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Beware of the Glycemia

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Case Report

An 83-year-old woman, with a past history of type 2 diabetes mellitus treated with insulin, was admitted for the treatment of acute-onset tetraplegia. Initial neurological examination revealed an altered level of consciousness, grade 3 weakness of the 4 limbs, brisk tendon reflexes, facial diplegia, dysarthria and buccofacial apraxia (NIHSS score 20).

A 3-tesla brain MRI performed 2 h after onset showed symmetrical hyperintensities on diffusion-weighted imaging (DWI) sequences, with low apparent diffusion coefficient (ADC) values

in both anterior choroidal artery territories that were compatible with acute ischemic stroke. On perfusion-weighted imaging, cerebral blood flow and volume were slightly increased (fig. 1a). There was no abnormality on the FLAIR images, nor was there any arterial occlusion visible on intracranial three-dimensional time-of-flight MRI. However, glycemia was low at 2.06 mmol/l.

The hypoglycemia was quickly corrected, and all neurological symptoms resolved within a few hours. In a second brain MRI scan performed 2 days later at 1.5-tesla, the whole lesion which had previously been visible had disappeared (fig. 1b).

Comment

Bilateral anterior choroidal artery stroke is a rare condition that usually occurs twice [1]. In our case, we found neither evidence of occlusion nor a cardioembolic source that might explain the symptoms.

Manifestations of hypoglycemia vary and range from focal deficits to an altered state of consciousness. Brain MRI classically shows cytotoxic edema located in the cerebral cortex, the hippocampus and the cerebral white matter [2].

The MRI pattern may mimic acute cerebral infarction, both on the DWI sequences and the ADC maps. The mechanisms respon-

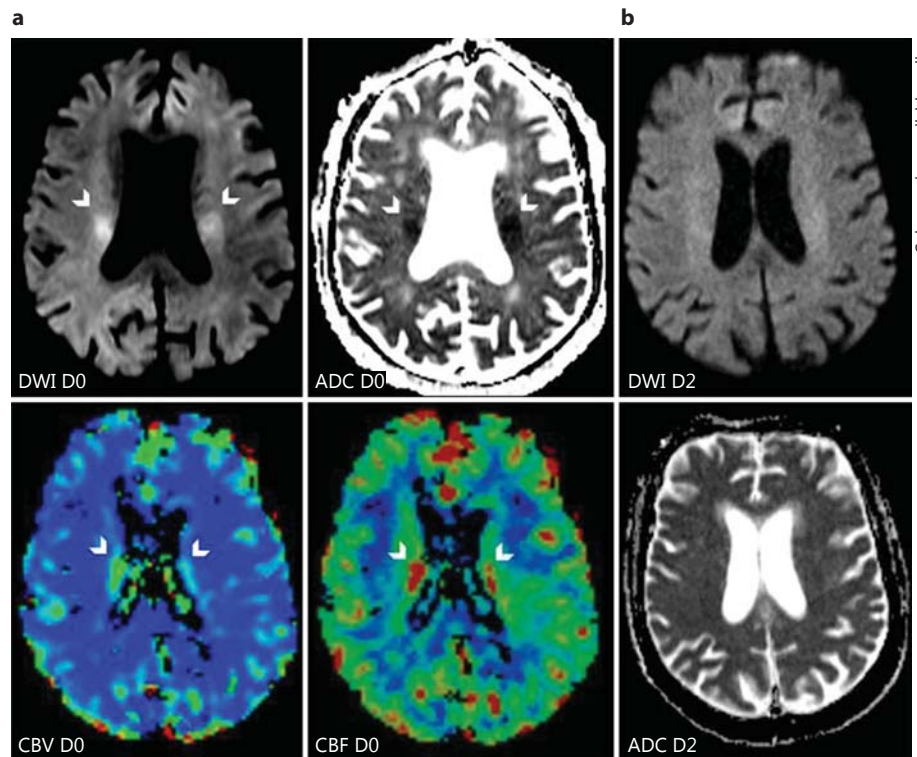


Fig. 1. **a** Brain MRI performed on admission showing bilateral DWI hyperintensities and low ADC values associated with a slight increase in cerebral blood volume (CBV) and flow (CBF) in both anterior choroidal artery territories. **b** Brain MRI performed 2 days later showed that lesions had disappeared.

sible for this pattern include energy failure, causing membrane sodium/potassium pump failure and cellular swelling with extracellular volume depletion, excitotoxic edema and asymmetrical blood flow due to the focal loss of autoregulation [2]. Symmetrical appearances of the lesions should alert to the need for a prompt and urgent assessment of the glycemc level.

A normalization of the DWI and ADC is usually seen. Here, this reversion could not be attributed to the field strength as the 2 methods are just as good for assessing stroke [3].

There are few data concerning perfusion imaging during acute hypoglycemia. A short report [4] and an experimental study [5] found an increase in the cerebral blood flow and volume similar to what we have seen. This pattern is the opposite of the one usually found during acute ischemic stroke and could be the clue that would allow cerebral infarction to be ruled out.

A prognosis would depend upon the severity and duration of the hypoglycemia. MRI may also be helpful in predicting the outcome, as the absence of any lesion or a lesion inside the internal capsule on DWI may suggest a good outcome [6].

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