Teaching Video NeuroImages: How to unmask respiratory strength confounded by facial diplegia

A 67-year-old man presented with progressive diplopia, dysarthria, dysphagia, and gait imbalance. Neurologic examination revealed ophthalmoplegia, facial diplegia, and areflexia without signs of respiratory failure. CSF showed albuminocytologic dissociation, consistent with Guillain-Barré syndrome. Initial spirometry yielded low values that were rectified by improved seal with facemask attachment (figure, table, video on the Neurology® Web site at Neurology.org).

<table>
<thead>
<tr>
<th>Table</th>
<th>Comparative sequential spirometry measurements in a patient with facial diplegia using traditional mouthpiece and facemask</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Forced vital capacity, mL</td>
</tr>
<tr>
<td>Using spirometry with traditional mouthpiece</td>
<td></td>
</tr>
<tr>
<td>Trial 1</td>
<td>700</td>
</tr>
<tr>
<td>Trial 2</td>
<td>650</td>
</tr>
<tr>
<td>Trial 3</td>
<td>660</td>
</tr>
<tr>
<td>Using spirometry with facemask</td>
<td></td>
</tr>
<tr>
<td>Trial 1</td>
<td>2,750</td>
</tr>
<tr>
<td>Trial 2</td>
<td>2,800</td>
</tr>
<tr>
<td>Trial 3</td>
<td>2,800</td>
</tr>
</tbody>
</table>

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Go to Neurology.org for full disclosures. Funding information and disclosures deemed relevant by the authors, if any, are provided at the end of the article.
Spirometry measures diaphragmatic strength in acute neuromuscular disorders and often directs patient triage. Facial weakness can confound readings with conventional mouthpieces due to poor seal. Facemask spirometry in patients with motor neuron disease\(^1\) and normal controls\(^2\) improves values by reducing leak. We demonstrate unequivocally that mask spirometry surmounts spurious readings in facial diplegia.

**AUTHOR CONTRIBUTIONS**

Dr. Kramer: design and conceptualization, drafted and revised manuscript. Dr. McCullough: design and conceptualization. Dr. Wijdicks: design and conceptualization, revised manuscript.

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**DISCLOSURE**

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**REFERENCES**

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