

Massive intracardiac thrombosis formation during veno-arterial extracorporeal membrane oxygenation support

Case presentation:

A 68-year-old female, with a history of heart failure, dilated cardiomyopathy, severe mitral regurgitation and underwent mitral valve replacement 2 months ago, was sent to our emergency department due to sudden collapse after a cough while chatting with her neighbors. Initial electrocardiogram revealed monomorphic and polymorphic ventricular tachycardia and DC shock was given. After cardio-pulmonary resuscitation, recovery of spontaneous circulation was obtained. Veno-arterial extracorporeal membrane oxygenation was implanted for stabilizing hemodynamic status. Bedside transthoracic echocardiography at emergency department showed severely impaired left ventricular systolic function and dilated chamber, no mitral regurgitation, leakage of prosthetic valve, right ventricular dilatation, pericardial effusions, nor intracardiac thrombosis. However, massive thrombosis extending from left atrium to pulmonary artery developed one day after ECMO was implanted. Trans-esophageal echocardiography showed there's severe blood stasis in left atrium and suspicious soft thrombus formation. Prosthetic dysfunction was also highly suspected due to limited movement of prosthetic leaflets, probably related to thrombus formation. For further confirmation of thrombosis and anatomical correlation, computed tomography was arranged and we inserted a balloon wedge catheter for contrast injection manually (as we know that intravenous route contrast injection leading to rapid suction of contrast from ECMO V cannula in right atrium and therefore poor quality of CT image). However difficulty of advancing Swan-Ganz catheter was noted and there was no normal PA or wedge wave obtained. We injected contrast into right ventricle and finally it confirmed left atrium and pulmonary artery filled with thrombosis and leading to circulatory obstruction (Figure 1). In this case, early development of massive intra-cardiac thrombosis within 24hours after ECMO implantation has been described. The consequence of this case should be keep in mind is that patients underwent prosthetic valve replacement are associated with higher risk of unexpected intracardiac thrombosis formation after ECMO implantation. TEE and early CT(with adequate contrast injection via Swan-Ganz catheter) are warrant for diagnosis and further decision making.

Cannulation of ECMO made contrast enhanced CT difficult to reveal image, so we tried to placement swan ganz as close to pulmonary capillary as possible. Unexpected huge thrombosis extended from main PA to LA stopped the advance of

catheter, and the usual contrast medium was too thick for Swan-Ganz injection due to its small diameter. We overcame the latter by rapid hand transmission instead of standard syringe pump of contrast and got complete images successfully. After discussion with families, they rejected anymore therapy so the patient was discharged.

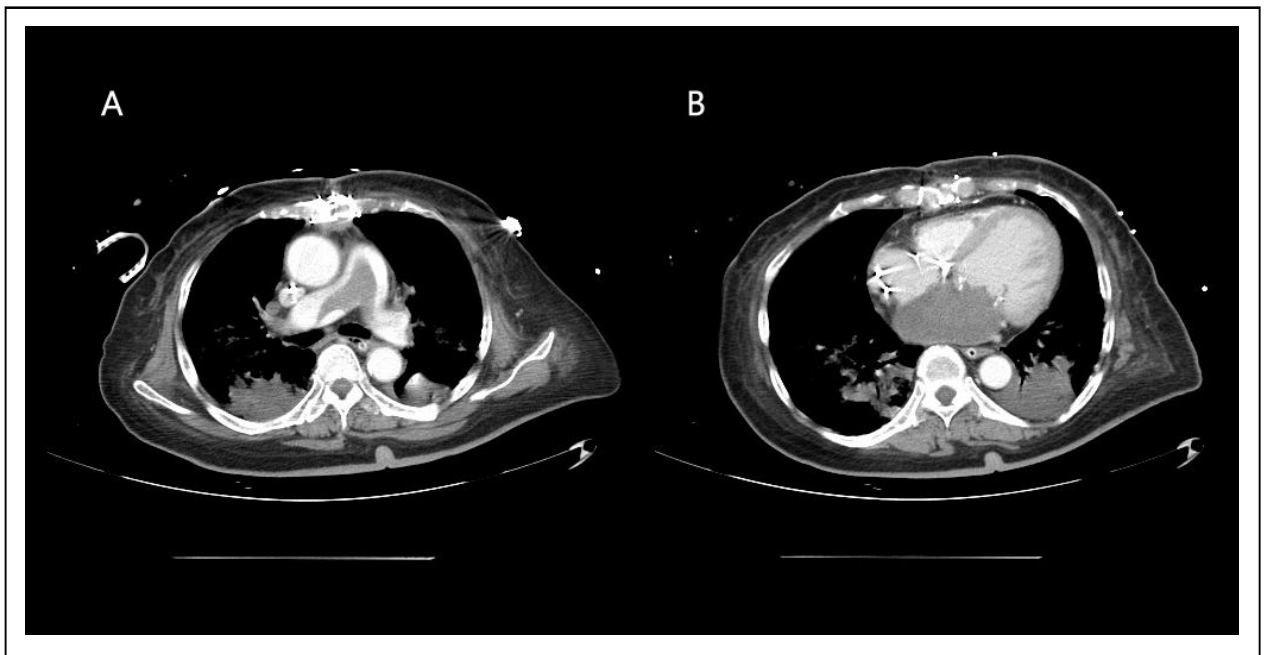


Image and figure legend:

Figure 1

Contrast enhanced CT(contrast injection via Swan-Ganz catheter in right ventricle),
A: thrombosis in pulmonary truck; B: left atrium filled with thrombus, leading to hemodynamic obstruction.

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Reference:

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