

Case report

Rapid recovery from left hemiplegia

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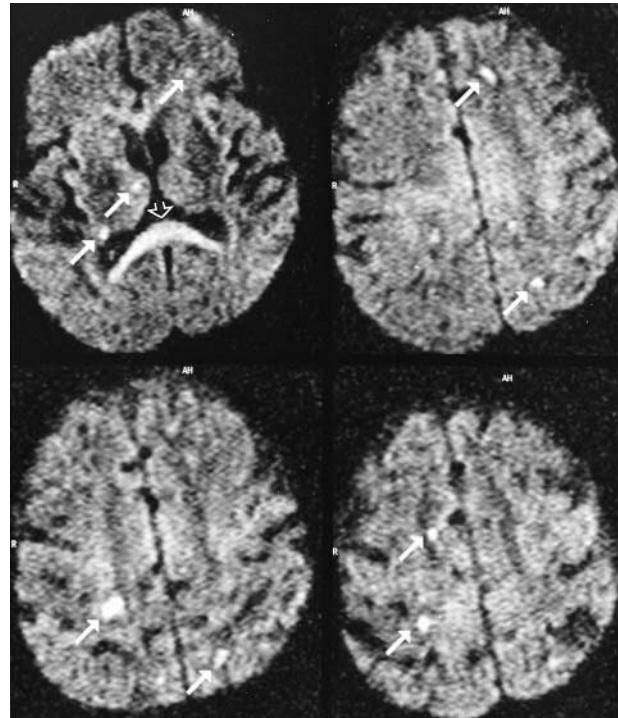
A 56-year-old woman with diabetes mellitus, chronic diabetic renal failure, and peripheral arterial disease was admitted for surgery to overcome vascular insufficiency in her left leg. Her neurological history was unremarkable. She underwent left femoral bifurcation thromboendarterectomy and iliofemoral bypass surgery. The following morning she had dialysis and in the early afternoon she was noted to have a left hemiparesis and to be inattentive. A cranial computed tomography (CT) scan showed multiple subcortical hypodense areas that suggested old lacunar lesions due to diabetic small-vessel disease but no evidence of acute ischaemia. When reviewed by a neurologist, she was somnolent and disoriented in place and time. There was continuous deviation of gaze to the right and left-sided hemiplegia. Reflexes on the left were absent with an extensor plantar response; those on the right were present and unremarkable. Pain perception in the left arm appeared greatly diminished. On the basis of the severe neurological deficit and the reduced level of consciousness, stroke due to infarction of the right middle cerebral artery infarction was suspected. Magnetic resonance imaging (MRI) for acute stroke including diffusion-weighted (DWI) sequences (EchoPlanar-SpinEcho ∞ /TE123 ms, b=300/1200 s/mm²) was done.¹⁻³ Conventional MRI (proton density, T2, and T1 weighted) showed no further structural changes than the CT scan. DWI showed no infarction of the right middle cerebral artery, but 13 small areas of high signal intensity in both hemispheres, all at the junction of white matter and cortex. The largest (0.5×1.0 cm²) was in the arm field of the motor strip in the right precentral gyrus (figure). A diagnosis of microembolic stroke was suggested. Echocardiography was normal and doppler studies of the extracranial and intracranial arteries showed no abnormalities.

Transoesophageal echocardiography showed a freely moving thrombus 1.2 cm in length with a calcified base adherent to the intimal wall of the aortic arch. Oral anticoagulation with warfarin was started. Over the next 4 days there was gradual resolution of symptoms resulting in a mild residual hemiparesis and attention deficit. On repeat MRI, 6 days later, DWI showed that the cortical lesion in the precentral hand area and three other lesions were unchanged but the remaining nine lesions were no longer visible. Two further episodes of psychotic agitation and disorientation occurred and DWI each time showed a new small lesion (in the left optic radiation, and in the right non-dominant cerebral peduncle). Repeat transoesophageal echocardiography showed a slight

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DWI MRI of supratentorial brain

There are small hyperintense areas of ischaemia (small arrows) suggestive of small embolic infarction. Bright signal in the splenium of the corpus callosum is due to anisotropy effects (open arrow)

reduction in the size of thrombus in the aortic arch and, later on, complete resolution. At discharge, 7 weeks after the initial stroke, she had made an excellent recovery with a discrete residual incoordination of her left hand and no abnormality on formal neuropsychological testing.

The clinical assumption of an extensive middle cerebral artery infarction was incorrect; multiple small emboli were the likely explanation for the severe ischaemic deficit and quick recovery. CT and conventional MRI failed to show this pathogenesis but DWI demonstrated a pattern indicating a thromboembolic source from the heart. After conventional echocardiography failed to show any abnormality, transoesophageal echocardiography, which is superior to conventional echocardiography in identifying sources of cerebral embolism (including paradoxical embolism via a patent foramen ovale),⁴ identified a freely moving thrombus in the aortic arch. This location has been noted to represent a high risk for recurrent embolic brain infarction.⁵ In this case, DWI findings led to an intensified search for the thromboembolic source, and prophylactic measures were taken early. In the presence of inconclusive CT and conventional MRI, DWI is useful not only in the early identification of cerebral ischaemia,^{2,3} but also to disclose its nature more reliably.

References

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