Case Report

Catastrophic Multiple Microbleeds Caused by Infective Endocarditis Following Intravenous Thrombolysis and Endovascular Thrombectomy

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Ischemic stroke is one of the most common complications of infective endocarditis (IE). IE must be considered as one of the causes of acute ischemic stroke (AIS) with emergent large vessel occlusion (ELVO), but early diagnosis of IE is difficult. AIS with ELVO must be treated using endovascular thrombectomy (EVT), with or without intravenous thrombolysis (IVT). IVT for AIS due to IE is not well established and remains controversial because of the risk of intracranial hemorrhage. A 42-year-old man suffered from right hemiparesis and disorientation, and AIS with ELVO was diagnosed. EVT with IVT was successfully performed and recanalization was achieved, but catastrophic multiple cerebral microbleeds appeared after treatment. EVT without IVT could be chosen for AIS caused by IE to avoid hemorrhagic complications. Hypointense signal spots on T2*-weighted magnetic resonance imaging (MRI) and susceptibility-weighted MRI could facilitate early diagnosis of IE.

Key Words: Infective endocarditis—intravenous thrombolysis—acute ischemic stroke—catastrophic multiple cerebral microbleeds—endovascular thrombectomy

Introduction

Stroke is one of the major complications of infective endocarditis (IE). IE must be considered one of the causes of acute ischemic stroke (AIS). The efficacy and safety of intravenous thrombolysis (IVT) for AIS due to IE remains controversial.[1] We describe the case of a patient with AIS, did not receive early diagnosis of IE, and presented with catastrophic multiple microbleeds following IVT and endovascular thrombectomy (EVT).

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Received March 28, 2019; revision received May 7, 2019; accepted June 2, 2019.

No funding was received for this report.

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1052-3057/$ - see front matter

https://doi.org/10.1016/j.jstrokecerebrovasdis.2019.06.004

Case Presentation

A 46-year-old man with no past medical history presented with left hemiparesis and disturbance of consciousness within 1.5 hours after symptom onset. On arrival, he presented with no cardiac murmur and no rash including Osler's nodes and Janeway lesions throughout his body. His C-reactive protein level on admission was 9.66 mg/dL and white blood cell counts were 12.1×10^3 cells/μL. Magnetic resonance imaging (MRI)/angiography of the head showed right thalamic and left cerebellum infarction and occlusion of the top of the basilar artery and distal part of the right posterior cerebral artery (Fig 1A-C). Furthermore, hypointense signal spots (HISS) in the cortex, subcortex, around the sulci, and in the cerebellum were detected on susceptibility-weighted imaging (SWI) (Fig 1D-F). We diagnosed AIS with emergent large vessel occlusion (ELVO). We decided to perform EVT with IVT for AIS. Recanalization was achieved. At the same time, diagnostic digital subtraction angiography depicted no mycotic cerebral aneurysm. However,

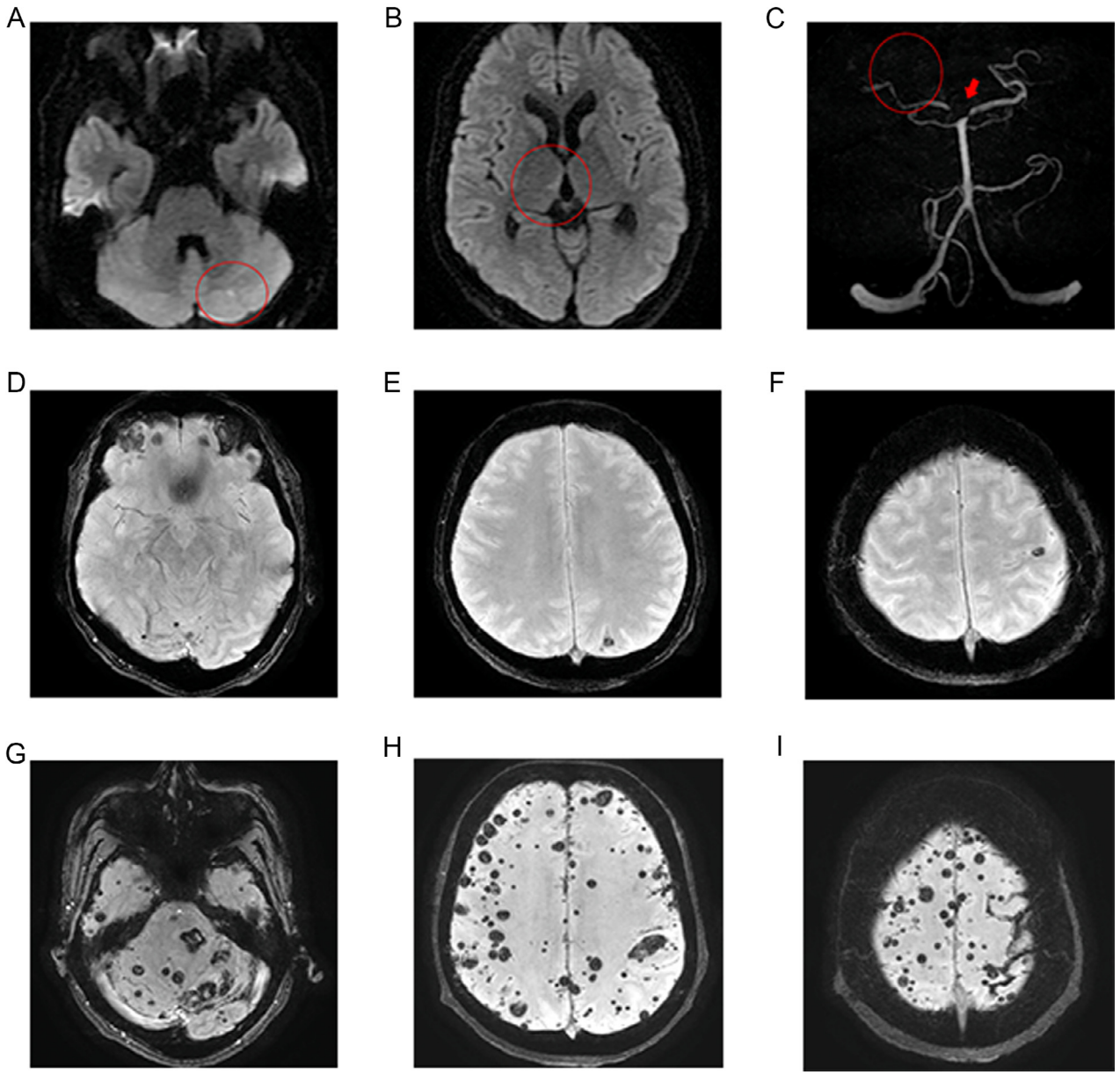

Figure 1. *(A and B) Magnetic resonance imaging (MRI) shows right thalamic and left cerebellar infarction (red circle) on diffusion-weighted imaging (DWI). (C) MR angiography (MRA) shows occlusion from the top of the basilar artery (arrow) and distal part of the right posterior cerebral artery (red circle). (D-F) Some hypointense signal spots are detected in the cortex, subcortex, around the sulci, and in the cerebellum on susceptibility-weighted MRI (SWI). (G-I) Postoperative SWI shows catastrophic multiple microbleeds in the cortex, subcortex, around the sulci, and in the cerebellum. (Color version of figure is available online.)*

postoperative MRI showed catastrophic multiple HISS on SWI (Fig 1G-I), even in regions unrelated to EVT. Later, his fever rose to 39.5°C. Transthoracic echocardiography demonstrated 10-mm mobile masses on the surface of aortic valves, consistent with vegetations. Finally, all 3 sets of blood cultures grew *Streptococcus parasanguinis*. We diagnosed AIS caused by septic emboli due to IE. The patient subsequently underwent aortic valvuloplasty and continued prescription of antibiotics. The postoperative course went well, and he was discharged home with only cerebellar ataxia persisted. No de novo cerebral aneurysm was shown in the follow-up digital subtraction angiography at a month and 6 months after the onset.

Discussion

Stroke is one of the major complications of IE. However, the consensus has been lacking on how to treat AIS with ELVO due to IE.[1-4] With limited sources of information within several hours from the onset regarding treatment strategies for AIS due to IE, IVT might increase the risk of hemorrhagic complications. However, EVT as a first-line

treatment rarely increases the chance of hemorrhagic complications.

Brain MRI, especially T2* weighted and SWI, is useful for the diagnosis of IE.[5-7] Judging whether microbleeds were present before or caused by IE is difficult, HISS detected in the cerebellum are strongly assisted with IE.[6-8] In the present case, we could have avoided catastrophic multiple microbleeds after IVT and EVT, if microbleeds in the cerebellum were initially detected and strongly suspected to represent IE.

Conclusions

EVT without IVT should be chosen for AIS with ELVO caused by IE to avoid hemorrhagic complications. HISS detected in the cortex, subcortex, around the sulci, and in the cerebellum on SWI could help with early diagnosis of IE.

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