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Imaging and Case Report

Concomitant Pulmonary Embolism and Anterior Myocardial Infarction as the Initial Presentation of Antiphospholipid Syndrome

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Antiphospholipid antibody syndrome (APLS) is a systematic autoimmune disease characterized by thrombotic events, including arterial, venous, and microvascular complications. Often, patients initially present with either arterial or venous thromboembolism but rarely present simultaneously with arterial and venous thromboembolic events.[1] We report an unusual case of a 21-year-old woman who presented to our hospital with chest pressure secondary to a concomitant pulmonary embolism (PE) and anterior myocardial infarction.

Clinical case

A 21-year-old woman with no significant past medical history, only on oral contraceptive pills, presented to the hospital with complaints of 4 days of progressively worsening substernal chest pressure associated with dizziness and lightheadedness. In the emergency department, she was mildly tachycardic but otherwise hemodynamically stable. An electrocardiogram revealed sinus rhythm with anterior T-wave abnormality (Figure 1A). Initial laboratory testing revealed mild thrombocytopenia and elevated troponin I levels of 9.63 ng/mL. A computed tomography angiography of the chest revealed small nonocclusive emboli in the right lower lobe pulmonary artery (Figure 1B); therefore, venous duplex ultrasound of the lower extremities was performed, which showed no evidence of deep vein thrombosis. Anticoagulation with intravenous heparin was started, and the patient was admitted to the floor with telemetry monitoring. Early morning on day 2 of hospitalization, the patient reported worsening chest pain, and the troponin I levels subsequently trended up to 20.08 ng/mL. A repeat electrocardiogram showed subtle ST-segment elevations, with QS complexes in the anterior leads. A bedside transthoracic echocardiogram revealed hypokinesis of the anterior wall and a severely reduced left ventricular ejection fraction. The patient was transferred to the cardiac catheterization laboratory for emergency coronary angiography.

Coronary angiography showed 100% occlusion of the left anterior descending artery (LAD) at the ostium. The right coronary artery was patent with extensive right to left collaterals supplying the LAD. A filling defect was noted in the proximal LAD, consistent with a thrombus. Thrombus aspiration was performed using the Indigo System CAT RX (Penumbra, Inc), followed by the placement of a single 3.0 × 18 mm XIENCE Skypoint (Abbott) drug-eluting stent in the proximal LAD, with resultant TIMI-3 flow. A formal transthoracic echocardiogram demonstrated a left ventricular ejection fraction of 35%-40%, with a large left ventricular thrombus.

Subsequent testing revealed antibody positivity for APLS, with elevated titers of anticardiolipin, lupus anticoagulant, and beta-2-glycoprotein antibodies. The patient was discharged on aspirin, ticagrelor, and warfarin along with high-intensity statin therapy, a low-dose angiotensin-converting enzyme inhibitor, and β-blocker therapy. The patient's oral contraceptive pills were discontinued, and the patient was counseled about the use of an alternative nonhormonal mode of contraception. Approximately 12 weeks after discharge, the patient's outpatient laboratory reports showed persistent elevation of all 3 antibodies, thus establishing the diagnosis of triple-positive APLS.

Discussion

Massive or submassive PEs can cause acute right heart strain and result in a small elevation of troponin levels. However, a high initial troponin level in patients with a nonmassive PE should raise suspicion of acute coronary syndrome, even with a low pretest probability of acute coronary syndrome.[2,3] Therefore, the detection of a high initial troponin level should be followed by serial troponin level testing and electrocardiograms, an echocardiogram, and an ischemic evaluation. Patients with APLS may present with complications of arterial or venous thromboembolism; however, they rarely present with both simultaneously. Myocardial infarction and PE associated with APLS have been extensively reported in the literature; however, there are limited reports regarding the incidence of simultaneous events as the initial presentation of APLS.[4] A high index of suspicion should be maintained for APLS in young patients

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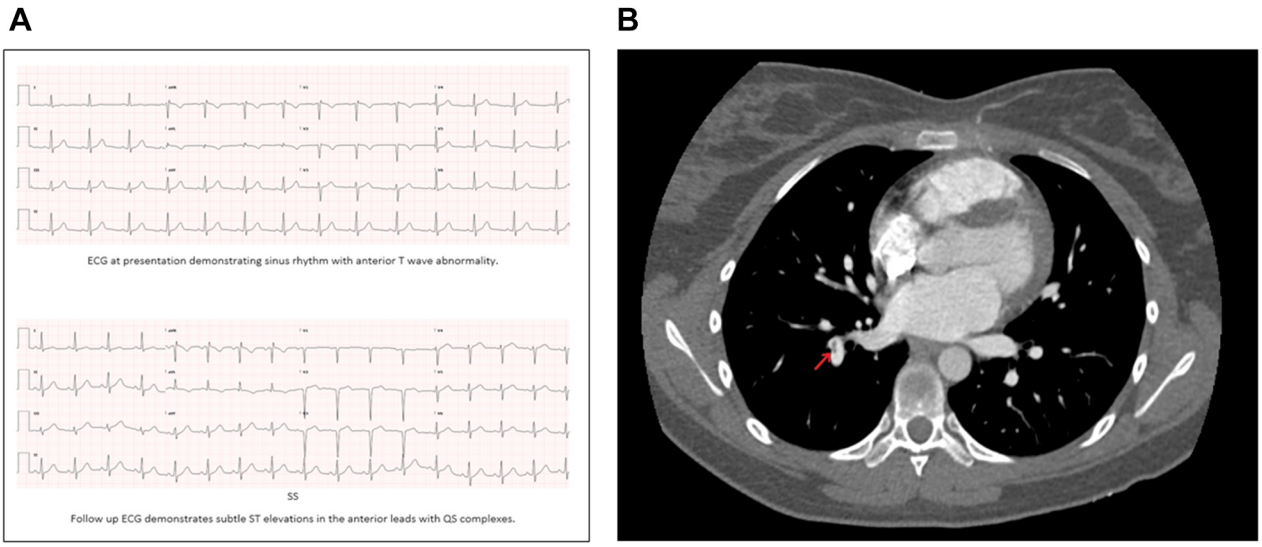

Figure 1. (**A**) Follow-up electrocardiogram demonstrating new QS complexes with subtle ST-segment elevation in the anterior leads. (**B**) Computed tomography angiography of the chest showing evidence of pulmonary embolism.

presenting with concomitant arterial and venous thromboembolic events because the timely diagnosis and initiation of anticoagulation can prevent further thromboembolic complications. Further research is required regarding optimal anticoagulation strategies after percutaneous coronary interventions in patients with hypercoagulation disorders.

Declaration of Competing Interest

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Ethics statement

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate.

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