

Transient splenial DWI abnormality of the corpus callosum during a stroke-like episode

Anne-Laure BOCHER, Sabine CARON and Charlotte CORDONNIER

Departments of Neurology (Stroke department) and Neuroradiology, Hôpital Salengro, Lille University Hospital, Lille, France

Abstract

Focal imaging abnormalities of the corpus callosum are rare but have been described in various clinical conditions. Because the MRI appearance may mimic acute stroke, clinicians have to be aware of differential diagnoses. We report a patient with a stroke-like episode and transient hypersignal in diffusion with decreased ADC values of the corpus callosum in a setting of sepsis due to a Klebsiella pneumoniae infection. This stroke mimic may be due to an inflammatory process and should be recognized because of therapeutic implications.

Acute, isolated, focal, and reversible abnormalities of the corpus callosum, have been reported on diffusion weighted images (DWI) in various medical conditions: encephalopathy with seizures (Maeda *et al.*, 2003; Tada *et al.*, 2004), non-epileptic patients receiving anti-epileptic drugs for any reasons (da Rocha *et al.*, 2006), systemic lupus, hypoglycemia, and various types of infections such as influenzae (Bulakbasi *et al.*, 2006), herpes virus (Kato *et al.*, 2003), rotavirus, or Legionnaire's disease (Bulakbasi *et al.*, 2006), and even in a case of fever of unexplained origin (Shimizu *et al.*, 2007).

We report, the first case of stroke-like episode with transient focal DWI abnormalities of the corpus callosum occurring in a context of urinary tract infection with septicemia.

Case report

A 31 year-old man was admitted for a sudden onset of paresthesia and hypoesthesia of his left hand, in a context of progressive headache that had occurred a few hours earlier. Focal symptoms resolved spontaneously within a few minutes. The patient was a current smoker, free of any other vascular risk factor. A cerebral magnetic resonance imaging (MRI)-scan performed 3 days after the first symptom showed an ovoid abnormality located in the splenium of the corpus callosum, slightly hyperintense on FLAIR and T2-weighted images, hypointense on T1-weighted sequences, not enhanced after gadolinium injection, and hyperintense on

isotropic diffusion weighted images (DWI) (Fig. 1), with decreased ADC values. The electrocardiogram, cervical and transcranial Doppler, intracranial and cervical magnetic resonance angiography, and transthoracic and transoesophageal echocardiography were normal. Routine blood tests were also normal except for a C Reactive Protein level of 171 mg/l. A few hours after admission, the patient developed an episode of fever (40.0°C) that lasted a few hours. Klebsiella Pneumoniae was isolated from urinary and blood cultures, but the cerebrospinal fluid was normal. We treated the patient with ciprofloxacin (for 21 days), and the association of sulfamethoxazole and trimethoprim (for 7 days). A few days later, the patient was free of any symptom. Nine months later, the patient was still asymptomatic and his brain MRI was normal in all sequences (T1, T2, FLAIR, T2* and DWI) (Fig. 1). Our final diagnosis was a focal and reversible intramyelinic edema in the setting of a bacterial septicemia.

Discussion

This is to our knowledge the first case of transient abnormality of the splenium of the corpus callosum revealed by a stroke-like episode, and also the first case that occurred in a context of bacterial septicemia with Klebsiella.

In previous cases that occurred in a context of encephalopathy, the presumed mechanism was an acute intramyelinic edema due to the separation of myelin layers and leading to transient abnormalities on MRI (Bulakbasi *et al.*, 2006). The reversibility of the lesion supports the hypothesis of intramyelinic edema. In line with this hypothesis, fractional anisotropy was described as normal within a similar transient lesion of the corpus callosum (Shimizu *et al.*, 2007). The reversible restricted diffusion in the splenium of the corpus callosum may be due to a transient disruption of energy metabolism and ionic transport, causing reversible myelin vacuolization or intramyelinic edema (Oster *et al.*, 2003). The reason why these abnormalities typically occur in the corpus callosum remains unknown. Such cases

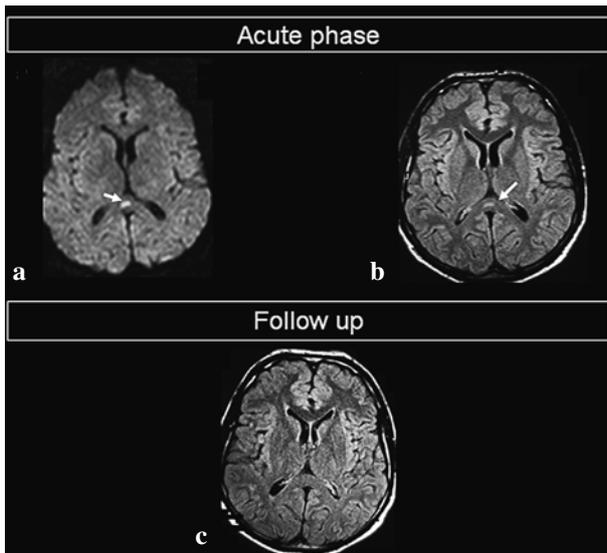


FIG. 1. — Magnetic resonance imaging scan performed 3 days after symptoms onset, showing an ovoid abnormality of the splenium of the corpus callosum, hyperintense in diffusion weighted sequences (arrow) (a), with decreased ADC values (not shown), and hyperintense on FLAIR sequences (arrow) (b).

Nine months later, the MRI was normal on all sequences, including FLAIR (c).

should be identified to dismiss the stroke hypothesis and to tailor the treatment.

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Dr. Charlotte CORDONNIER, M.D., Ph.D.,
Department of Neurology and Stroke Unit
Hôpital Salengro, Lille University Hospital
Rue Emile Laine
59037 Lille, France
E-mail : c-cordonnier@chru-lille.fr