Teaching NeuroImages: The heart sign in a patient with apparent locked-in syndrome

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Neurology® 2018;91:e2102-e2103. doi:10.1212/WNL.0000000000006579

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Figure Radiologic imaging features of the patient

(A) Diffusion-weighted imaging and (B) axial fluid-attenuated inversion recovery image show an infarction in the bilateral paramedian medulla, with evidence of pontine extension involving the floor of the 4th ventricle (C). (D) Magnetic resonance angiography reconstruction demonstrates occlusion of the left vertebral artery and areas of thrombosis and stenosis at the left vertebrobasilar junction.

An 85-year-old man presented with 48 hours of recurrent vomiting and vertigo with rapidly progressive dysphagia and quadriplegia. MRI–magnetic resonance angiography showed a paramedian medullary infarct (figure, A–C), known as the heart sign, hallmark of this rare posterior circulation stroke caused by occlusion of the anterior spinal artery (figure, D). Clinical presentation is determined by anteroposterior extension.¹ Associated with quadriplegia, tongue weakness, and sensory loss, localized to the pyramidal tracts, hypoglossal nucleus, and medial lemniscus respectively,² our case correlates with pontine extension evidenced by recurrent vomiting, facial diplegia, and horizontal ophthalmoplegia, with the involvement of the area postrema, facial colliculus, and paramedian-pontine-reticular formation.

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Study funding

No targeted funding reported.

Disclosure

The authors report no disclosures relevant to the manuscript. Go to Neurology.org/N for full disclosures.

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Appendix 1 Author Contributions

Name	Location	Role	Contribution
Ylec M. Cardenas, MD	Albert Einstein Medical Center, Philadelphia-Pennsylvania	Author	Design and conceptualized study; acquisition of data, analysis, interpretation, bibliographic review and drafted manuscript for intellectual content.
Aparna Prabhu, MD, MRCP	Albert Einstein Medical Center, Philadelphia-Pennsylvania	Author	Supervision and revision of manuscript.
Yan Zhang, MD, PhD	Albert Einstein Medical Center, Philadelphia-Pennsylvania	Author	Study concept and design, supervision and revision of manuscript.

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This information is current as of November 26, 2018

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