

CARDIOVASCULAR ULTRASOUND IN THE DIAGNOSIS AND MANAGEMENT OF ACUTE INTERMEDIATE-RISK PULMONARY EMBOLISM

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A 72-year-old obese woman, with history of arterial hypertension 17 presented to emergency department with a 10-day history of progressive dyspnoea (NYHA class III/IV). Prior this examination, she experienced 18 days before a collapse with consequent fracture of the left humerus. She has subjected to immobilization. On physical examination, the patients was a haemodinamically stable, with a normal auscultatory findings, a blood pressure of 120/80 mmHg, regular pulse rate of 125 bpm, and respiratory rate of 16 breaths/min. After removing immobilization left arm swelling was revealed. The electrocardiogram revealed sinus tachycardia with S₁Q₃T₃ pattern. Blood gas analysis obtained on room air showed slightly decreased oxygen partial pressure (8 kPa) and saturation (90%). Echocardiography revealed highly mobile thrombus in the dilated right atrium (Fig. 1A and B), dilated and hypoki-

netic right ventricle, mild tricuspid regurgitation and moderate pulmonary artery hypertension (systolic pulmonary arterial pressure was 60 mmHg). A venous ultrasonography (Fig. 1C) demonstrated that thrombi were originated in the deep veins of the left arm. The intermediate-risk pulmonary embolism (PE) was diagnosed. Considering patient's age, functional status, and patient's consent after the therapeutic options was explained, thrombolytic therapy (streptokinase, 1.5 MU over 2 hours) was performed. Within 20 hours after thrombolysis, echocardiography demonstrated complete dissolution of the right atrial thrombus, improved right ventricular function, and reduction of the pulmonary arterial pressure (for approximately 20 mmHg). No adverse effects of the therapy were noted. Anticoagulation therapy with LWMH low molecular weight heparin and warfarin was started, and the patient was

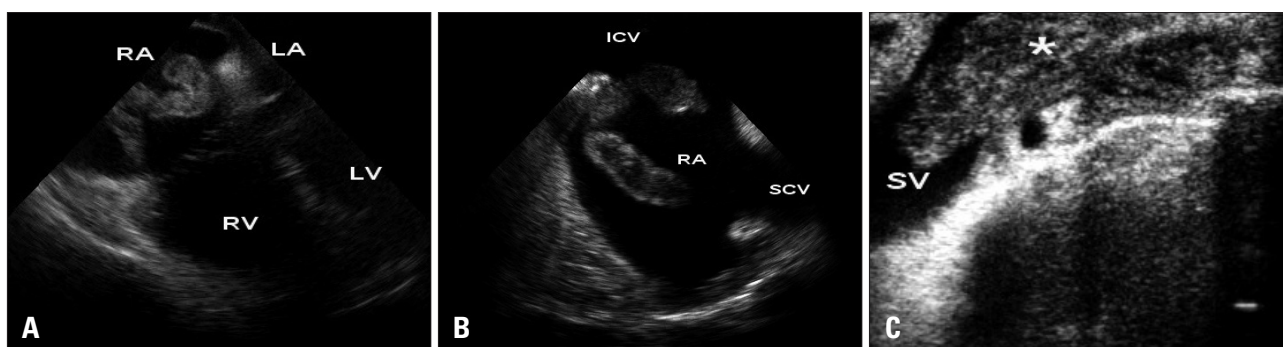


Fig. 1. Transesophageal echocardiography (A and B) showed highly 76 mobile thrombus in the dilated right atrium, and duplex-Doppler scanning (C) revealed subocclusive thrombosis (*) of the left subclavian vein. RA: right atrium, RV: right ventricle, LA: left atrium, LV: left ventricle, SCV: superior caval vein, ICV: inferior caval vein, SV: subclavian vein.

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discharged after 10 days. After two months warfarin therapy, echocardiography showed normal cavities size and function, and duplex-Doppler scanning of the left arm showed completely dissolution of thrombus and constitution of venous flow with vein-valve competency.

Recent clinical practice guidelines confirm that thrombolytic therapy is the first-line therapy for high-risk PE, and heparin the first-line therapy for non-high-risk PE.¹⁾ Routine use of thrombolysis in non-high risk PE patients is not recommended, but may be considered in selected patients with intermediate-risk after thorough consideration of contraindications.¹⁾ PE patients at higher risk of death, despite the absence of systemic arterial hypotension and cardiogenic shock, are those with right ventricular dilatation and hypokinesis or akinesis on echocardiography, right heart thrombi, pulmonary arterial systolic pressure > 50 mmHg, age > 70 years, and elevated troponin level.^{1,2)} Patients with PE and right heart thrombi have a very poor short term prognosis with early mortality of 44%, despite their clinical stability, primarily because these highly mobile, poorly fixed clots are at high risk for fatal re-embolisation.³⁾ In our case, additional reason for thrombolytic therapy was massive thrombus revealed in left

subclavian vein. In that case, thrombolytic therapy lead to a simultaneous lysis of the thrombus in the deep vein system as well as those in the right heart and pulmonary arteries, resulting in clinical improvement and decreased re-embolization risk. Therefore, echocardiography confirmation of the right heart thrombi is a clear reason for early thrombolysis even in clinically stable patients with intermediate-risk PE, if absolute contraindications for thrombolytic treatment are not exist.

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