Pathological Findings of Rivaroxaban-Associated Hemorrhagic Pericarditis

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Figure. Imaging and autopsy findings of hemorrhagic pericarditis. (A) Echocardiogram showing a moderate amount of pericardial effusion at the posterior position (dotted cross). (B) Contrast-enhanced computed tomography shows pleural and pericardial effusion with marginal contrast enhancement (white arrow). (C) T1-weighted magnetic resonance imaging showing pericardial effusion mimicking an isointense mass (yellow arrow). (D) Ventral surface of the mediastinum showing hemorrhagic pericardial effusion (white arrow, hemorrhage). (E) Hematoxylin-eosin staining of the hemorrhagic pericardium, showing hematoma and the presence of capillary vessels (scale bar, 1 mm) and (H) high-resolution image of the black box area (scale bar, 100 μm). (F,G,I,J) Immunostaining performed at the same site is equally positive for (F,I) CD34 (scale bars: F, 1 mm; I, 100 μm) and (G,J) D2-40 (scale bars: G, 1 mm; J, 100 μm).
We describe the pathological findings of hemorrhagic pericarditis in a 76-year-old man who had been receiving rivaroxaban for atrial fibrillation (CHADS2 score, 3) and who had a history of cardiac surgery (coronary artery bypass surgery and mitral valve repair) 9 years prior to admission. Although the patient had been on aspirin after surgery, the aspirin had to be discontinued due to continuous nasal hemorrhage 3 months earlier.

At admission for worsening heart failure, echocardiography showed a moderate amount of pericardial effusion (Figure A). Computed tomography showed a moderately sized enhancing pericardial effusion with marginal contrast enhancement (Figure B). T1-weighted magnetic resonance imaging (MRI) indicated an isointense pericardial effusion, which also suggested hemorrhagic pericardial effusion (Figure C). As a result, rivaroxaban had to be discontinued, which evoked cerebral infarction. The patient died and an autopsy was performed. Histology not only confirmed the diagnosis of hemorrhagic pericardial effusion (Figure D–G) and thromboembolic stroke, but also showed thrombi at the left atrial appendage. Also, angiogenesis and lymphangiogenesis, indicative of a relatively fresh hematoma, were seen on microscopy.

Rivaroxaban is an oral anticoagulant—an factor Xa inhibitor—approved for the prevention of stroke and thromboembolism in patients with atrial fibrillation.1 The occurrence of hemorrhagic pericarditis as a complication is extremely rare. The present patient had previously undergone cardiac surgery, suggesting the possibility of post-pericardiotomy syndrome.2

Disclosures
The authors declare no conflicts of interest.

References