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

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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 Posner1 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.

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Appendix Authors

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References
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