

Myocardial Infarction (MI) presenting as acute limb: an extremely rare presentation of MI

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ABSTRACT Acute embolic occlusion of the bilateral lower limbs from the left ventricular thrombus is an extremely rare medical condition that is not only limb threatening but also potentially life threatening. Several strategies are available but not even a single treatment modality is clearly the best. Here, we present an interesting case that presented with bilateral lower limb ischemia and was later found to have a big thrombus in the left ventricle as the source of the emboli.

KeyWords: Myocardial Infarction; LV thrombus; Emboli

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The association between acute myocardial infarction and thrombus formation is well known. Acute embolic occlusion of bilateral limbs is very rare phenomenon from the left ventricular thrombus due to hypokinetic left ventricle. It requires prompt diagnosis and emergent intervention.

Case report

A 38 year old male significant past medical history of chronic smoking presented with the chief complaint of pain in both lower legs for last two weeks. He was a construction worker and was completely asymptomatic till 2 weeks back. He developed pain in both lower extremities, more prominent in the calves, sudden in onset, aggravated on walking and relieved with rest. The pain was getting worse over the course of last 2 weeks. He denied any chest pain and shortness of breath. He denied any IV drug abuse. On physical examination, he was not in any acute distress and was hemodynamically stable. Examination of the lower extremities showed no muscle wasting, no chronic ischemic changes like loss of cutaneous hair, thinning of the skin or dry gangrenous changes. Dorsalis pedis, Posterior Tibial and Popliteal pulses were absent but femoral pulses were strongly palpable bilaterally. Cardiac examination showed normal heart sounds with no murmur or gallop. Chest x ray was normal. Ultrasound Doppler showed occluded right popliteal artery. CT angiogram showed acute occlusion of

both right and left popliteal, tibial and peroneal arteries. EKG was significant for ST segment elevation in V3 and T wave inversions in V2 and V4.

2D Echo at this stage showed apical akinesis and a huge clot at the apex of the left ventricle.

Immediate consult for vascular surgery and cardiology was called. Patient went for emergency cardiac angiogram which showed 60-80% occlusion of LAD. Cardio-thoracic surgery was called and he was taken to the operating room for left ventricular thrombectomy (Fig 1 & 2). LIMA bypass was also done. Subsequently, percutaneous Mechanical thrombectomy was done to save both the lower limbs. Patient responded very well to the whole treatment plan.

Discussion

Inflammation of the endocardium resulting from myocardial necrosis in any location may cause a layered mural thrombus (1,2). More extensive thrombi with protruding appearance are at increased risk for systemic embolization (2,3). Echocardiography has been instrumental in refining our understanding of patho-physiology of LVT and is a useful tool in identification of patient who would benefit from continued anticoagulation and assessing the status of the LVT by serial echocardiographies (4).

Left ventricular mural thrombus (LVT) is a well recognized consequence of acute myocardial infarction. LVT formation often occurs early after anterior myocardial infarction (AMI). As suggested in our patient, acute anterior wall thrombus leads to decreased anterior wall motion leading to a big thrombus formation in the left ventricle (5). The absence of symptoms of acute coronary syndrome in our patient led to the delay in the diagnosis of the AMI which subsequently led to the formation of a big left ventricular thrombus.

No potential conflict of interest.

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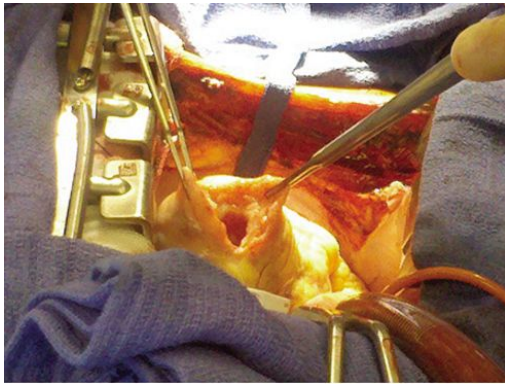


Fig.1 ventriculostomy

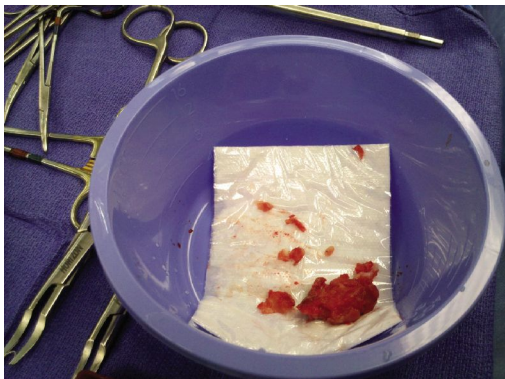


Fig.2 Thrombus removed from the left ventricle

The highest rate of occurrence of LVT was found among patients with anterior MI and an LV ejection fraction of less than 40%. The incidence of LVT in the pre-thrombolytic era is reported between 20 and 56%, but the Healing and Early After-load Reducing Therapy (HEART) study assessed the prevalence of LVT as only 0.6% at day 1, 3.7% at day 14, and 2.5% at day 90 (6).

The role of activated protein C resistance (APC-R) is under study as a possible predictor of those who would develop LVT. In a recent study, smoking and APC-R were significantly greater in those with LVT than those without. Multivariate regression analysis showed APC-R as an independent risk factor for LVT, whereas protein S and antithrombin III concentrations were not significantly different in the two groups (7). The mainstay of treatment is anticoagulation and it leads to a successful resolution in a large number of cases. In a study carried out to follow the course of LVT, echocardiography was done serially at day three of admission, then before patient discharge, and again at one, three and twelve months after discharge. The results were that at discharge only 30% had the LVT still seen and at one, three and twelve months 81%, 84% and 90% of LVTs respectively had resolved completely (8). But due to extensive emboli to both the lower limbs in our patient, it was decided to perform ventriculostomy and thrombectomy to prevent further embolic phenomenon.

A recent epidemiologic study showed that peripheral artery obstruction occurs in 14 of every 100,000 people in the general popu-

lation (9). The heart is the major source of emboli in patients with valvular disease with or without atrial fibrillation or ventricular mural thrombus after myocardial infarction. Thrombotic obstructions of the peripheral arteries are generally associated with atherosclerotic progression. However, differentiating these two pathologies clinically is difficult in most cases, and impossible in 10-15% of cases (10).

Classically, the symptoms of acute limb ischemia are dominated by the six Ps (pain, pallor, paralysis, poikilothermia, paresthesias, and pulselessness) or 'blue toe syndrome' which was the main presenting complaint of our case (11). Patients in whom acute limb occlusion is suspected are evaluated using digital subtraction angiography (DSA), duplex ultrasonography, CT angiography, and magnetic resonance angiography. Although DSA is regarded as the gold standard for limb ischemia imaging, CT angiography has recently come into wider use (12,13,14).

Various options have been proposed for the management of acute embolic limb ischemia. For years, surgical procedures such as embolectomy, bypass, and amputation were considered the gold standard treatment for total common iliac artery occlusion. However, early operative intervention has several procedural limitations and is characterized by a high mortality rate, with a 30-day mortality rate of 15-25% (15,16).

Randomized studies have shown that thrombolysis is generally as effective as surgery. Therefore, local thrombolysis has become a treatment modality in appropriately selected patients (17,18). Moreover, several recent studies have reported that percutaneous mechanical thrombectomy has a high success rate, with low amputation and mortality rates (19,20). Primary endovascular stenting is not usually considered for the treatment of acute embolic limb lesions due to the fear of distal embolization (21). Therefore, instead of using surgery or stenting, we decided to combine treatment with intra-arterial thrombolysis and percutaneous thrombectomy.

In short, our case has myocardial infarction leading to large thrombus formation in the left ventricle which then sent emboli to both the limbs leading to acute ischemia of both the limb which is an extremely rare phenomenon. The case was treated successfully with ventriculostomy and thrombectomy followed by percutaneous thrombectomy and lysis of the clot in the lower limbs.

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