

## Case Studies

# Multiple Thromboembolic Cerebral Infarctions from the Aorta in a Patient with Churg–Strauss Syndrome

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**Background:** Ischemic stroke is a rare complication of Churg–Strauss syndrome (CSS) and its pathogenesis has not been well clarified yet. We report a case of cerebral infarction in a patient with CSS due to embolism from a thrombus on the wall of the aorta. **Case:** A 39-year-old man had multiple cerebral infarctions with symptoms of mild left hemiparesis and reduced vision. He was clinically diagnosed to have CSS based on remarkable eosinophilia, history of asthma, sinusitis, pulmonary infiltrates, and histologically proven extravascular eosinophilic infiltrates in the specimen of gastric mucosa. Cerebral angiography did not show any stenotic lesions in cerebral arteries. A thrombus was detected on the wall of the aorta by transesophageal echocardiography, which was considered as the source of embolism. The thrombus resolved on follow-up examination 3 months after the onset of the stroke. **Conclusions:** This is the first case report on cerebral infarction caused by aortogenic thromboembolism in a CSS patient. Other than cerebral vasculitis, embolism from cardiovascular system, including the wall of the aorta, is a possible cause of cerebral infarctions in a CSS patient. **Key Words:** Churg–Strauss syndrome—embolism—aorta—eosinophilia—vasculitis.

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## Case Illustration

A 39-year-old man was found to have elevated eosinophil count on medical checkup. After 1 month, he had general fatigue, cough, and fever. The patient was diagnosed to have bronchial asthma; however, the symptoms did not improve despite antibiotics and bronchodilator. At the same time, eosinophils remarkably increased (leukocyte count of 21,500 with 59.6% eosinophil). Blood test did not show hypercoagulability.

A few weeks later, the patient felt left arm weakness and decrease in eyesight. Brain magnetic resonance imaging showed multiple cerebral infarctions in the territory of bilateral middle cerebral artery and bilateral posterior cerebral artery (Fig 1, A). Cerebral angiography did not show any stenotic changes (Fig 1, B).

Based on the history of asthma and remarkably elevated eosinophil count, we suspected Churg–Strauss syndrome (CSS). Pulmonary computed tomography showed subtle bronchial inflammatory changes and minimal pleural effusion; head computed tomography showed mild ethmoid sinusitis. Gastrointestinal endoscopy detected acute inflammatory changes of the gastric mucosa, and histological examination showed extravascular infiltration of eosinophils. The patient met the American College of Rheumatology criteria for CSS.<sup>1</sup>

Electrocardiogram and Holter monitoring could not detect any arrhythmia. Transesophageal echocardiography (TEE) demonstrated a mass lesion on the wall of the sinus of Valsalva (Fig 1, C). We considered that this mass lesion

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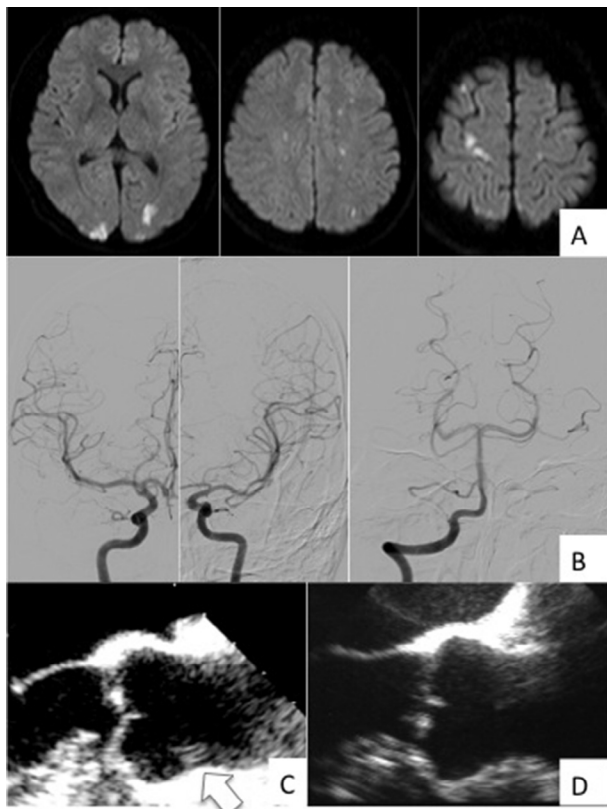
Received May 26, 2015; revision received October 18, 2016; accepted October 31, 2016.

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1052-3057/\$ - see front matter

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<http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2016.10.042>



**Figure 1.** (A) Diffusion-weighted magnetic resonance images revealing multiple cerebral infarctions in the territory of bilateral middle cerebral artery and bilateral posterior cerebral artery. (B) Cerebral angiograms showing neither stenotic nor occlusive changes in large vessels. (C) Transesophageal echocardiography demonstrating a mass lesion (arrow) on the wall of the sinus of Valsalva, which was considered to be a thrombus. (D) The mass lesion disappeared 3 months after the first examination.

might be a thrombus and a possible source of embolism. Mild thickness of the aortic valve was also demonstrated. We treated him with oral warfarin administration, and the mass lesion disappeared on follow-up TEE 3 months after (Fig 1, D).

## Discussion

Ischemic stroke is a rare complication of CSS, and its pathogenesis has not been clearly understood. Cerebral vasculitis has classically been assumed to be the main cause; however, the etiology of the reported cases has been diversified.<sup>2-7</sup> Recently, a high prevalence of cardiac involvement in CSS has been reported.<sup>8,9</sup> The pathophysiology of cardiac changes in CSS was attributed to eosinophil degranulation, which causes inflammatory

changes like myocarditis, endocarditis, and pericarditis.<sup>2,3</sup> Due to these inflammatory changes, a thrombus can be formed in the ventricle or on the wall of aorta and become a possible cause of embolism.<sup>9</sup> TEE and cardiac magnetic resonance imaging were found to be suitable for detecting these cardiac changes.<sup>10,11</sup> In conclusion, embolism from the cardiovascular system, including the wall of the aorta, is one of the possible mechanisms for cerebral infarction in CSS.

**Acknowledgments:** I am grateful to Dr. Yuko Tanaka and Dr. Tomoaki Terada for helpful discussions, and for Dr. Shintaro Kuki for helpful cardiovascular investigations.

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