

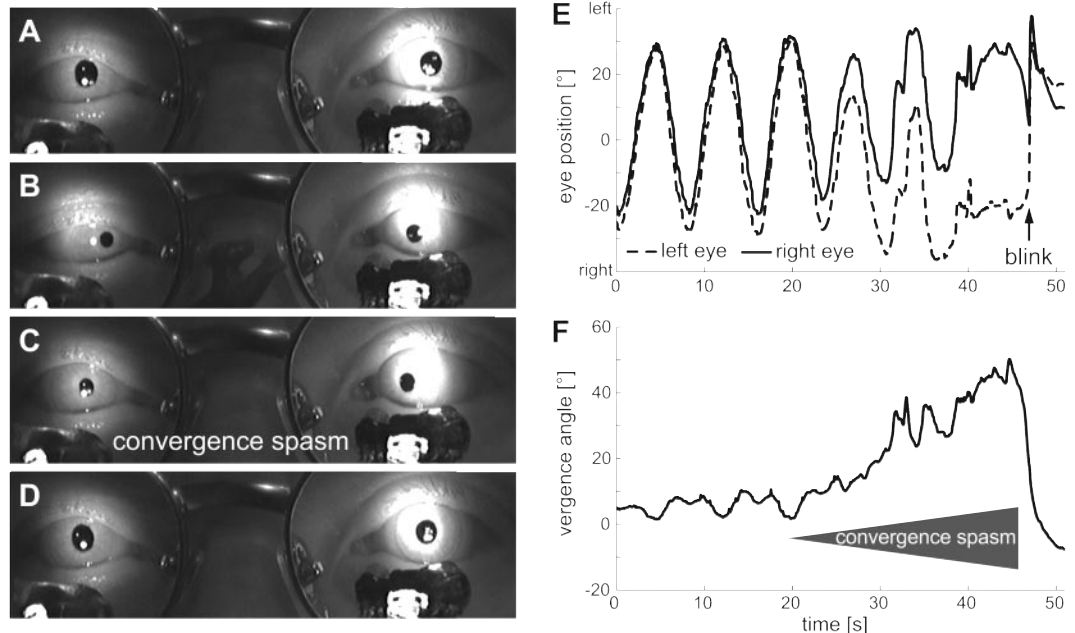
# Teaching *NeuroImage*: Convergence spasm associated with midbrain compression by cerebral aneurysm



Konrad P. Weber, MD  
Matthew J. Thurtell,  
MBBS  
G. Michael Halmagyi,  
MD

Address correspondence and  
reprint requests to Dr. G.  
Michael Halmagyi, Department  
of Neurology, Royal Prince  
Alfred Hospital, Missenden  
Road, Camperdown NSW  
2050, Australia  
michael@icn.usyd.edu.au

**Figure 1** Infrared video stills and search coil recording of convergence spasm



(A–D) Convergence spasm precipitated by fixation on a near target and released after a blink (video, A). (A) During fixation on a distant target, the patient has mid-range pupils. (B) During fixation on a near target, the patient converges and has miotic pupils. (C) After the near target is removed, convergence is maintained. The pupils remain miotic, which helps to differentiate from bilateral sixth nerve palsies. (D) After a blink, the patient is able to re-fixate on the distant target and the pupils return to mid-range diameter. (E) Binocular search coil recording during sinusoidal horizontal smooth pursuit, in which there is a period of convergence spasm that is released by a blink (video, B). (F) The vergence angle progressively increases up to 50° during the period of convergence spasm (gray triangle).

A 72-year-old woman presented with intermittent diplopia. She had a history of vascular disease, but no history of stroke or psychiatric disturbance. On examination, she developed convergence spasm with associated miosis following fixation on near targets and during horizontal smooth pursuit (video, figure 1). The spasms were terminated with a blink. She had no ptosis, her eye movements were normal in range, and her pupils were equal in size with normal reactions to light. Neurologic examination was otherwise unremarkable. Five years prior to her current presentation, a left-sided

terminal carotid artery aneurysm had been incidentally detected. The aneurysm gradually expanded to a diameter of 2.4 cm and compressed the midbrain (figure 2). The intermittent diplopia had developed in the months following endovascular coiling of the aneurysm.

Convergence spasm is characterized by the inappropriate appearance of the near triad, which consists of convergence, miosis, and accommodation.<sup>1</sup> Most patients are young and the cause is psychiatric; a focal lesion is rarely found.<sup>1</sup> Since the neural substrate for the near triad is located in the midbrain, convergence spasm could occur

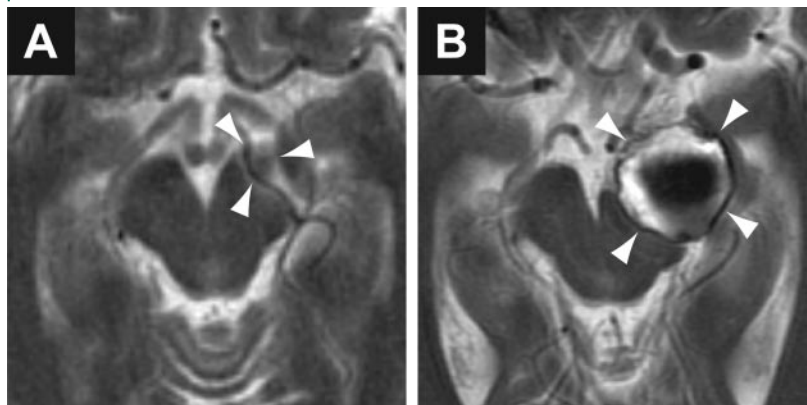
Supplemental data at  
[www.neurology.org](http://www.neurology.org)

From the Department of Neurology, Royal Prince Alfred Hospital, Sydney, Australia.

Supported by Garnett Passe and Rodney Williams Memorial Foundation.

*Disclosure:* The authors report no conflicts of interest.

**Figure 2** T2-weighted axial MRI demonstrating progressive compression of the midbrain by an expanding aneurysm (arrowheads) arising from the terminal left carotid artery



(A) MRI 5 years prior to onset of symptoms. (B) MRI at the time of presentation with convergence spasm (after endovascular coiling of the aneurysm).

with a midbrain lesion. In our patient, isolated convergence spasm may have been a manifestation of midbrain compression. Thus, in patients presenting with convergence spasm, the presence of other focal neurologic signs or the absence of psychiatric history, especially in the elderly, should prompt neuroimaging. Furthermore, it is important not to mistake convergence spasm for bilateral sixth nerve palsies; miosis on attempted lateral gaze is diagnostic of convergence spasm.<sup>2</sup>

#### ACKNOWLEDGMENT

The authors thank Dr. Geoffrey D. Parker for help with the interpretation of the MRI.

#### REFERENCES

1. Goldstein JH, Schneekloth BB. Spasm of the near reflex: a spectrum of anomalies. *Surv Ophthalmol* 1996; 40:269–278.
2. Griffin JF, Wray SH, Anderson DP. Misdiagnosis of spasm of the near reflex. *Neurology* 1976;26:1018–1020.

# Neurology<sup>®</sup>

**Teaching *NeuroImage*: Convergence spasm associated with midbrain compression by cerebral aneurysm**

Konrad P. Weber, Matthew J. Thurtell and G. Michael Halmagyi

*Neurology* 2008;70:e49-e50

DOI 10.1212/01.wnl.0000308952.85042.bf

**This information is current as of May 20, 2008**

*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 . All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.



|   |   |
|---|---|
| <b>Updated Information &amp; Services</b> | including high resolution figures, can be found at:<br><a href="http://n.neurology.org/content/70/15/e49.full">http://n.neurology.org/content/70/15/e49.full</a>  |
| <b>Supplementary Material</b>             | Supplementary material can be found at:<br><a href="http://n.neurology.org/content/suppl/2008/06/17/70.15.e49.DC1">http://n.neurology.org/content/suppl/2008/06/17/70.15.e49.DC1</a>  |
| <b>References</b>                         | This article cites 2 articles, 1 of which you can access for free at:<br><a href="http://n.neurology.org/content/70/15/e49.full#ref-list-1">http://n.neurology.org/content/70/15/e49.full#ref-list-1</a>  |
| <b>Citations</b>                          | This article has been cited by 1 HighWire-hosted articles:<br><a href="http://n.neurology.org/content/70/15/e49.full##otherarticles">http://n.neurology.org/content/70/15/e49.full##otherarticles</a>   |
| <b>Subspecialty Collections</b>           | This article, along with others on similar topics, appears in the following collection(s):<br><b>All Cerebrovascular disease/Stroke</b><br><a href="http://n.neurology.org/cgi/collection/all_cerebrovascular_disease_stroke">http://n.neurology.org/cgi/collection/all_cerebrovascular_disease_stroke</a><br><b>All Neuro-ophthalmology</b><br><a href="http://n.neurology.org/cgi/collection/all_neuroophthalmology">http://n.neurology.org/cgi/collection/all_neuroophthalmology</a><br><b>Clinical neurology examination</b><br><a href="http://n.neurology.org/cgi/collection/clinical_neurology_examination">http://n.neurology.org/cgi/collection/clinical_neurology_examination</a><br><b>Diplopia (double vision)</b><br><a href="http://n.neurology.org/cgi/collection/diplopia_double_vision">http://n.neurology.org/cgi/collection/diplopia_double_vision</a><br><b>MRI</b><br><a href="http://n.neurology.org/cgi/collection/mri">http://n.neurology.org/cgi/collection/mri</a><br><b>Ocular motility</b><br><a href="http://n.neurology.org/cgi/collection/ocular_motility">http://n.neurology.org/cgi/collection/ocular_motility</a><br><b>Pupils</b><br><a href="http://n.neurology.org/cgi/collection/pupils">http://n.neurology.org/cgi/collection/pupils</a> |
| <b>Permissions &amp; Licensing</b>        | Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:<br><a href="http://www.neurology.org/about/about_the_journal#permissions">http://www.neurology.org/about/about_the_journal#permissions</a>   |
| <b>Reprints</b>                           | Information about ordering reprints can be found online:<br><a href="http://n.neurology.org/subscribers/advertise">http://n.neurology.org/subscribers/advertise</a>   |

*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 . All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

