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## Non-bacterial thrombotic endocarditis in a Trousseau syndrome patient with stomach cancer: A case report

Dear Editor,

Older adults often experience stroke or cancer, which can have important influences on their activities of daily living and life. Unfortunately, stroke and cancer are sometimes complicated and related to each other.

Since 1865, many studies have confirmed the association between cancer and cerebral infarction (CI).<sup>1,2</sup> Trousseau syndrome and non-bacterial thrombotic endocarditis (NBTE) are widely recognized as the causes of stroke in patients with cancer. However, the therapeutic strategy for patients with both Trousseau syndrome and NBTE remains controversial excluding treatment for cancer.<sup>3–7</sup>

A 78-year-old woman with gastric cancer developed paresthesia of the right hand 10 months after gastrectomy with adjuvant chemotherapy. In addition, she experienced paresthesia of the right side of her lips and dysarthria after waking up from sleep; thus, she visited our hospital, Tokyo Metropolitan Geriatric Hospital, Tokyo, Japan. She had a history of transient ischemic attack. The patient had neither fever nor cardiac murmur. Neurological findings included mild right hemiparesis, paresthesia of the right hand and instability during walking.

The serum values of carcinoembryonic antigen, d-dimer, thrombin–antithrombin complex, plasmin- $\alpha$ 2-plasmin inhibitor complex, and protein C and S activity were elevated. Serum tests of lupus anticoagulant and anticardiolipin antibodies were within normal limits. There was no evidence of collagen disease, atrial fibrillation, pulmonary thromboembolism, deep vein thrombosis or stenosis of the carotid artery. Repeated blood cultures were negative. Transthoracic echocardiography showed only mitral annular calcification.

Head magnetic resonance imaging showed a scattered high intensity of diffusion-weighted images in the bilateral cerebral cortex, white matter and cerebellum, including the border zone (Fig. 1a).

She was diagnosed with Trousseau syndrome; thus, treatment with anticoagulants was initiated. However, the patient's response to the treatment was poor, and her neurological symptoms deteriorated. A further cardiac assessment using transesophageal echocardiography showed an abnormal mobile structure attached to the bicuspid of the mitral valve without leaflet destruction, suggesting infectious endocarditis (Fig. 1b; supplemental data). We suspected a cardiac tumor or NBTE, and carried out a mitral valve replacement with a biological valve to avoid fatal embolism. The abnormal structures on the mitral valve were diagnosed as NBTE by pathological findings (Fig. 1c, d).

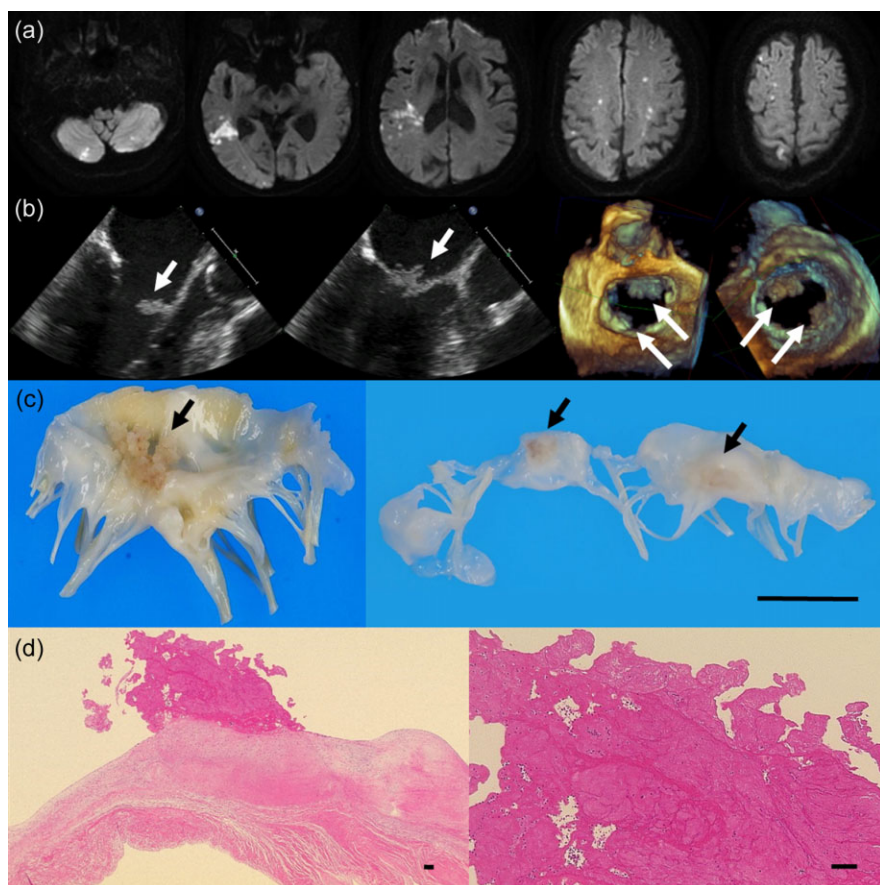
Her postoperative course was good, and she underwent rehabilitation; however, recurrent small CI could not be prevented. The patient's stomach cancer became terminal; thus, she was discharged to home care on her family's request.

Here we report a Trousseau syndrome patient with pathologically confirmed NBTE who presented with recurrent ischemic strokes. The patient underwent mitral valve replacement to avoid lethal CI and preserve activities of daily living. Before the present report, little evidence existed about successful treatments for CI patients with both NBTE and Trousseau syndrome.<sup>8</sup> Also, in older adults, invasive therapy, including cardiac surgery, represents a valuable therapeutic alternative in patients with large mobile vegetations, valvular dysfunctions or recurrent embolic events that are unresponsive to treatment with anticoagulants.<sup>9</sup>

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### Disclosure statement

The authors declare no conflict of interest.



**Figure 1** Head magnetic resonance imaging, cardiac echography and histopathological findings of the resected mitral valve. (a) Diffusion-weighted images show hyperintense lesions in multiple vascular territories on admission. (b) Two- and three-dimensional transesophageal echocardiography show large abnormal mobile structures attached on A1–A2 lesions of the anterior leaflet and P3 lesions of the posterior leaflet of the mitral valve. Arrows show abnormal structures on the mitral valve. (c) Macroscopic finding of surgical materials shows several white vegetations on the anterior (left; 4 mm in diameter) and posterior (right; 3 mm in diameter, 2 in number) leaflet of the mitral valve (arrows). Bar, 1 cm. (d) Histology of multiple fibrin thrombi with neutrophilic infiltration and myxoid degeneration of the mitral valve. Bar, 100  $\mu$ m. Hematoxylin–eosin and Elastica van Gieson staining.

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