

Teaching *NeuroImages*: Marked reduced apparent diffusion coefficient in acute multiple sclerosis lesion

J.-M. Bugnicourt, MD
P.-Y. Garcia, MD
P. Monet, MD
B. Bonnaire, MD
A. Al Khedr, MD
O. Godefroy, MD, PhD

Address correspondence and reprint requests to Dr. J.-M. Bugnicourt, Department of Neurology, University of Amiens, France bugnicourt.jean-marc@chu-amiens.fr

A 24-year-old woman presented with sudden right-sided weakness and aphasia. Brain MRI was performed 5 hours after symptoms onset. On diffusion-weighted imaging (DWI), the lesion showed a marked increase in signal intensity and an approximately 70% mean apparent diffusion coefficient (ADC) decline as compared with the contralateral hemispheric white matter (figure). The patient met diagnostic criteria for multiple sclerosis and other etiologies were excluded.

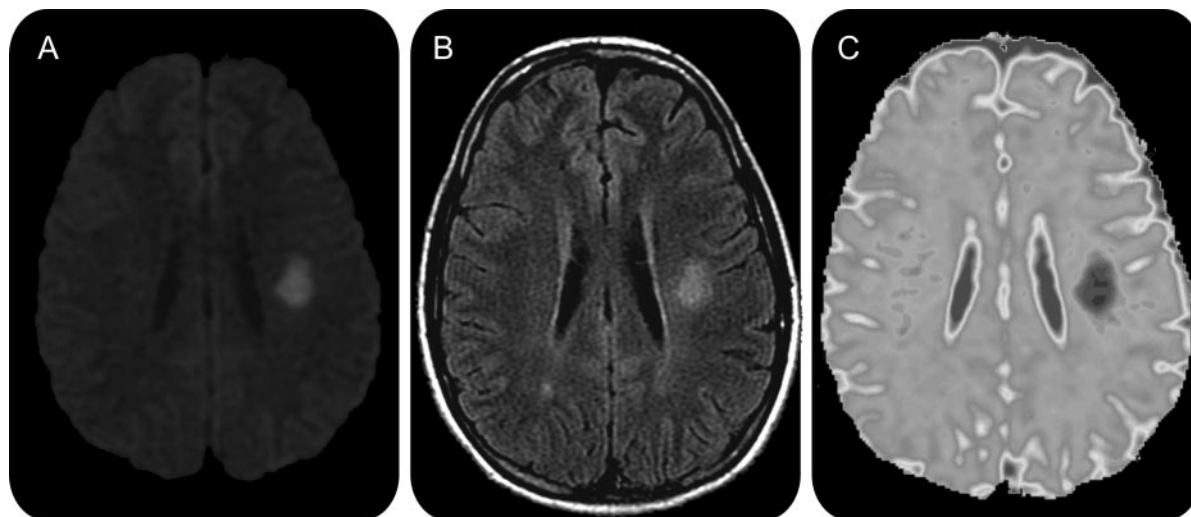
ADC decline in acute multiple sclerosis lesions, suggesting a diagnosis of ischemic stroke, has been previously reported.^{1,2} However, the decline in ADC values (22% to 40% decrease) was not as

pronounced as our observation. Thus this fourth case of reduced ADC in acute demyelinating lesion indicates that the ADC drop may be important and close to that observed in the core of an acute brain infarction.

REFERENCES

1. Rovira A, Pericot I, Alonso J, Rio J, Grive E, Montalban X. Serial diffusion-weighted MR imaging and proton MR spectroscopy of acute large demyelinating brain lesions: case report. *AJNR Am J Neuroradiol* 2002;23:989–994.
2. Rosso C, Remy P, Creange A, Brugieres P, Cesaro P, Hosseini H. Diffusion Weighted MR Imaging Characteristics of an Acute Stroke-like Form of Multiple Sclerosis. *AJNR Am J Neuroradiol* 2006;27:1006–1008.

Figure Brain neuroimaging



(A) Diffusion-weighted imaging showing high signal intensity of left centrum semiovale. (B) Fluid-attenuated inversion recovery sequence showing a second smaller high signal intensity in the posterior right centrum semiovale close to parietal cortex. (C) Apparent diffusion coefficient (ADC) mapping showing marked reduced ADC of the left centrum semiovale ($19.5 \times 10^{-5} \text{ mm}^2/\text{s}$ for the region of interest vs $71.8 \times 10^{-5} \text{ mm}^2/\text{s}$ for apparently normal white matter).

From the Department of Neurology (J.-M.B., P.-Y.G., A.A.K., O.G.), Laboratoire de Neurosciences Fonctionnelles et Pathologies (J.-M.B., O.G.), and Department of Radiology (P.M., B.B.), Amiens University Hospital, France.

Disclosure: Dr. Bugnicourt, Dr. Garcia, Dr. Monet, Dr. Bonnaire, and Dr. Al Khedr report no disclosures. Dr. Godefroy serves on the editorial board of *Revue de Neuropsychologie*; receives royalties from the publication of *Behavioral and Cognitive Neurology of Stroke* (Cambridge University Press, 2007); and has received research support from Eisai Inc., Novartis, Janssen, Lundbeck, Inc., GlaxoSmithKline, Servier/Eutherapie, Biogen Idec, and Bayer Schering Pharma.

Neurology[®]

Teaching *NeuroImages*: Marked reduced apparent diffusion coefficient in acute multiple sclerosis lesion

J.-M. Bugnicourt, P.-Y. Garcia, P. Monet, et al.

Neurology 2010;74:e87

DOI 10.1212/WNL.0b013e3181df09f7

This information is current as of May 17, 2010

Updated Information & Services	including high resolution figures, can be found at: http://n.neurology.org/content/74/20/e87.full
References	This article cites 2 articles, 0 of which you can access for free at: http://n.neurology.org/content/74/20/e87.full#ref-list-1
Citations	This article has been cited by 1 HighWire-hosted articles: http://n.neurology.org/content/74/20/e87.full##otherarticles
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): All Clinical Neurology http://n.neurology.org/cgi/collection/all_clinical_neurology MRI http://n.neurology.org/cgi/collection/mri Multiple sclerosis http://n.neurology.org/cgi/collection/multiple_sclerosis
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 . All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

