Brief Report

Calcified amorphous tumor in left atrium presenting with cerebral infarction

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Abstract: Calcified amorphous tumor (CAT) of the heart is an extremely rare cardiac mass. We describe a case of cardiac CAT in a 70-year-old Korean female who presented with acute onset dysarthria and right side weakness. Echocardiography and chest computed tomography revealed a left atrial mass that originated from the interatrial septum. The patient underwent surgical resection and pathologic examination demonstrated CAT. Postoperative course was uneventful and she was followed without recurrence.

Keywords: Calcification; cardiac tumor; cerebral complication

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Introduction

Calcified amorphous tumor (CAT) is a non-neoplastic tumor composed of calcified nodules on a background of amorphous fibrous material and it can cause symptoms of embolization or obstruction of calcified fragments. Herein, we describe a patient with CAT that was presented with cerebral infarction.

Case report

A 70-year-old Korean female with a history of hypertension and diabetes mellitus was referred to our hospital. She complained of abruptly developed dysarthria and right side weakness. Her blood pressure, pulse rate, and body temperature on presentation were 140/90 mmHg, 87 beats/min and 36.7 ℃. Laboratory findings showed white blood cell count of 8,700/L, blood urea nitrogen of 28.4 mg/dL, creatinine of 0.77 mg/dL and serum calcium of 9.4 mg/dL. Brain magnetic resonance imaging showed acute infarction in pons and multiple high signal intensities in both cerebral subcortical white matter and periventricular white matter on FLAIR images. Her symptoms were improved after medical treatment and echocardiography revealed a hyperechoic and calcified mass in the left atrium (*Figure 1*). The mass originated from the interatrial septum 2 cm above the foramen ovale. Mitral regurgitation and mitral annular calcification were not found and left ventricular function was preserved. Chest computed tomography was performed and approximately 2 cm-sized, oval shaped ring like calcified mass in the left atrium was noted in the non-enhanced and enhanced imaging (*Figure 2*).

The patient underwent cardiac exploration and the mass was noted in the left atrium and that was attached to the interatrial septum (*Figure 3*). The cardiac mass was completely resected and postoperative course was uneventful. On the basis of the pathological examination (*Figure 4*), the cardiac mass was demonstrated with CAT of the heart. The patient was doing well with no evidence of the recurrence of the tumor and cerebral infarction 14 months after operation.

Discussion

Primary cardiac tumors are not so frequent and 75% of primary cardiac tumors are benign and 25% are malignant.

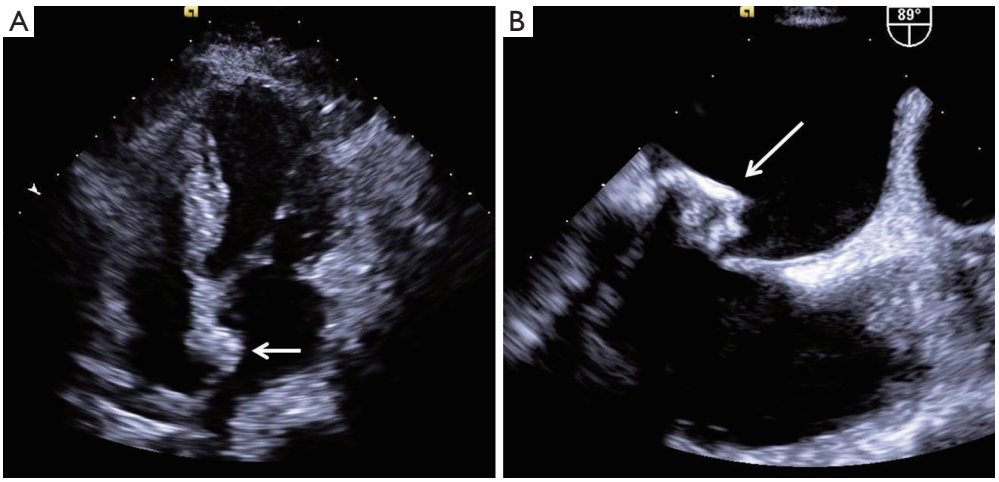

Figure 1 (A) Transthoracic (B) and transesophageal echocardiography revealed a calcified mass in the left atrium. White arrow indicates the mass.

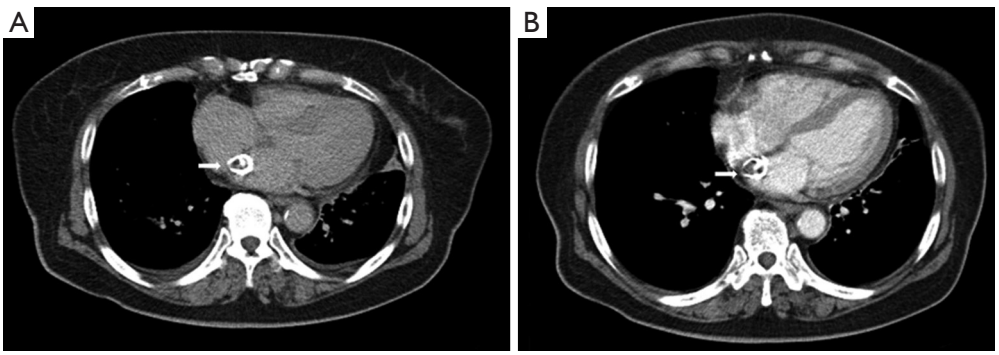

Figure 2 Chest computed tomography demonstrating approximately 2 cm-sized, calcified mass in the left atrium which was attached to the interatrial septum. (A) Non-enhanced image; (B) enhanced image.

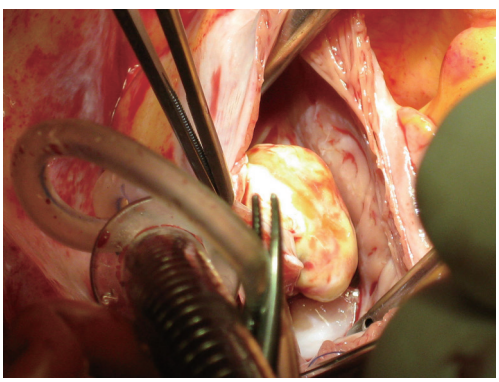

Figure 3 Operation field shows oval and yellowish glistening mass.

Most common benign cardiac tumors are myxoma and they occupy 50% of all benign cardiac tumors. Systemic embolization is the second most common presentation of myxoma, comprising 30% to 40 % of patients.

CAT of the heart is a rare non-neoplastic cardiac mass that mimics malignancy and causes symptoms of obstruction or embolization (1) and diffuse calcific involvement of myocardium rarely elicits congestive heart failure symptoms (2). Fifty percent of embolic episodes of myxoma were occurred in the central nervous system. Retinal artery embolization had been described in patient with myxoma and visual loss due to cardiac CAT was also reported (1). However, pontine infarction caused by cardial CAT has not been reported.

Previously it was named "pseudotumors" and had represented organized thrombi (3). In 1997, Reynolds *et al.* first reported 11 cases of CAT of the heart during 30 years (4). From these Mayo clinic's series, CAT can originate in any of cardiac chambers and the distribution of age and predilection of sex, tumor size and configuration are variable and most of the tumors were located intracavitary and motionless.

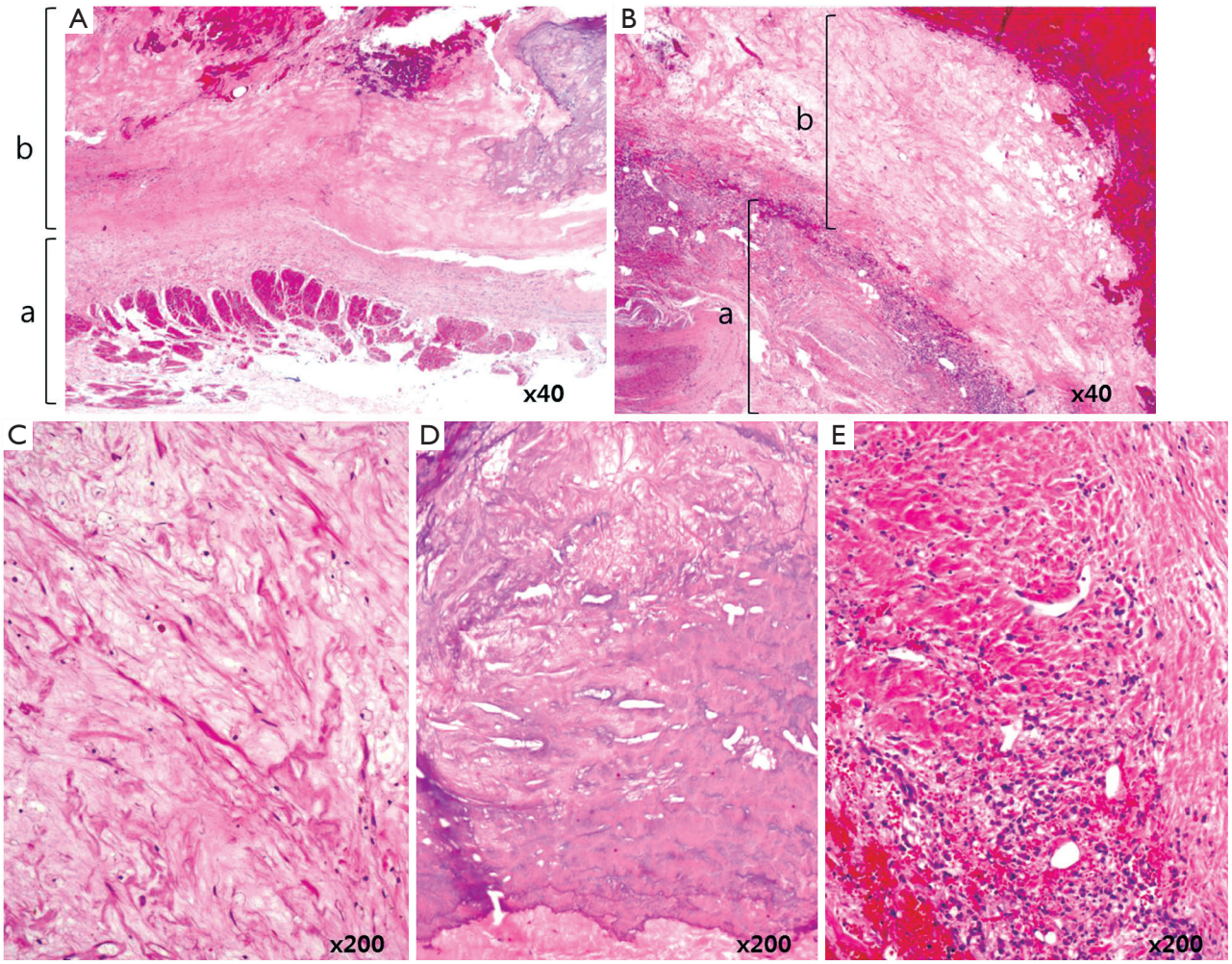

Figure 4 Cardiac calcified amorphous tumor after decalcification. Intracavitary cardiac mass composed of dense calcification in a background of amorphous degenerating fibrinous material and chronic inflammation. (A) Cardiac wall (Hematoxylin and eosin; ×40); (B) intracavitary mass with hemorrhage and calfication (Hematoxylin and eosin; ×40); (C) amorphous degenerating fibrinous material (Hematoxylin and eosin; ×200); (D) dense calcification (Hematoxylin and eosin; ×200); (E) chronic inflammation (Hematoxylin and eosin; ×200).

CAT is a nonneoplastic cardiac tumor and has characteristic histologic features which include the presence of calcified nodules in an amorphous background of fibrin with degeneration and focal chronic inflammation (4). Although pathogenesis of cardiac CAT has been unknown, association with organized thrombi, primary or secondary hypercoagulability (5), or abnormal calcium-phosphorous metabolism especially in hemodialyzed patients (6,7) were suggested.

CAT should be differentiated with calcified myxoma or fibroma, calcified cardiac tuberculoma, vegetation as well as intracardiac carcinosis, especially in patients with hemodialysed end stage renal disease and abnormal calcium metabolism (7,8).

Surgical excision is mandatory for diagnosis and treatment. Resection of the lesion usually curative, but postoperative recurrence of CAT has been rarely reported and postoperative regular follow-up with cardiac imaging studies is recommended, especially in case of incomplete resection (5).

Cardiac CAT is a rare benign condition in the heart and it can be mimicked with benign and malignant cardiac tumors, predominantly myxomas, and nonneoplastic processes that include thrombi, emboli, and vegetations. Therefore, it has to be considered in the differential diagnosis prior to surgery.

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