## **Case Report**

# Challenging Left Ventricular Apical Mass: A Case Review

## Daryoush Saed<sup>1</sup>, MD; Azin Alizadehasl\*<sup>2</sup>, MD

### ABSTRACT

Primary and secondary cardiac tumors are uncommon, but not extremely rare. Cardiac tumors comprise benign and malignant tumors that arise from the heart valves, endocardium, or myocardium. On the other hand, nowadays, infective endocarditis involves increasing numbers of patients without

predisposing cardiac conditions and requires a completely different management approach. We describe a challenging case of a cardiac mass (left ventricular apical mass) and present some

educational points and discuss the differences between cardiac tumors, infected left ventricular clots (endocarditis), and pure left ventricular apical clots. (*Iranian Heart Journal 2018; 19(4): 62-65*)

KEYWORDS: Left ventricular mass, Cardiac tumors, Infective endocarditis, Left ventricular clot

<ol> <li><sup>1</sup> Rajaie Cardiovascular, Medical, and Research Center, Iran University of Medical Sciences, Tehran, IR Iran.</li> <li><sup>2</sup> Echocardiography Research Center, Rajaie Cardiovascular, Medical, and Research Center, Iran University of Medical Sciences, Tehran, IR Iran.</li> </ol>	
<ul> <li>* Corresponding Author: Azin Alizadehasl, MD; Rajaie Cardiovascular, Medical, Research Center, Vali-E-Asr Ave, Tehran, IR Iran.</li> <li>Email: alizadeasl@gmail.com</li> <li>Tel: 02123922190</li> </ul>	
Received: January 27, 2018	Accepted: April 25, 2018

Primary cardiac tumors are rare, with an incidence of 0.05% to 1% in autopsy series.<sup>1</sup> Of these tumors, 75% are benign and 75% of the benign tumors are myxomatous. Sarcomas constitute 75% of the primary cardiac malignant tumors,<sup>2</sup> and these tumors require a complete surgical resection for improved survival.<sup>3</sup>

Metastatic cardiac tumors are 40 to 100 times more frequent than are primary ones.<sup>4,5</sup>

Cardiac surgery to excise a cardiac tumor is rarely done. The incidence of cardiac surgeries for the excision of cardiac tumors is 1 in 500 cardiac surgeries.<sup>6</sup> Herein, we describe a challenging case of a cardiac mass from the view point of the differential diagnosis between a cardiac tumor, a pure left ventricular (LV) clot, and infective endocarditis. The global burden of infective endocarditis is largely unknown.<sup>7</sup> A significant proportion of non-addict infective endocarditis involves patients without predisposing cardiac conditions; these cases have some different features such as younger age, aortic and rightheart valve involvement, and lower mortality rates by comparison with patients suffering from endocarditis with underlying valvular diseases.<sup>8</sup>

#### **Case Presentation**

A 42-year-old man was referred to our center from another hospital with severe illness, a downhill course, significant weight loss, and severe bilateral lower extremity edema. He was a cigarette smoker and an inhalation opium addict. The patient had been relatively well until 4 months before that progressive weakness of the lower extremities, followed by the upper extremity weakness.

In his medical history, the patient had undergone laparotomy for acute abdominal pain due to acute mesenteric ischemia, leading to the transmural necrosis of a sizable part of the small bowel about 2 months before this presentation. Following that admission, he suffered a cerebrovascular accident (a thromboembolic event) confirmed by magnetic resonance imaging as a brain-stem infarct, followed by bilateral iliac and femoral vein thrombosis.

Significant weight loss in the past 3 months and bedridden state in the past 1 month were also noticeable.

Coronary angiography about 1 month prior to this admission revealed a double-vessel coronary artery disease (left circumflex and right coronary disease) and an anatomy not amenable to revascularization. A decision was, therefore, made at the time to have a medical follow-up plan for the patient.

The abdominopelvic sonography and chest radiography findings were unremarkable. An electrodiagnostic study revealed a subacute symmetric axonal polyneuropathy without demyelinization criteria.

The laboratory data revealed anemia of chronic disease with a hemoglobin level of 9.3 mg/dL, leukocytosis with a shift to the left, thrombocvtosis. mild normal а creatinine phosphokinase level. and an international normalized ratio (INR) of 2.3 due to warfarin consumption. He had also been on daily ASA and clopidogrel since the previous coronary angiography.

Electrocardiography (ECG) illustrated a normal sinus rhythm with nonspecific ST-T changes (Fig. 1).



Figure 1. Electrocardiography, revealing a normal sinus rhythm with nonspecific ST-T changes

Transthoracic echocardiography (TTE) in our center showed moderate LV systolic dysfunction (ejection fraction=35%) and a large homogenous mass originating from the LV apex with a bizarre shape protruding into the LV cavity but without any obvious invasion of the myocardium (size=50 mm  $\times$  14 mm). Additionally, there were a normal right ventricular size and function, a normal pulmonary artery pressure, and no significant valvular heart disease (Fig. 2). These findings were similar to those reported in a previous TTE examination conducted 1 month previously, with the exception of the significant decline of about 10% in the ejection fraction.



Figure 2. Large homogenous mass, originating from the left ventricular (LV) apex with a bizarre shape protruding into the LV cavity

Transesophageal echocardiography was not performed.

The other laboratory data in the previous hospital had revealed an increased sedimentation rate (ESR) to 57 and 2+ positive C-reactive protein (CRP). The urinary analysis, the stool examination, and viral markers for hepatitis and human immunodeficiency viruses were unremarkable, and so were the brucellosis and salmonellosis tests. The patient also had a normal liver function test.

Finally, the patient was referred to our hospital for a prompt surgical intervention with the presumptive diagnosis of a primary cardiac tumor versus a large infected LV clot. Nevertheless, before the patient underwent other imaging modalities such as cardiovascular magnetic resonance imaging, he went on a downhill course with a severe systemic inflammatory response syndrome and shock, which regrettably led to his death.

Unfortunately, autopsy was not done and the exact diagnosis was not established.

#### DISCUSSION

Although our patient was a smoker, there was no evidence of a myocardial infarction in his medical records. Indeed, his ECG was unremarkable from this aspect and TTE revealed no significant regional wall-motion abnormality in the apex, which is a common accompaniment of LV apical clots.<sup>9</sup> More importantly, he had been on oral anticoagulants with a therapeutic range of the INR for least 1 month before his referral to our hospital, suggesting that an LV clot would have been resolved at least to some extent.<sup>10</sup>

A higher prevalence of LV clot is concomitant with less access to cardiac magnetic resonance imaging, and computed tomography is known to lead to the misdiagnosis and mismanagement of LV tumors.

Our reasons for the need to a more aggressive diagnostic and therapeutic approach can be summarized as follows:

Our patient had suffered a significant weight loss over a period of several months, in tandem with a hypercoagulable state as evidenced by an extensive bilateral iliofemoral vein thrombosis despite dual antiplatelet therapy without predisposing genetic thrombophilia disorders, and also 2 embolic events (the first one to the mesenteric artery and the second one to the brainstem). Additionally, the unresponsiveness of the mass lesion to the anticoagulant therapy, relatively elevated inflammatory markers (ESR and CRP), anemia, and the echocardiographic characteristics of the mass were all in favor of a tumoral lesion or a superimposed infection on the LV clot.<sup>12</sup> More importantly, the tragic final presentation of the patient with a systemic inflammatory response syndrome was another clue to the malignant nature of the disease.

#### CONCLUSIONS

Despite advances in decision-making and various therapeutic modalities for the management of cardiac mass lesions, we would recommend the appropriate use of imaging modalities to enhance decision-making with respect to patients who are seriously ill.

#### REFERENCES

- 1. Lam KY, Dickens P, Chan AC, Tumors of the heart, A 20-year experience with a review of 12485 consecutive autopsies, Arch Pathol Lab Med. 1993 Oct; 117(10):1027-31.
- 2. Vander salm TJ, Unusual primary tumors of the heart, Semin Thorac Cardiovasc Surg. 2000 Apr ; 12(2):89-100.
- **3.** Kim MP, Correa AM, Blackmons, et al. outcomes after right-side heart sarcoma resection, Ann Thorac Surg, 2011 Mar ; 941(3) :770-6.
- Yuk, Liu Y, Wang H, Hus, Long C. Epidemiological and pathological characteristic of cardiac tumors :A clinical study of 242 cases. Interact Cardiovasc Thorac Surg.2007; 6: 636-639.
- 5. Kosmider A, Jaszewski R, Marcinkiewic Z A, Bartezac K, Knopik J, Ostrowski S.23- year experience on diagnosis and surgical treatment of benign and malignant cardiac tumors, Arch Med Sci 2013;9:826-830.
- Kajihara N,Tanoue Y, Eto M, Tamita Y, Masuda M, Marita S. Surgical Experience Of Cardiac tumors: Early and Late Results. Surg Today 2006; 36: 602-607.

- Mann D, Zipes D, Libby P, etal, Infetive endocarditis in Braunwald's Heart disease, 10<sup>th</sup> ed, 1524, 2014.
- **8.** M Ruiz et al, Rev Esp cardiac 47(8), 518, Infective endocarditis in non-addict patients without predisposing heart disease differential features.
- **9.** Giansteffanis, Douiri A, Delithanasis I, et al: Incidence and predictors of early left ventricular thrombus after ST-elevation myocardial infarction in the contemporary era of primary percutaneous coronary intervention, Am J Cardiol 113:1111-1116,2014.
- **10.** Domenicucci S, Chiarella F, Bellotti P, et al: Long-term prospective assessment of left ventricular thrombus in anterior wall acute myocardial infarction and implications for a rational approach to embolic risk, Am J Cardiol 839: 519-524, 1999.
- **11.** Solheim S, Seljeflot I, Lunde K, et al: Frequency of left ventricular thrombus in patients with anterior wall acute myocardial infarction treated with percutaneous coronary intervention and dual antiplatelet therapy, Am J Cardiol 106: 1197-1200, 2010.
- **12.** Riofman I, Connelly K, Wright G, et al: Echocardiography VS cardiac magnetic resonance imaging for the diagnosis of left ventricular thrombus: a systematic review, Can J Cardiol 31: 785-791, 2015.

Iranian Heart Journal; 2018; 19 (4)