# "Hanging by a thread" left ventricular thrombus in an asymptomatic soldier

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## ABSTRACT

تم اكتشاف وجود كتلة متحركة ومعلقة في البطين الأيسر أثناء إجراء تصوير روتيني للقلب بالإيكو لجنديّ يبلغ من العمر 32 عاماً ولا يشكو من أية أعراض. كانت الكتلة متحركة وسببها غير مؤكد، تم نُصح المريض بإجراء عملية جراحية لاستئصالها، لكن المريض رفض العملية واختار العلاج بمسيلات الدم. اختفت الكتلة خلال ستة أسابيع دون حدوث أية مضاعفات في صمامات أو نزيف. ولم يحدث أي عودة لتشكل الخثرة خلال فترة متابعة المريض لمدة 12 شهرا.

A mobile and pedunculated left ventricular mass was incidentally detected on transthoracic echocardiography in a 32-year old asymptomatic soldier. Because of the mobility of the mass and the uncertainty of its nature, the risk of embolization was considered to be high, and hence surgical removal was recommended but the patient opted for anticoagulation therapy. The mass resolved within 6 weeks without any embolic or bleeding complications. No recurrence of the thrombus was observed during a 12-month follow up period.

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Intracardiac masses are mostly thought to be thrombi or tumors. Left ventricular (LV) thrombi are seen in the setting of myocardial infarction, LV aneurysm and dilated cardiomyopathy. Identification of LV thrombi is of major importance since it can predispose to catastrophic arterial events.[1] Mobile and pedunculated thrombi are unusual lesions compared with mural thrombi, but they have a significantly higher risk of embolization and thus, surgical excision is generally indicated to prevent the occurrence of life-threatening emboli.[2] We report a case of a mobile pedunculated LV mass found incidentally in an asymptomatic soldier by transthoracic echocardiography (TTE).

**Case Report.** This is a 32-year-old soldier working for 6 years, who was referred for a routine examination. He was asymptomatic and denied any history of chest pain, dyspnea or palpitation (patient currently holding a sedentary post). He had no history of smoking, hypertension, diabetes mellitus, hyperlipidemia, alcohol intake, or recent viral infection. There was no history of deep venous thrombosis, peripheral or cerebral embolization. No family history of cardiac disease. On physical examination, the pulse was 78 bpm and his blood pressure was 125/75 mm Hg. Chest and cardiac examinations were unremarkable except for an apical mid systolic murmur 2/6. He had no oral or genital ulcers. Laboratory investigations included cardiac enzymes, C-reactive protein, erythrocyte sedimentation rate, antinuclear factor, antiphospholipid antibodies, and thyroid function tests were normal. He had no evidence of other coagulopathies or homocystinuria. Chest x-ray demonstrated mild cardiomegaly and his ECG was normal. Transthoracic echocardiography was requested for investigation of systolic murmur. It revealed global LV hypokinesis with an ejection fraction of 35% and mild mitral regurgitation. A large mobile pedunculated mass measuring 1.5 x 2.7 cm was attached with a narrow stalk to the apical septal segment and protruding into the LV cavity (**Figure 1**). Coronary angiography was not performed in view of young age, absence of coronary risk factors, and normal ECG. The patient was thought to have idiopathic cardiomyopathy in the absence other detectable secondary causes. In the presence of LV dysfunction, the mass was suspected of being a thrombus. However, the possibility of a cardiac tumor could not be excluded. In view of the potential risk of embolization and the uncertainty of its nature, surgical removal of

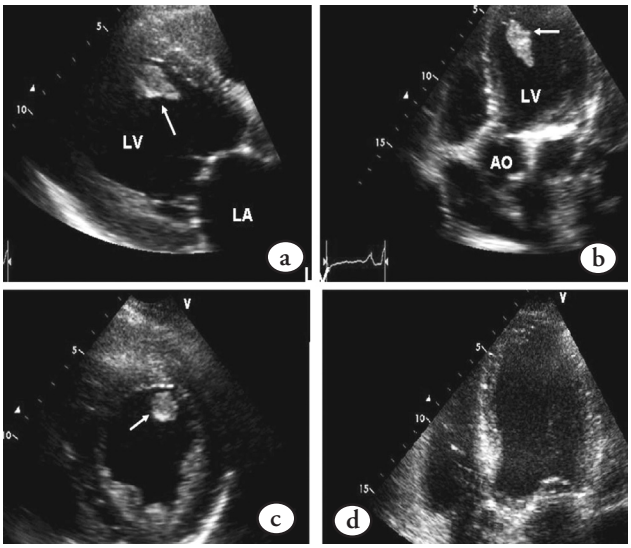


**Figure 1 -** Two-dimensional transthoracic echocardiography images showed the thrombus attachment to the interventricular septum (arrow) in **a**) parasterna long axis, **b**) modified apical 5-chamber, **c**) left ventricular (LV) short axis, and **d**) apical 4-chamber views (after resolution†). LA - left atrium, AO - aota

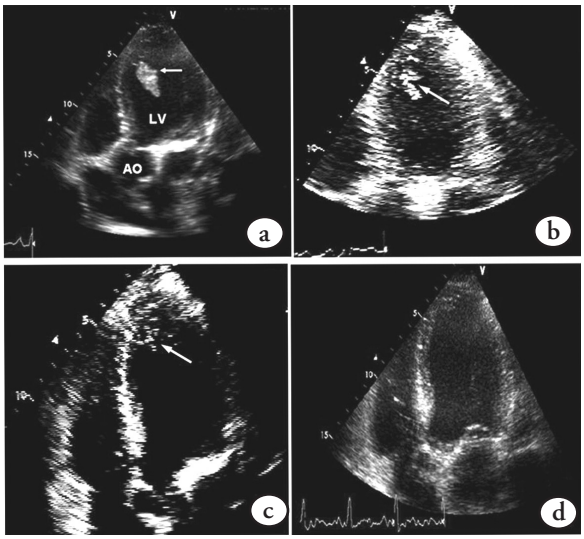


**Figure 2 -** Serial transthoracic echocardiography images of the left ventricular (LV) thrombus in the modified apical 5-chamber view **a**) before anticoagulant, **b**) 1 week after, **c**) 3 weeks after, and **d**) after thrombus resolution.

the mass was recommended but the patient refused, and thus he opted for anticoagulation. He was commenced on Warfarin overlapped with Enoxoparin for 5 days and the International normalized ratio was maintained at 2.0-3.0. Serial TTE showed gradual diminution of the thrombus size with a complete resolution after 6 weeks without any embolic or bleeding complications (**Figure 2**). Warfarin was continued for further 6 months. No recurrence of the thrombus was observed during a 12-month follow up period. He was also commenced on an angiotensin-converting enzyme inhibitor and beta blocker. An improvement of LV function was noted with an ejection fraction of 43% at one-year follow up.

**Discussion.** Cardiac masses are mostly thought to be thrombi or tumors. Such cases warrant attention since the possibility of a cardiac tumor should also be kept in mind. The incidence of LV thrombus in patients with cardiomyopathy has been reported in the literature as 11-44%.[3] The morphologic characteristics of the thrombus together with the LV contractility are the primary determinants of embolic risk. A pedunculated thrombus that is connected to the ventricular wall or septum by a narrow stalk and that moves throughout the cardiac cycle is an unusual type of LV thrombus. Such thrombi have an especially high tendency to embolize despite adequate anticoagulation.[2] The definitive treatment of these thrombi is still controversial. Over the last 30 years, the primary therapeutic options for such thrombi have included thrombectomy, anticoagulation, or thrombolysis.[1] Surgical removal is recommended for such cases and it has usually been carried out by ventriculotomy. Yet making a ventricular wall incision may cause deterioration of LV function and potentially induce ventricular arrhythmia.[2,4] Transaortic video assisted removal of a LV thrombus,[5] and also the trans-left atrial appendage and mitral valve approach, can provide good LV visualization. However, there are serious potential complications related to video assisted cardioscopy.[4] Transatrial method of thrombectomy also can allow avoidance of a ventriculotomy.[4,6] Oral anticoagulation has had variable success, with resolution rates ranging from 13-59%.[7] High-dose intravenous heparin or low-molecular-weight heparin may effectively treat the mobile thrombi that protrude into the LV cavity.[7,8] Rester et al[9] reported successful lysis of a pedunculated, mobile LV thrombus with recombinant tissue plasminogen activator in a patient with peripartum cardiomyopathy and evidence of systemic embolization. However, the risks of hemorrhagic or embolic complications may be unacceptably high.

Our patient had a mobile and pedunculated LV mass which was thought to be a thrombus secondary to an idiopathic cardiomyopathy. Because of its narrow stalk attachment to the wall, the risk for systemic embolization was thought to be extremely high and hence surgical removal was recommended. The disappearance of the mass with anticoagulation confirmed the nature of the mass. Furthermore, although thrombectomy may be the preferred method of treatment in such case, anticoagulation was effective in our patient without

any embolization sequale. Serial echocardiography for change in or disappearance of a ventricular mass may be crucial in distinguishing thrombus from tumor and judging the effect of therapy.

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