



Documenting the invisible in stroke-like symptoms during extracorporeal membrane oxygenation

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Case

A 17-year-old male with dilated cardiomyopathy developed cardiac arrest during hospital admission. Awakening was achieved during veno-arterial extracorporeal membrane oxygenation (ECMO). Seven days after cardiac arrest, he developed lethargy, global aphasia, and right hemiplegia. Left hemispheric infarction was suspected. However, his brain computed tomography was unremarkable. Magnetic resonance imaging (MRI) of the brain was performed soon after weaning from ECMO. Routine MRI sequences also showed no specific findings (Fig. 1a–d). However, susceptibility-weighted imaging (SWI) revealed hundreds of small signal loss lesions (Fig. 1e). His stroke-like symptoms resolved over the

course of a month, but the SWI lesions were still observable 1 year later (Fig. 1f).

SWI is highly sensitive to deoxygenated hemoglobin and thus can reveal cerebral microbleeds which are undetectable on routine imaging tools. Microbleed-mimics such as embolic infarcts with hemorrhagic transformation, fat embolism, air embolism, and calcification should be ruled out by clinical history and serial neuroimaging studies. Microvasculopathy following cardiac arrest as well as the use of anticoagulants may contribute to the development of microbleeds. In addition, exposure of blood to ECMO may lead to hemolysis, platelet dysfunction, and coagulopathy. The rapid appearance of cerebral microbleeds in our case may explain the symptoms.

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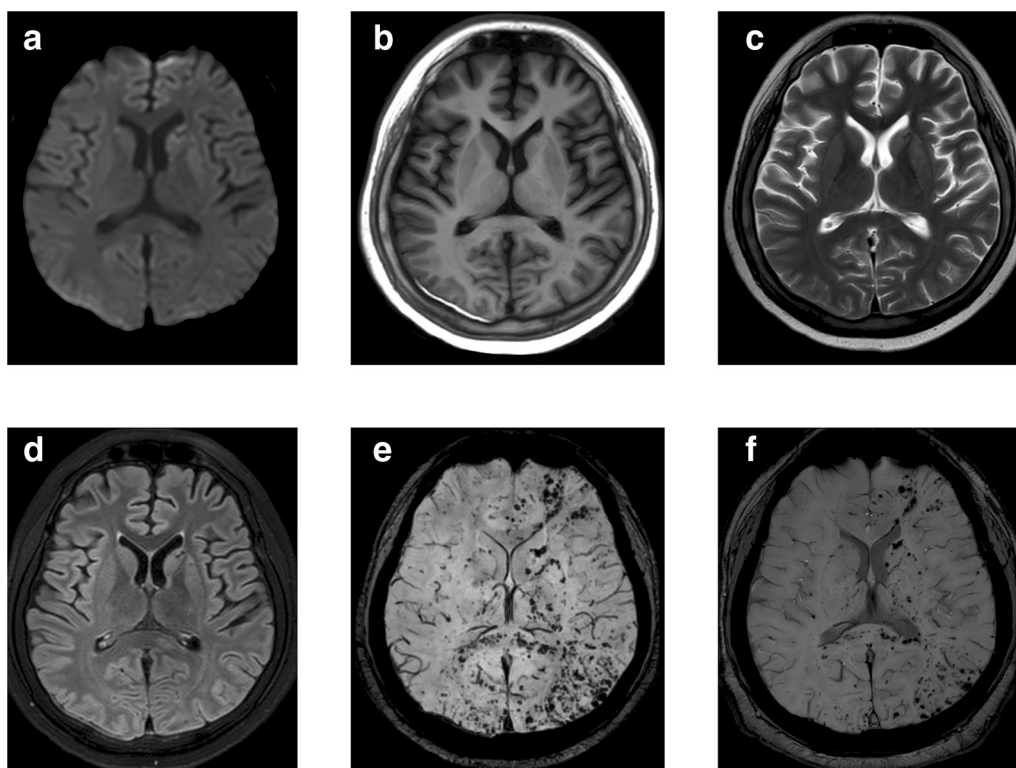


Fig. 1 Diffusion-weighted imaging (a), T1-weighted imaging (b), T2-weighted imaging (c), and fluid attenuated inversion recovery imaging (d) were unremarkable 15 days after presentation. However, susceptibility-weighted imaging revealed hundreds of cerebral microbleeds (e). Cerebral microbleeds were still observable on follow-up susceptibility-weighted imaging performed 1 year later (f)

Compliance with ethical standards

Conflicts of interest

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