Teaching Video NeuroImages: Cluster Breathing in Brainstem-Sparing Bihemispheric Cerebral and Cerebellar Lesions

Roger M. Meza, MD, Hans Schulz, MD, Diego Alva, MD, and Alberto J. Espay, MD, MSc

*Neurology*® 2021;96:e2243-e2244. doi:10.1212/WNL.0000000000011215

**Figure** Brain MRI and Monitoring Screen

Postcontrast sagittal and coronal T1-weighted brain MRI demonstrated nodular bihemispheric lesions as well as contrast-enhancing bilateral cerebellar lesions with no mass effect on the brainstem. Screenshots of the respiratory monitor at the bottom document the cluster-breathing waveforms in the mean airway pressure (Paw, in cm H2O) and volume (flow, in L/min).

A 65-year-old comatose man with metastatic melanoma developed rapidly cycling breathing, with clusters of approximately 10 abdominal excursions within 3 seconds, interspersed by 10 seconds of apnea (video 1 and figure), mimicking abdominal myoclonus. Introduced by Plum and Posner\(^1\) as a respiratory pattern associated with lesions in the low pons or high medulla, cluster breathing can occur without pontomedullary lesions when respiratory alkalosis accompanies bihemispheric lesions.\(^2\) It differs from the constant tachypnea of central neurogenic hyperventilation, also associated with respiratory alkalosis, and from the crescendo-decrescendo breathing pattern of Cheyne-Stokes. Combined cerebellar and cerebral lesions may suffice to affect brainstem-mediated respiratory control in the absence of brainstem lesions.

**Study Funding**

No targeted funding reported.
Disclosure
R.M. Meza, H. Schulz, and D. Alva report no disclosures. A.J. Espay has received grant support from the NIH and the Michael J Fox Foundation; personal compensation as a consultant/scientific advisory board member for AbbVie, Neuroderm, Neurocrine, Amneal, Adamas, Acadia, Acorda, InTrance, Sunovion, Lundbeck, and USWorldMeds; publishing royalties from Lippincott Williams & Wilkins, Cambridge University Press, and Springer; and honoraria from USWorldMeds, Acadia, and Sunovion. Go to Neurology.org/N for full disclosures.

Appendix Authors

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roger M. Meza, MD</td>
<td>Hospital Regional Docente de Trujillo, Peru</td>
<td>Evaluation of patient, drafted the manuscript for intellectual content</td>
</tr>
<tr>
<td>Hans Schulz, MD</td>
<td>Hospital Regional Docente de Trujillo, Peru</td>
<td>Major role in the acquisition of data, review of manuscript</td>
</tr>
<tr>
<td>Diego Alva, MD</td>
<td>Hospital Regional Docente de Trujillo, Peru</td>
<td>Major role in the acquisition of data, review of manuscript</td>
</tr>
<tr>
<td>Alberto J. Espay, MD, MSc</td>
<td>University of Cincinnati, OH</td>
<td>Critical review of manuscript, supervise all review cycles</td>
</tr>
</tbody>
</table>

References
Teaching Video NeuroImages: Cluster Breathing in Brainstem-Sparing Bihemispheric Cerebral and Cerebellar Lesions
Roger M. Meza, Hans Schulz, Diego Alva, et al.
Neurology 2021;96:e2243-e2244 Published Online before print November 16, 2020
DOI 10.1212/WNL.0000000000011215

This information is current as of November 16, 2020

Updated Information & Services
including high resolution figures, can be found at:
http://n.neurology.org/content/96/17/e2243.full

References
This article cites 1 articles, 0 of which you can access for free at:
http://n.neurology.org/content/96/17/e2243.full#ref-list-1

Subspecialty Collections
This article, along with others on similar topics, appears in the following collection(s):
All Clinical Neurology
http://n.neurology.org/cgi/collection/all_clinical_neurology
Coma
http://n.neurology.org/cgi/collection/coma
Critical care
http://n.neurology.org/cgi/collection/critical_care
Prognosis
http://n.neurology.org/cgi/collection/prognosis

Permissions & Licensing
Information about reproducing this article in parts (figures,tables) or in its entirety can be found online at:
http://www.neurology.org/about/about_the_journal#permissions

Reprints
Information about ordering reprints can be found online:
http://n.neurology.org/subscribers/advertise