

Case Report

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## Mitral regurgitation due to caseous calcification of the mitral annulus: two case reports

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### Abstract

Caseous calcification is a rare variant of mitral annular calcification, occurring in about 0.06% of echocardiographic studies performed. It is usually a benign lesion, but it should be differentiated by abscess and tumors. Echocardiography is the most sensitive method to identify caseous calcification which appears typically as a round, calcified mass with an echo-lucent, liquid-like inner part.

### Background

Unlike mitral annular calcification (MAC), that is a common echocardiographic finding, caseous calcification is a rare variant, occurring in about 0.6% of patient with annular calcification [1-3]. Patient 1.

An 82-year-old woman, with history of hypertension, was admitted to our department for paroxysmic atrial fibrillation, which was successfully treated with intravenous Amiodarone. Physical examination revealed a systolic murmur of 2-3/6 L grade. Besides laboratory examinations were substantially normal.

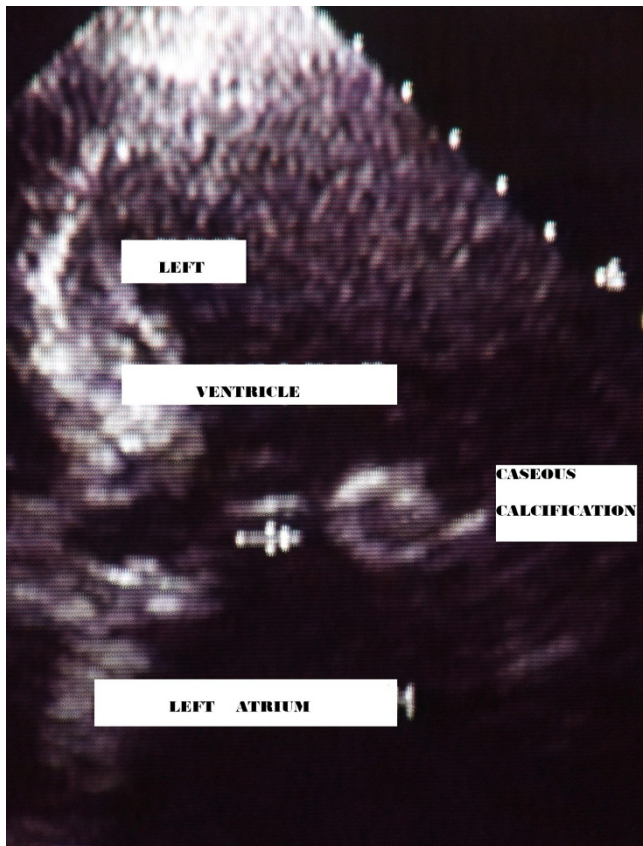
Echocardiogram demonstrated mild left atrial enlargement (diameter = 42 mm, area = 22 cm<sup>2</sup>), therefore left ventricle was hypertrophic with an ejection fraction of about 60%. Additionally in the posterior site of mitral annulus, at the base of corresponding leaflet, was a round cystic mass of about 2 cm in diameter, with a calcified capsule and an echo-lucent core (Fig. 1). The lesion was consistent with caseous calcification of mitral annulus.

Colour-Doppler examination ruled out shunt between the cyst and the cardiac chambers, moreover colour flow

mapping revealed a moderate mitral insufficiency without mitral stenosis. Transesophageal echocardiogram was refused by the patient.

Since there was not dyspnoea, nor left ventricular dilatation, conservative treatment and follow up was considered sufficient.

Patient 2. A 71-years-old woman was referred to our institution because of anterior acute myocardial infarction, about 6 hours after the onset of symptoms. Electrocardiogram showed sinus rhythm and ST elevation in precordial V1 → V4 leads. She did not complain dyspnea (Killip class 1). Coronary arteriogram showed a sub-occlusion (TIMI 1-2) of mid-portion of the left anterior descending artery, that was successfully treated with percutaneous coronary intervention with stent implantation. On auscultation a 3/6 grade systolic murmur was heard at the lower left sternal border. Echocardiogram evidenced an hypertrophic left ventricle of normal dimension, with apical akinesis, ejection fraction was 48%. Moreover posterior mitral annulus appeared calcified with a rounded, vacuolated mass of 1 cm in diameter (Fig. 2). Colour-Doppler examination demonstrated mild aortic insufficiency and



**Figure 1**  
apical four chamber view.



**Figure 2**  
apical four chamber view.

moderate mitral regurgitation. Transesophageal echocardiogram confirmed that mitral posterior leaflet was thickened and partially calcified, otherwise chordate tendineae appeared normal but the posterior valvular ring and the base of leaflet was deformed by a cystic mass consistent with caseous calcification.

### Comments

MAC is a common finding, especially in the elderly and in the end-stage renal failure [1-5]. Calcification begins between the posterior atrio-ventricular groove and the base of posterior mitral leaflet, although in very elderly subjects it can involve the entire annulus. Otherwise caseous calcification represents a rare evolution of a calcified mitral ring, due to caseous transformation of the inner material.

Histological examination of the inner fluid usually reveals an amorphous, basophilic content, composed by a blend of calcium and cholesterol, surrounded by a inflammatory cells, mainly macrophages [3-5]. Echocardiography has demonstrated to be the most reliable method to diagnose this lesion. Almost invariably, caseous calcification appears as an echo-dense, round, smooth mass with a liquid core, surrounded by a calcified envelop, as a rule it is localized into the posterior mitral annulus [1-3,6]. Further exams, such as transesophageal echocardiography, computed tomography and magnetic resonance, are seldom necessary to differentiate caseous calcification from tumour or abscess [3]. In fact the latter condition usually causes fever and embolic events. Besides caseous calcification has a more calcified envelope than infected mitral ring [3].

Caseous calcification is a rare, accidental echocardiographic finding, occurring in about 0,06% of all echocardiographic studies [3-6], whereas it has a higher prevalence in a necropsy series [4]. This discrepancy could be explained by the fact that this condition could not be recognised by cardiologists that are unfamiliar with this unusual lesion. It is of interest that this pathological condition is mentioned as sterile caseous abscess of mitral ring in a widely diffuse textbook of echocardiography [7] and it is neglected by a recent review of echogenic structures [8].

Caseous calcification is a benign condition, which only rarely may determine significant valvular stenosis or insufficiency, requiring surgical treatment [3-6,9]. As a rule conservative management is indicated in most of the cases [1-3].

### Competing interests

The authors declare that they have no competing interests.

## Consent

The authors state that informed written consents were obtained from both the patients for publication of manuscript and figures.

## Authors' contributions

Both Authors, MM and FLJ, have contributed to collect clinical data and have performed echocardiograms of the second patient. MM has performed clinical examination and echocardiogram of the first patient moreover he has found bibliography. The manuscript was made and revised by both the Authors.

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