

Case Report

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Biventricular and Left Atrial Free Floating Thrombi in a Patient Diagnosed with Fulminant Myocarditis Managed with Thrombectomy and Left Ventricular Assist Device Implantation

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Abstract

The majority of acute viral myocarditis cases are subclinical and self-limiting in both adults and children. However, acute fulminant myocarditis (AFM) has a fatal course due to the rapid development into acute heart failure, cardiogenic shock or serious arrhythmias. Cardiac thrombus formation is an important factor affecting the prognosis of these patients. We present a patient who was diagnosed as AFM with multiple free floating intracardiac thrombi and aimed to explore the clinical characteristics and the treatment of AFM.

Keywords: Myocarditis; Thrombus; Assist device; Echocardiography

Case Presentation

A previously healthy 18-year-old man was admitted to our hospital with cardiac decompensation after a flu-like disease 2 weeks earlier. The electrocardiogram displayed negative T-waves in anterior precordial leads with low voltage QRS complexes. Laboratory findings revealed leukocytosis ($18 \times 10^3/\mu\text{L}$, 65% lymphocytes) and elevated blood levels of troponin I (2.5 ng/mL) (Normal < 0.05 ng/mL), C reactive protein: 38 mg/dL (Normal < 0.8 mg/dL), procalcitonin (11 mcg/mL) (Normal < 0.5 mcg/mL) and NT-proBNP (3100 pg/mL) (Normal < 300 pg/mL). Physical examination revealed a heart rate of 115 bpm, respiratory rate of 21/min, blood pressure of 100/70 mmHg. Transthoracic echocardiography (TTE) revealed a globally hypokinetic and dilated left ventricle with an ejection fraction of 15% and multiple mobile thrombi in all heart chambers except right atrium (Figure 1). The septal wall thickness was measured as 15 mm and right ventricular systolic function was also diminished. There were not any signs of any

other organ failure on admission. The patient underwent emergent surgery with thrombectomy and left ventricular assist device (LVAD) implantation without any thromboembolic events. Myocardial biopsy which was taken during surgery showed interstitial lymphocytic inflammation with scattered foci of myocyte necrosis which was consistent with acute fulminant myocarditis (AFM). Anti-inflammatory and immunosuppressive treatment with prednisolone (3*16 mg for 1 month), anticoagulation with intravenous unfractionated heparin followed by oral warfarin (for 3 months) and cardiac supportive treatment with ramipril (2.5 mg/day) and spironolactone (25 mg/day) was performed. The treatment regimen included an intravenous inotrop (dopamine 5-15 mcg/kg/min) in the first two weeks in addition to LVAD. There was no side effects or complications related to the treatment. Weaning from LVAD support was achieved in the 4th week and he discharged from the hospital after 6 weeks. Two months after admission the patient's general condition was good and TTE showed nearly normal left ventricular systolic functions with an ejection fraction of 50% (Videos 1 and 2).

Intracardiac thrombus formation is an important factor affecting the prognosis of AFM and emergent surgery has an incremental value for primary embolic prevention in these patients [1,2]. LVAD implantation may be used as a bridge to recovery from AFM [3].

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Received July 14, 2014; Accepted July 28, 2014; Published August 04, 2014

Citation: Kalçık M, Yesin M, Gursoy MO, Ocal L, Cerşit S, et al. (2014) Biventricular and Left Atrial Free Floating Thrombi in a Patient Diagnosed with Fulminant Myocarditis Managed with Thrombectomy and Left Ventricular Assist Device Implantation. *J Cardiovasc Dis Diagn* 2: 168. doi:10.4172/2329-9517.1000168

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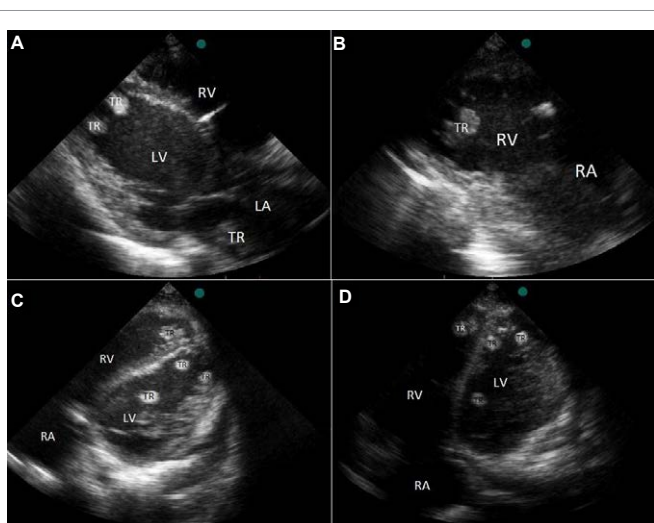
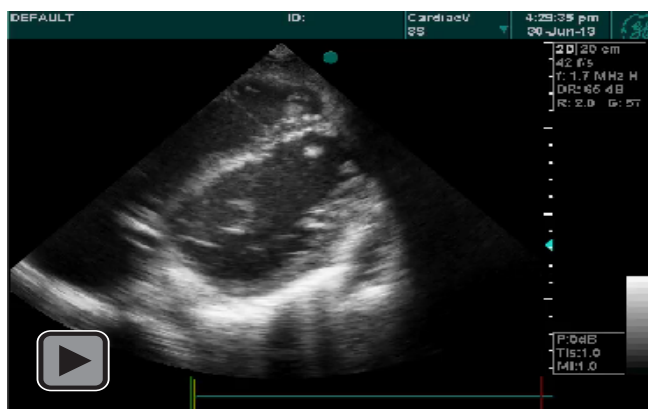


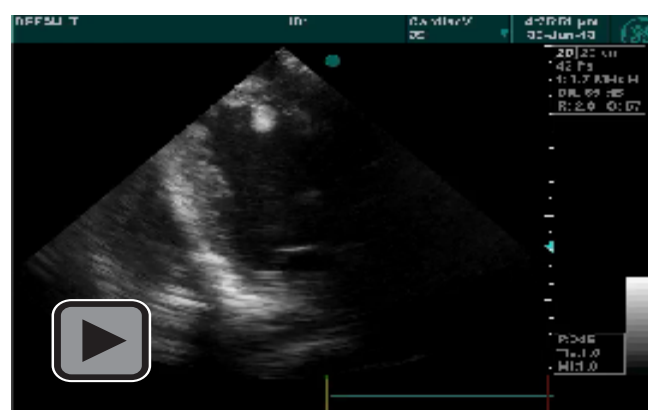
Figure 1: Transthoracic echocardiography parasternal long axis view revealed two apical left ventricular thrombi and a left atrial thrombus (A). Modified parasternal long axis view showed right ventricular apical thrombus (B) and modified apical four chamber view revealed three left ventricular and one right ventricular thrombi (C and D). (LA: Left Atrium, LV: Left ventricle, RA: Right Atrium, RV: Right ventricle, TR: Thrombus).

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Video 1: Two-dimensional transthoracic echocardiography modified apical four chamber view revealed a globally hypokinetic and dilated left ventricle with two apical and one free floats mobile thrombus in right and left ventricular cavities.



Video 2: Two-dimensional transthoracic echocardiography modified apical three chamber view revealed two apical and one free floating mobile thrombi in left ventricular cavity.

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