

Hippocampal ischemia in a patient who experienced transient global amnesia after undergoing cerebral angiography

Case illustration

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It is well known that transient global amnesia (TGA) is a complication of cerebral angiography. We describe a case of TGA with ischemia of the bilateral hippocampi that was induced by angiography. A 43-year-old ambidextrous woman was referred to our university hospital for treatment of falx meningioma, which had been found incidentally during an examination for headache. The patient had no history of epilepsy.

The meningioma was located at the anterior one-third portion of the falx. Cerebral angiography was performed using the ionic contrast medium, ioxaglate. Before catheter insertion, 2000 U heparin was administered intravenously. A No. 5 French catheter was inserted into the right vertebral artery, at first without difficulty. Vertebral angiography was performed with 6 ml of contrast medium injected over a 1-second period. Immediately after vertebral angiography, the patient repeatedly asked why she was in the hospital. She was alert and able to identify herself but was not oriented to time or place. Her retrograde memory for approximately the preceding 1 month was also affected. Angiography in three other vessels was performed quickly. Emergency computerized tomography scanning revealed no abnormal lesions. Approximately 7 hours later, the patient's retrograde memory began to improve, but she still showed mild anterograde amnesia. Seventeen hours after angiography had been performed, she was fully recovered, but could not remember events that had occurred between the time of angiography and the evening of that day. Diffusion-weighted magnetic resonance (MR) imaging performed 20 hours after angiography revealed hyperintense lesions in the right hippocampus and probable involvement in the left hippocampus (Fig. 1 left). Hyperintense lesions were also detected in the cerebellum; however, no lesions were observed in the thalamus or retrosplenial region. Conventional T_1 - and T_2 -weighted MR images did not reveal abnormal findings in either hippocampus. A follow-up diffusion-weighted

MR image obtained 1 week later yielded normal findings, not only with regard to the hippocampi but also the cerebellum (Fig. 1 right).

It was difficult to visualize the TGA lesion after cerebral angiography. A recent study of the use of diffusion-weighted MR imaging in cases of TGA not related to angiography showed elevated signal intensity in the left mesial temporal lobe in seven of 10 patients; three of the seven patients exhibited bilateral signal abnormalities.² Other lesions detected by diffusion-weighted imaging included the left hippocampus and the splenium of the corpus callosum in a right-handed patient, and the right hippocampus, right thalamus, and left mesial temporal and retrosplenial region in another right-handed patient.^{1,3} Our findings support the hypothesis suggested by Strupp, et al.,² that bitemporal disturbances initially occur during TGA. However, their hypothesis that disturbances in the left temporal lobe last longer than those in the right may not be applied to ambidextrous patients, because the hyperintensity in the left hippocampus was too subtle in our case compared with that in the right. Bilateral signal abnormality in the hippocampus may be detected if diffusion-weighted imaging is performed soon after TGA.

References

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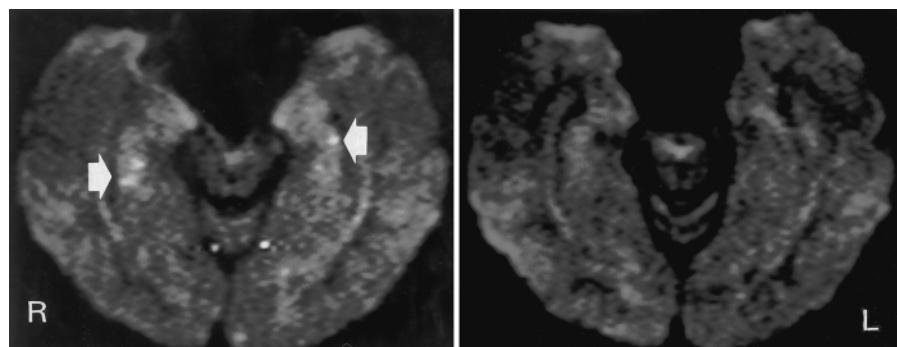


FIG. 1. Diffusion-weighted MR images (TR 0.8 msec; TE 123 msec; B value 1100 seconds/mm²; field of view 23 × 23 cm; matrix 128 × 200; 5-mm slice with a 2.5-mm gap; one excitation). *Left*: Axial image obtained parallel to the temporal lobe 20 hours after amnesia onset demonstrating bilateral hippocampi involvement (arrows). *Right*: Image obtained in the same plane 1 week later revealing no abnormality.

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