



## Case Report

## A case of multiple cardiac calcified amorphous tumours

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## ABSTRACT

Cardiac calcified amorphous tumours of the heart are rare non-neoplastic cardiac masses that can present like a malignant mass or an intra-cardiac thrombus. We report an extremely unusual case of a 73 year old man who presented to hospital with dyspnoea and subsequent investigations revealed multiple cardiac CATs.

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## 1. Introduction

Calcified amorphous tumours of the heart (cardiac CATs) are rare non-neoplastic cardiac masses that were first described by Reynolds et al.<sup>1</sup> Few cases of this condition have been reported. Here we present a case of four cardiac CATs occurring in a single patient.

A 73-year-old man was referred to hospital with symptoms of shortness of breath on exertion. He was an inveterate smoker, but had no other past medical history.

Initial trans-thoracic echocardiogram (TTE) revealed a large spherical mass in the right atrium (RA) associated with the free wall suggestive of thrombus or myxoma. There was also a small echogenic mass in the left atrium (LA) which appeared to be attached to the interatrial septum. In order to ascertain whether these two masses were clot or tumour, we planned a cardiac MRI. However because the patient was severely claustrophobic this could not be performed. Instead, he underwent a CT pulmonary angiogram (CTPA) looking for thromboemboli from the possible clot in the RA (Fig. 1).

CTPA confirmed filling defects in the right lower lobe pulmonary artery and sub-segmental branches of the left upper lobe, suggestive of chronic pulmonary embolus. It showed that the RA mass was calcified, measured approximately 5 cm by 5 cm, and appeared to arise from the lateral wall with extension into the

appendage and the root of the superior vena cava (SVC). It did not affect flow in the SVC. The mass seen on echocardiogram in the LA attached to the interatrial septum was not well visualised on the CTPA. A previously undetected mass was also identified arising from the anterolateral wall of the LA with extension into the appendage and the root of the SVC. This mass measured 4 cm by 3 cm and was also calcified.

Transoesophageal Echocardiography (TOE) was then performed which revealed the fourth separate mass in his heart (Fig. 2). The fourth and final mass was seen just superiorly to the third mass, close to the coumadin ridge, measuring 1.5 cm × 1.5 cm.

The patient subsequently underwent surgical resection of the cardiac masses. Histopathological examination revealed endocardial masses formed by amorphous material with extensive calcification in keeping with appearances of cardiac CAT.

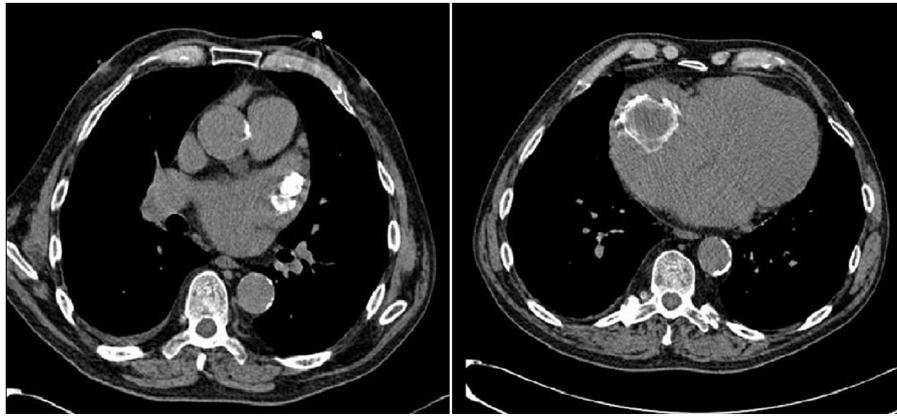
A repeat TTE seven months post-operatively did not show a recurrence of the cardiac masses. The patient remained anticoagulated for life.

## 2. Discussion

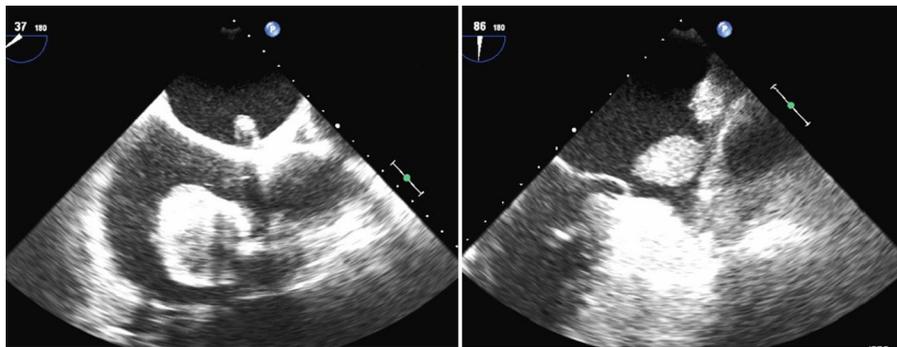
This case is interesting firstly because cardiac CAT is an exceedingly rare diagnosis that can present with serious complications such as pulmonary emboli. Secondly, multiple CATs occurring simultaneously in the left and right atria have never previously been reported. We could only identify one reported case of multiple CATs, and it shows two tumours which occurred in the left ventricle.<sup>3</sup>

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**Fig. 1.** CTPA demonstrating large hyperechoic calcified mass within the right atrium (left hand image). Two smaller calcified masses are seen adjacent to each other arising from the anterolateral wall of the left atrium. Their close proximity to each other gives the appearance of a single bi-lobed mass (right hand image).



**Fig. 2.** Modified mid-oesophageal TOE view (37°) showing both atria and the interatrial septum. A large calcified mass is seen in the right atrium and a smaller calcified mass is seen in the left atrium attached to the inter-atrial septum. Mid-oesophageal view commissural view (87°) showing the two masses attached to the anterolateral wall of the left atrium adjacent to the left atrial appendage.

The differential diagnoses of intra cardiac masses include thrombi and cardiac tumours such as myxomas. Cardiac CAT remains a diagnosis that is not commonly considered.

Cardiac CAT can arise in any of the four chambers of the heart and are characterized histopathologically by an amorphous degenerating mass of fibrin with diffuse calcific infiltration.<sup>1</sup> Diagnosis is aided by imaging modalities such as TTE and TOE along with C-MRI or Cardiac CT. Post-operative histopathological examination remains the mainstay of diagnosis. The treatment of choice is surgical excision of the cardiac mass.

Right-sided tumours remain predominantly asymptomatic until they become large enough to interfere with intra-cardiac blood flow, alter hemodynamic function or induce arrhythmias. Chronic repeating pulmonary embolization may lead to significant hypoxaemia and severe pulmonary hypertension. Left sided tumours may result in arterial embolism, resulting in stroke, retinal artery occlusion, myocardial ischaemia, renal infarction or limb ischaemia. Large tumours can even cause obstruction of left ventricular filling during diastole or Left Ventricular Outflow Tract obstruction.<sup>2</sup>

There is one reported fatality from a Cardiac CAT.<sup>4</sup> In this particular case the tumour involved the chordae tendineae of the tricuspid valve leading to right ventricular decompensation.

Diagnosis is aided by imaging modalities such as TTE and TOE along with cardiac MRI or cardiac CT. Post-operative histopathological examination remains the mainstay of diagnosis. Mainstay of treatment is surgical excision of the cardiac mass.

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