

A Puzzling Case of Cryptogenic Stroke

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Background: Stroke is a common neurological complication of infective endocarditis (IE) and it is associated with increased morbidity and mortality but infective endocarditis in acute stroke setting is hard to discover. **Material and methods:** A 75-year-old man referred to hospital for the onset of left hemiparesis and dysarthria. His past medical history included hypertension. He had 3 months history of fatigue, fever, and weight loss. Neurological examination revealed left hemiparesis and dysarthria. **Findings:** Brain CT and CT angiography revealed a right M1 segment occlusion. Thrombolysis was delivered followed by mechanical thrombectomy by clot aspiration and recanalization was achieved. Anatomopathological analysis of the clot showed necrotic material and bacterial colonies consistent with septic emboli. The day after he developed fever and brain CT revealed a right parieto-occipital intraparenchymal and subarachnoid hemorrhage. Blood cultures demonstrated growth of *Enterococcus faecalis*. Treatment with vancomycin and ampicillin was started. **Conclusion:** Management of acute ischemic stroke related to IE is difficult. The great clinical challenge for the physician is recognizing the signs suggestive of IE in the acute stroke setting. Anatomic-pathological and bacteriological analysis of the clot in patients eligible to mechanical thrombectomy can provide the remarkable advantage to analyse directly the extracted material, allowing an early diagnosis and appropriate antibiotic therapies and treatments.

Key Words: Stroke—*infective endocarditis—thrombolysis—mechanical thrombectomy—clot aspiration*

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Introduction

Stroke is a common complication of infective endocarditis (IE) and represents a strong independent predictor of mortality.¹ rt-PA represents the standard of care for acute ischemic stroke² but strokes related to IE treated with rt-PA show a higher risk of haemorrhage.^{3,4} Guidelines do not recommend rt-PA for these patients⁵ but in acute stroke, infective endocarditis is hard to discover.

Case Report

A 75-year-old man referred to ER for acute onset of left hemiparesis and dysarthria. His past medical history included hypertension. He had 3-month history of fatigue, fever, and weight loss. Neurological examination

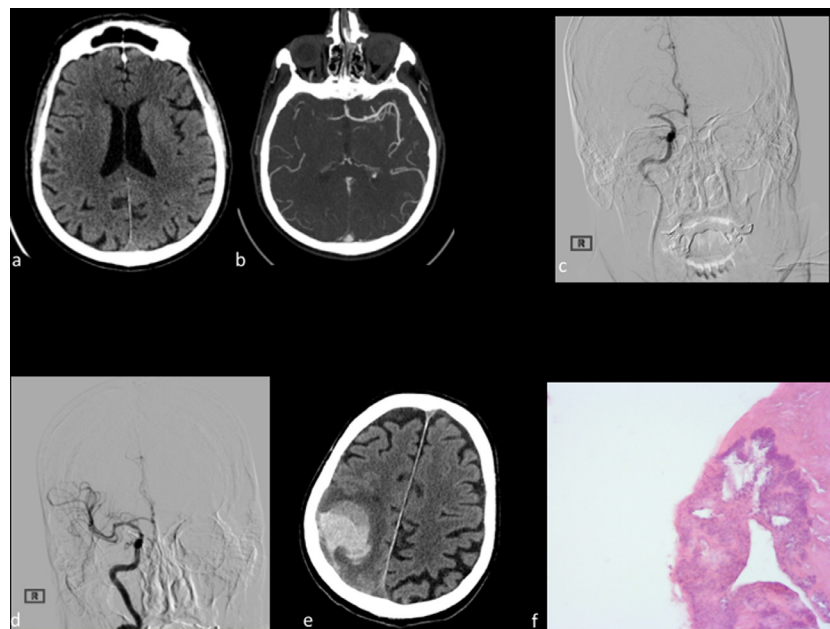


Figure 1. (a) Noncontrast-enhanced CT (NECT) at the onset of symptoms does not show abnormalities. (b) CT angiography and (c) digital subtraction angiography (DSA) show right middle cerebral artery M1 segment occlusion. (d) DSA after mechanical thrombectomy shows recanalization of right middle cerebral artery. (e) NECT scans 24 hours after onset shows a large right parieto-occipital intraparenchymal hemorrhage associated with subarachnoid hemorrhage (SAH). (f) Hematoxylin and eosin staining shows the presence of necrotic material and bacterial colonies consistent with septic emboli.

revealed hemiparesis and NIHSS was 16. Brain computed tomography (CT) and CT angiography revealed right middle cerebral artery occlusion (Fig. 1 a-b). Thrombolysis with rtPA was administered with no benefit. Clot aspiration with reperfusion (Fig. 1 c-d) was performed and anatomopathological analysis showed necrotic material and bacterial colonies consistent with septic emboli (Fig. 1, f). Follow-up brain CT revealed hemorrhage over the left central sulcus (Fig. 1, e). Blood cultures demonstrated growth of *Enterococcus faecalis* and transthoracic echocardiogram (TTE) revealed severe aortic insufficiency and vegetation in aortic valve. Antibiotic therapy with vancomycin and ampicillin was started but few days later patient worsened and died of septic shock.

Discussion

Neurologic complications are the most frequent extracardiac complications of left-sided IE occurring in 20%-55% of patients and they include acute ischemic stroke (AIS), cerebral microbleeds, cerebral abscess, mycotic aneurysms, and meningoencephalitis.⁶ Cryptogenic stroke can be the first sign of the IE in about 35% of patients and is associated with increased morbidity and mortality.⁷

The prompt beginning of appropriate antibiotic therapy and cardiac valve surgery are the best strategies for preventing embolism and reducing the risk of stroke.⁸ Conversely, the best approach to treat patient with acute ischemic stroke related to IE is controversial. IV alteplase

should not be administered because of the increased risk of intracranial hemorrhage.⁵ Recent studies on IE-related stroke showed a favorable outcome of patients treated with thrombectomy^{9,10} that can also provide the remarkable advantage of pathological examination of the extracted material, allowing a diagnosis of IE on early stage.¹¹

Conclusion

Diagnosis of IE in patients eligible for acute stroke treatments is difficult and the best treatment is not well established yet. It is not known whether clot retrieval is helpful in cases of endocarditis-related embolic stroke but on the other hand, thrombectomy by clot removal when performed may give the advantage of anatomo-pathological analysis of the clot providing a fast diagnosis for cryptogenic stroke related to infective endocarditis.

When mechanical thrombectomy is performed, the histopathological and bacteriological analysis of the clot may be advisable and may be helpful for IE diagnosis allowing early therapies.

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