Teaching *NeuroImages*: Reversible cognitive impairment with bithalamic lesions caused by a dural arteriovenous fistula

Eri Iwasawa, MD
Satoru Ishibashi, MD,
PhD
Kazunori Miki, MD, PhD
Yoshikazu Yoshino, MD,
PhD
Shigeru Nemoto, MD,
PhD
Hidehiro Mizusawa, MD,
PhD

Correspondence to
Dr. Mizusawa:
h-mizusawa.nuro@tmd.ac.jp

Figure 1 Brain MRI and angiography of the right carotid artery before treatment

Brain MRI on T2-weighted (A, C) and diffusion-weighted (B) images. Right external carotid angiogram shows feeding arteries from the occipital artery to the transverse-sigmoid sinuses (D, arrow) with filling into the vein of Galen (E, arrow). Right internal carotid angiogram shows the superior sagittal sinus draining into only the left transverse sinus (F).

Figure 2 Brain MRI after treatment

Brain MRI on T2-weighted (A, C) and diffusion-weighted (B) images.

A 54-year-old man developed apathy and memory impairment in 3 months. MRI showed bilateral thalamic hyperintensities with dilated cortical veins in the right cerebellum. Angiography revealed dural arteriovenous fistula (dAVF) at right transverse-sigmoid sinuses with retrograde flow through the vein of Galen (figure 1). Transvenous coil embolization improved his MRI findings (figure 2) and Wechsler

Memory Scale–Revised scores from 55 at baseline to 105 in the delayed recall index.

dAVF is a rare cause of bithalamic lesions¹ and cognitive impairment. His bithalamic venous congestion was caused by unilateral transverse-sigmoid dAVF due to noncommunication between the right and left transverse sinuses as anatomical variation.²

Download teaching slides:
www.neurology.org

From the Departments of Neurology and Neurological Science (E.I., S.I., H.M.) and Endovascular Surgery (K.M., Y.Y., S.N.), Center for Brain Integration Research, Tokyo Medical and Dental University, Tokyo, Japan.

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.

AUTHOR CONTRIBUTIONS

E. Iwasawa: drafting/revising the manuscript, study concept or design, acquisition of data, analysis or interpretation of data. S. Ishibashi: drafting/revising the manuscript, study concept or design, analysis or interpretation of data, study supervision. K. Miki and Y. Yoshino: treating physicians of the patient, study concept or design. S. Nemoto: treating physician of the patient, study supervision. H. Mizusawa: study supervision.

STUDY FUNDING

No targeted funding reported.

DISCLOSURE

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

REFERENCES

1. Greenough GP, Mamourian A, Harbaugh RE. Venous hypertension associated with a posterior fossa dural arteriovenous fistula: another cause of bithalamic lesions on MR images. *Am J Neuroradiol* 1999;20:145–147.
2. Bisaria KK. Anatomic variations of venous sinuses in the region of the torcular Herophili. *J Neurosurg* 1985;62:90–95.

Neurology®

**Teaching NeuroImages: Reversible cognitive impairment with bithalamic lesions
caused by a dural arteriovenous fistula**

Eri Iwasawa, Satoru Ishibashi, Kazunori Miki, et al.

Neurology 2013;81:e38-e39

DOI 10.1212/WNL.0b013e31829e6f4a

This information is current as of August 5, 2013

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 © 2013 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

Updated Information & Services	including high resolution figures, can be found at: http://n.neurology.org/content/81/6/e38.full
Supplementary Material	Supplementary material can be found at: http://n.neurology.org/content/suppl/2013/08/04/81.6.e38.DC1
References	This article cites 2 articles, 1 of which you can access for free at: http://n.neurology.org/content/81/6/e38.full#ref-list-1
Citations	This article has been cited by 1 HighWire-hosted articles: http://n.neurology.org/content/81/6/e38.full##otherarticles
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): All Cerebrovascular disease/Stroke http://n.neurology.org/cgi/collection/all_cerebrovascular_disease_stroke Arteriovenous malformation http://n.neurology.org/cgi/collection/arteriovenous_malformation Assessment of cognitive disorders/dementia http://n.neurology.org/cgi/collection/assessment_of_cognitive_disorders_dementia MRI http://n.neurology.org/cgi/collection/mri Vascular dementia http://n.neurology.org/cgi/collection/vascular_dementia
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 © 2013 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.