>
<td>2.0 ± 0.8</td>
<td>1.0 ± 0.4</td>
<td>...</td>
</tr>
<tr>
<td>ProSP-C, AU</td>
<td>8 ± 5</td>
<td>26 ± 13</td>
<td>.009</td>
</tr>
<tr>
<td>Mature SP-C, AU</td>
<td>18 ± 4</td>
<td>5 ± 1</td>
<td>.03</td>
</tr>
<tr>
<td>ProSP-C/mature SP-C ratio</td>
<td>0.7 ± 0.2</td>
<td>9.3 ± 3.2</td>
<td>.0009</td>
</tr>
</tbody>
</table>

Data are expressed as mean ± SEM. API = absence of pulmonary infiltration; AU = arbitrary unit; BALF = BAL fluid; Cl,dyn = dynamic compliance; PI = presence of pulmonary infiltration; proSP-C = surfactant protein propeptide form; SP-C = surfactant protein; VC = vital capacity. *P values > .05 are not shown.

described. Signals were scanned, analyzed by Quantity One software (Bio-Rad; Marnes-La-Coquette, France), and expressed as arbitrary units. We have shown that BALF proSP-C levels were significantly higher in the PI group compared with the API group, whereas BALF mature SP-C levels were significantly lower in the PI group compared with the API group (Table 1). The ProSP-C/mature SP-C ratio was also significantly higher in the PI group compared with the API group. Furthermore, elevated proSP-C (or decreased mature SP-C) levels were associated with lower Cl,dyn, and we observed a strong correlation between both proSP-C and SP-C BALF expression and Cl,dyn (r = −0.52, P = .03 for proSP-C and r = 0.681, P = .007 for mature SP-C). No correlation was shown between proSP-C or mature SP-C levels and FVC (r = −0.18, P = .48 for proSP-C and r = 0.375, P = .16 for mature SP-C).

Our results highlight the relation among SP-C expression, parenchymal lung disease, and Cl,dyn in children with sarcoidosis. Although a change in SP-C expression levels is usually observed in SFTP-C mutation-associated disorders, no mutation in the SFTP-C gene was identified in our patients. Furthermore, proSP-C and mature SP-C levels in the API group are similar to those observed in our control subjects (without interstitial lung disease) from a previous study. Hence, changes observed in individuals with parenchymal lesions likely reflect damage or release of proSP-C from epithelial cells as a consequence of granulomatous inflammation. This study suggests that assessment of SP-C levels in BALF may represent a complementary tool for therapeutic orientation and follow-up of pediatric sarcoidosis.

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REFERENCES