Surgical treatment of a calcified amorphous tumor originating from left atrium

Mehtap Eroğlu1, Muhammet Bozgunaş2, Tamer Eroğlu3, Burak Açıkgoz4

Institution where the research was done:
Kayseri Training and Research Hospital, Kayseri, Turkey

Author Affiliations:
1Department of Pathology, Niğde Ömer Halisdemir Üniversitesi Faculty of Medicine, Niğde, Turkey
2Department of Cardiovascular Surgery, University of Health Sciences, Kayseri City Hospital, Kayseri, Turkey
3Department of Cardiovascular Surgery, Niğde Ömer Halisdemir Üniversitesi Faculty of Medicine, Niğde, Turkey
4Department of Cardiovascular Surgery, Bakırköy Dr. Sadi Konuk Training and Research Hospital, İstanbul, Turkey

ABSTRACT
Calcified amorphous tumor is a non-neoplastic tumor or intracavitary cardiac mass which is rarely seen in heart. It is frequently associated with left ventricle and mitral valve. Clinical symptoms varies from asymptomatic status to serious neurological and cardiopulmonary symptoms. Imaging studies such as echocardiography, computed tomography, or magnetic resonance imaging can reveal the mass preoperatively, although the exact diagnosis is done by pathological inspection of the specimen. Follow-up is recommended by echocardiography after surgical treatment due to its recurrence potential. Herein, we present a mass attached to the mitral valve posterior leaflet causing rather silent symptoms such as dyspnea and fatigue on exertion.

Keywords: Calcified amorphous tumor, diagnosis, surgical treatment.

ÖZ

Anahat sözcüklər: Kalsifiye amorf tümör, tanı, cerrahi tedavi.

Calcified amorphous tumors (CATs) of the heart are extremely rare non-neoplastic tumors or intracavitary cardiac masses. The rarity can be explained by a long-term study for 29 years conducted at the Mayo Clinic in Rochester, Minnesota, USA in which only 11 patients were diagnosed with a CAT.[1] The histological features of CATs include calcified nodules in an amorphous fibrinous background with degeneration and focal chronic inflammation.[1] The clinical presentation may be confused with calcified cardiac myxomas and calcified thrombi. The gold standard method for the diagnosis is histopathological examination.

Herein, we present a case of a CAT attached to the mitral valve posterior leaflet causing rather silent symptoms such as dyspnea and fatigue on exertion in the light of literature data.

CASE REPORT
A 56-year-old woman was admitted to our hospital with dyspnea and early fatigue with...
exertion. The transthoracic and transesophageal echocardiography demonstrated a 2x3-cm immobile calcified mass in the left atrium attached to the mitral valve posterior leaflet with second-degree mitral insufficiency and an ejection fraction of 55 to 60%. Contrast-enhanced computed tomography demonstrated a 22x33 mm calcified mass localized in the mitral valve (Figure 1). Based on physical examination and imaging study findings, the patient was scheduled for surgery. A written informed consent was obtained from the patient.

After bicaval and aortic cannulation, cardiopulmonary bypass was initiated. The left atrium was exposed through a right atriotomy and interatrial septotomy. An immobile calcified mass adjacent to the annular side of the mitral valve posterior leaflet was detected intraoperatively. The mass was excised, and the sticky viscous contents were removed (Figures 2). Due to the involvement of the posterior leaflet, the defect in the leaflet was primarily repaired, after the excision of the mass. Postoperative transthoracic echocardiography demonstrated no cardiac mass left.

Histopathological examination of the mass showed an amorphous eosinophilic hyalinized material along with dense calcification (Figures 3). The patient was discharged without any complication in the postoperative sixth day. She was scheduled for regular follow-up. At 24 months of follow-up, transthoracic echocardiography demonstrated no mitral insufficiency and no recurrence of the tumor.

**DISCUSSION**

Primary cardiac tumors are rare and many of them are atrial myxomas. It accounts for 50% of all benign cardiac tumors. The single treatment option is the excision of the cardiac mass, independently of its nature, due to the potential risk of obstruction or embolization. Cardiac CATs are rare entities first described by Reynolds et al. in 1997. Histologically, a cardiac CAT consists of calcified nodules in an amorphous fibrinous background with degeneration and focal chronic inflammation. Differential diagnosis includes cardiac calcified myxoma or fibroma, calcified cardiac tuberculoma, thrombi, embolism, vegetations, and intracardiac carcinosis, particularly in patients with end-stage renal disease.
Although cardiac CATs can grow in any chamber of the heart, they are predominantly localized in the left ventricle and mitral valve. Tumor sizes range from 0.17 to 4 cm in their greatest dimensions with the mean size of 2.8 cm. There is a slight female predominance. In our case, the CAT was detected in the left atrium adjacent to the mitral valve annulus with a size of 1.5×2 cm.

The clinical presentation, which depends on the location and size of the mass, includes dyspnea, chest pain, syncope, and pulmonary or systemic embolism. Mobile CATs definitely indicate a greater risk of cerebrovascular events or systemic embolism than immobile amorphous tumors.

Surgical excision is recommended, if the lesion is large or symptomatic, and surgery is curative, particularly for pedicled lesions. Postoperative recurrence has rarely been reported, particularly in patients not receiving a complete resection. Therefore, these patients should be kept under follow-up after surgical excision through imaging studies.

In conclusion, cardiac calcified amorphous tumors are non-neoplastic rare cardiac tumors. The exact diagnosis is made based on pathological examination. Surgery is the only treatment option. Follow-up is recommended by imaging studies after surgical treatment due to its recurrence potential.

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