Teaching NeuroImages: Extrapontine osmotic demyelination in hypernatremia

Pablo Paz, MD, Jie Pan, MD, PhD, and Samedeb Ball, MD

Neurology® 2020;94:e1780-1781. doi:10.1212/WNL.00000000000009299

Correspondence

Dr. Pan
jie.pan@ttuhsc.edu

Figure Diffusion-weighted imaging (DWI), apparent diffusion coefficient (ADC), and fluid-attenuated inversion recovery (FLAIR)

Axial diffusion-weighted MRI brain shows bilateral symmetrical hyperintensities in (A) middle cerebral peduncles and (B, C) along the cortical spinal tracts. (D–F) ADC sequence shows areas of hypodensity correlating with hyperintensity in DWI sequence. (G–I) Subtle changes noticed in FLAIR sequence due to the early stage of demyelination process.

An 82-year-old man presented with altered mental status, withdrawal to pain, osmolality 405 mOsm/kg, and sodium >180 mEq/L, corrected at 8 mEq/L/d. Brain MRI on day 4 showed restricted diffusion within bilateral middle cerebellar peduncles and along the cortical spinal tracts (figure). Extrapontine osmotic demyelination was diagnosed. Classically described after rapid correction of hyponatremia, few cases have been reported in patients with severe hypernatremia. Extrapontine osmotic demyelination occurs after rapid increase in extracellular sodium causing cellular dehydration and cell death of astrocytes or oligodendrocytes provoking non-inflammatory demyelinating lesions in pontine or extrapontine regions. Isolated extrapontine lesions are seen in two-fifths of patients.^{1,2}

MORE ONLINE

→Teaching slides

links.lww.com/WNL/B74

From the Departments of Internal Medicine (P.P., S.B.) and Neurology (J.P.), Texas Tech University Health Science Center, Lubbock.

Go to Neurology.org/N for full disclosures. Funding information and disclosures deemed relevant by the authors, if any, are provided at the end of the article.

Study funding

No targeted funding reported.

Disclosure

P. Paz, J. Pan, and S. Ball report no relevant disclosures. Go to Neurology.org/N for full disclosures.

Appendix Authors

Name	Location	Contribution
Pablo Paz, MD	Texas Tech University Health Science Center, Lubbock	Literature review, paper writing

Appendix *(continued)*

Name	Location	Contribution
Jie Pan, MD, PhD	Texas Tech University Health Science Center, Lubbock	Literature review, image processing
Somedeb Ball, MD	Texas Tech University Health Science Center, Lubbock	Literature review

References

1. Jee Han M, Hyoung Kim D, Hwa Kim Y, Mo Yang I, Hyung Park J, Ki Hong M. A case of osmotic demyelination presenting with severe hyponatremia. *Electrolyte Blood Press* 2015;13:30–36.
2. Barhaghi K, Molchanova-Cook O, Rosenberg M, et al. Osmotic demyelination syndrome revisited: review with neuroimaging. *J LA State Med Soc* 2017;169:89–93.

Neurology®

Teaching NeuroImages: Extrapontine osmotic demyelination in hypernatremia

Pablo Paz, Jie Pan and Somdeb Ball

Neurology 2020;94:e1780-e1781 Published Online before print March 27, 2020

DOI 10.1212/WNL.00000000000009299

This information is current as of March 27, 2020

Updated Information & Services	including high resolution figures, can be found at: http://n.neurology.org/content/94/16/e1780.full
References	This article cites 2 articles, 0 of which you can access for free at: http://n.neurology.org/content/94/16/e1780.full#ref-list-1
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): MRI http://n.neurology.org/cgi/collection/mri
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

Neurology® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2020 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.