Final Measurements vs ANOVA for Data Analysis

To the Editor:

I write concerning the analytical methods in the article, “Emergency Treatment of Acute Asthma With Albuterol Metered-Dose Inhaler Plus Holding Chamber,” by Karpe1 et al. Typically between-groups comparisons on repeated measures use repeated measures analysis of variance (ANOVA), in which the main effect of interest is treatment × time. The use of final measurements (such as final FEV1) or change in measurements (such as change in FEV1) does not give as much power to detect differences as does repeated measures ANOVA. In our experience, logarithmic transformation of flow measurements is also helpful to normalize distribution and thus to give greater power. It may be of interest if the same conclusions were achieved by the authors if these analytical methods were used. Figure 1 response curves suggest that a higher 20- to 60-min slope is seen with the every 30-min treatment group. Such a difference may be detected with repeated measures ANOVA. Rather than to conclude that there is no difference between the every 30-min treatment group and the every 60-min treatment group, it may be more appropriate to conclude that the differences between the one treatment group and the other more frequent treatment groups were more marked than that observed between the multiple treatment groups. However, the use of a single albuterol treatment over a 2-h period in acute asthma is not recommended for patients with severe exacerbations, and thus the use of this reference treatment has limited clinical relevance in many asthmatics who arrive at the emergency department. Further studies are required to determine whether there is any advantage of more frequent treatment with MDI devices in acute asthma.

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REFERENCES

3 Lin Ry, Pesola GR, Bakalchuk L, et al. A randomized clinical trial demonstrating superiority of ipratropium plus albuterol over albuterol alone in the emergency department manage-

Widespread Occurrence of Diffuse Aspiration Bronchiolitis in Patients With Dysphagia, Irrespective of Age

To the Editor:

We have reported in CHEST (November 1996) the clinical significance of diffuse aspiration bronchiolitis (DAB) in elderly patients. DAB is a new clinical entity defined by us and characterized by a chronic inflammation of bronchioles caused by recurrent aspiration of foreign particles. Clinical presentations of DAB are signs of bronchorrhea, bronchospasm, wheeze, and dyspnea closely associated with oral food intake. The incidence of DAB in a total of 4,880 autopsy cases was 0.64% (total, 31; male, 21; female, 10). The mean±SD onset age of DAB was 81.2±6.2 years and 62.6±10.4 years in the Tokyo Metropolitan Geriatrics Center Hospital (20 patients) and Tokyo University Hospital (11 patients), respectively.

We describe here the occurrence and distribution of the onset age of DAB in other hospitals in Japan. Thirty-eight departments of respiratory medicine of other university hospitals and 24 other hospitals with respiratory divisions were surveyed. Eleven university hospitals and seven other hospitals responded. Nine hospitals of a total of 18 responders reported cases of DAB. These diagnoses were based on pathologic features and radiologic findings in addition to the clinical criteria of DAB. Table 1 shows the distribution of onset age of DAB in different types of hospitals. Surprisingly, DAB occurred not only in elderly patients, but also in younger patients with the same clinical manifestations as those observed in the elderly patients with DAB. Two patients, ages 12 and 11 years, had dysphagia caused by esophageal achalasia and another 18-year-old patient had dysphagia associated with Kluneleiter syndrome, suggesting that dysphagia itself is a risk for DAB, irrespective of age. In addition, when compared with the incidence of DAB diagnosed mainly by autopsy examination in the Tokyo Metropolitan Geriatrics Center Hospital and Tokyo University Hospital, DAB in the other hospitals was clearly less diagnosed. The reason for this might be due to the lack of clinical recognition of this pathological entity.

DAB should be suspected even in younger patients with dysphagia and episodes of recurrent bronchorrhea, broncho-

Table 1—Distribution of the Onset Age of Diffuse Aspiration Bronchiolitis (DAB)*

<table>
<thead>
<tr>
<th>Institution</th>
<th>10s</th>
<th>20s</th>
<th>30s</th>
<th>40s</th>
<th>50s</th>
<th>60s</th>
<th>70s</th>
<th>80s</th>
<th>90s</th>
<th>Total</th>
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<tr>
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<td>1</td>
<td>4</td>
<td>6</td>
<td>13</td>
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<td></td>
<td></td>
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<tr>
<td>TGH</td>
<td>10</td>
<td>10</td>
<td>2</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
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<td>2</td>
<td>1</td>
<td>4</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TGH=Tokyo University Hospital, data from reference 2 plus two additional cases; TGH=Tokyo Metropolitan Geriatrics Center Hospital, data from reference 2 plus two additional cases; others=data from nine other hospitals including six university hospitals in Japan.