**Name of journal: World Journal of Cardiology**

**ESPS Manuscript NO: 9495**

**Columns: CASE REPORT**

Calcific left atrium: A rare consequence of endocarditis

DattiloG *et al*. New perspectives of endocarditis

Giuseppe Dattilo, Carmelo Anfuso, Matteo Casale, Vincenza Giugno, Lorenzo Camarda, Natascia Laganà, Gianluca Di Bella

**Giuseppe Dattilo, Matteo Casale, Vincenza Giugno, Lorenzo Camarda, Natascia Laganà, Gianluca Di Bella,** Department of Clinical and Experimental Medicine, University of Messina, 98125 Messina, Italy

**Carmelo Anfuso,** Division of Radiology, ‘Ospedali Riuniti Papardo-Piemonte’ Hospital, 98125 Messina, Italy

**Author contributions:** Dattilo G and Di Bella G provided for patient clinical examination and echocardiogram; Casale M, Giugno V, Camarda L and Laganà N collected the patient’s clinical data and wrote the paper; Anfuso C provided for CT and CMR; Dattilo G and Di Bella G analyzed the data.

**Correspondence to: Giuseppe Dattilo, MD, PhD,** Departement of Clinical and Experimental Medicine, Section of Cardiology, University of Messina, Policlinico G. Martino, Via Consolare Valeria, 98125 Messina, Italy. giu.dattilo@libero.it

**Telephone:** +39-90-2213531 **Fax:** +39-90-2213530

**Received:** February 14, 2014 **Revised:** April 15, 2014

**Accepted:** July 18, 2014

**Published online:**

**Abstract**

Usually, cardiac calcifications are observed in aortic and mitral valves, atrio-ventricular plane, mitral annulus, coronaries, pericaridium (usually causing constrictive pericarditis) and cardiac masses. The calcifications of atrial walls are unusual findings that can be identified only using imaging with high spatial resolution as cardiac magnetic resonance and computed tomography. We report a case of a 43-year-old patient with no history of heart disease that underwent cardiac evaluation for mild dyspnoea. The echocardiogram showed a calcific aortic valve and a hyper-echogenic lesion located in atrio-ventricular plane. The patient was submitted to cardiac magnetic resonance and to computed tomography imaging to better characterize the localization of mass. The clinical features and location of calcified lesion suggest an infective aetiology causing an endocarditis involving aortic valve, atrio-ventricular plane and left atrium. Although we haven’t data to support a definite and clear diagnosis, the clinical features and location of calcified lesion suggest an infective etiology causing an endocarditis involving aortic valve, atrio-ventricular plane and left atrium. The patient was followed for 12 mo both clinically and by ECG and echocardiography without worsening of clinical, electrocardiographic and echocardiographic data. Cardiac magnetic resonance imaging and computed tomography are ideal methods for identifying and following over time patients with calcific degeneration in the heart.

© 2014 Baishideng Publishing Group Inc. All rights reserved.

**Key words:** Endocarditis complications; Left atrium calcification; Cardiac magnetic resonance; Computed tomography

**Core tip:** Patient submitted to echocardiography, cardiac magnetic resonance and to computed tomography imaging to better characterize a hyper-echogenic lesion located in atrio-ventricular plane. The clinical features and location of calcified lesion suggest an infective aetiology causing an endocarditis involving aortic valve, atrio-ventricular plane and left atrium**.**

Dattilo G, Anfuso C, Casale M, Giugno V, Camarda L, Laganà N, Di Bella G. Calcific left atrium: A rare consequence of endocarditis. *World J Cardiol* 2014; In press

**INTRODUCTION**

Calcification can be observed in many cardiac localizations but is particularly rare an lesion that involves the aortic valve, atrioventricular plane and left atrium

**CASE REPORT**

We report a case of a 43-year-old patient with no history of heart disease that underwent cardiac evaluation for mild dyspnoea. On physical examination he showed only a mild aortic systolic murmur. Blood pressure (130/65 mmHg) and electrocardiogram were normal. The echocardiogram showed an increase of left ventricular (LV) outflow aortic velocity (max velocity 2.2 m/) due to calcific aortic valve and a hyper-echogenic lesion located in atrio-ventricular plane. The patient was submitted to cardiac magnetic resonance (CMR) and to computed tomography imaging to better characterize the localization of mass.

CMR by steady-state free precession sequence showed normal atrial and ventricular dimensions; furthermore were found hypointense areas located in left atrium and atrio-ventricular plane (Figure 1, red arrows on panel A-D) with a partial obstruction of superior pulmonary vein (Figure 1, on panel B). Gradient echo T1-weighted image after 10 min of injection of contrast media (delayed contrast enhancement technique) showed hypointense area in LA suggesting calcium.

Axial images by cardiac computed tomography showed the presence of a mass suggestive of calcium in LA (Figure 1, red arrows on panel E-F), atrioventricular groove and aortic LV outflow (white arrows on panel E-F).

The patient was followed for 12 mo both clinically and by ECG and echocardiography without worsening of clinical, electrocardiographic and echocardiographic data.

**DISCUSSION**

Calcification can be observed in many cardiac localizations[1–7]; particularly, they can be located: (1) valves (usually aortic and mitral valve); (2) atrio-ventricular plane; (3) mitral annulus (usually located in mitral posterior annulus as consequence of a degenerative disorders in the elderly, osteoporosis women, kidney disease); (4) epicardial coronaries; (5) cardiac masses (caseous calcification of the posterior mitral annulus, soft tissue calcified sarcomas, calcified echinococcoccus cysts, cardiac osteocondromas and cardiac calcified amorphous tumors); and finally (6) in pericaridium (usually causing constrictive pericarditis).

The calcifications of atrial walls are unusual findings that can be identified only using imaging with high spatial resolution as cardiac magnetic resonance and computed tomography. Cardiac magnetic resonance imaging and computed tomography, having an high spatial resolution and tissue characterization, are ideal methods for identifying and following over time patients with unusual localization of calcific degeneration in the heart. This case report represent a very rare manifestation of exetended endocarditis. Although we haven’t data to support a definite and clear diagnosis, the clinical features and location of calcified lesion suggest an infective aetiology causing an endocarditis involving aortic valve, atrio-ventricular plane and left atrium.

**COMMENTS**

***Case characteristics***

A 43-year-old patient with no history of heart disease who underwent to cardiac evaluation for mild dyspnoea.

***Clinical diagnosis***

At the physical examination there was only a mild aortic systolic murmur.

***Imaging diagnosis***

Cardiac magnetic resonance (CMR) by steady-state free precession sequence showed hypointense areas located in left atrium and atrio-ventricular plane with a partial obstruction of superior pulmonary vein and the delayed contrast enhancement technique showed a hypointense area in LA suggesting the presence of calcium. Axial images by cardiac computed tomography showed the presence of a mass suggestive of calcium in LA, atrioventricular groove and aortic LV outflow.

***Related reports***

Endocarditis is a serious condition that can endanger the patient life, showing itself in different ways.

***Term explanation***

CMR delayed contrast enhancement technique is based on the use of gradient echo T1-weighted images after 10 min by the injection of contrast medium and it is very useful to evaluate the tissue characteristics, also in an organ in constant motion like heart.

***Experiences and lessons***

This case report not only represents one of the largest extensions of endocarditis described but also shows a lack of correlation between clinical manifestation and clinical symptoms.

***Peer review***

The report is interesting, and it is an excellent work.

**REFERENCES**

1 **Funada A**, Kanzaki H, Kanzaki S, Takahama H, Amaki M, Hasegawa T, Yamada N, Kitakaze M. Coconut left atrium. *Int J Cardiol* 2012; **154**: e42-e44 [PMID: 21641668 DOI: 10.1016/j.ijcard.2011.05.085]

2 **Lee WJ**, Son CW, Yoon JC, Jo HS, Son JW, Park KH, Lee SH, Shin DG, Hong GR, Park JS, Kim YJ. Massive left atrial calcification associated with mitral valve replacement. *J Cardiovasc Ultrasound* 2010; **18**: 151-153 [PMID: 21253366 DOI: 10.4250/jcu.2010.18.4.151]

3 **Müller UM**, Gielen S, Schuler GC, Gutberlet M. Endocardial calcification of left atrium, tracheobronchopathia osteoplastica, and calcified aortic arch in a patient with dyspnea. *Circ Heart Fail* 2008; **1**: 290-292 [PMID: 19808305 DOI: 10.1161/CIRCHEARTFAILURE.108.799437]

4 **Di Bella G**, Masci PG, Ganame J, Dymarkowski S, Bogaert J. Images in cardiovascular medicine. Liquefaction necrosis of mitral annulus calcification: detection and characterization with cardiac magnetic resonance imaging. *Circulation* 2008; **117**: e292-e294 [PMID: 18362237 DOI: 10.1161/CIRCULATIONAHA.107.729905]

5 **Vidal A**, Lluberas N, Florio L, Gómez A, Russo D, Agorrody V, Albistur S, Lluberas R. Massive left atrial calcification, tracheobronchopathia osteoplastica and mitral paravalvular leak associated with cardiac rheumatic disease and previous mitral valve replacement. *Int J Cardiol* 2013; **167**: e111-e112 [PMID: 23659878 DOI: 10.1016/j.ijcard.2013.04.120]

6 **Di Bella G**, Gaeta M, Pingitore A, Oreto G, Zito C, Minutoli F, Anfuso C, Dattilo G, Lamari A, Coglitore S, Carerj S. Myocardial deformation in acute myocarditis with normal left ventricular wall motion--a cardiac magnetic resonance and 2-dimensional strain echocardiographic study. *Circ J* 2010; **74**: 1205-1213 [PMID: 20453384]

7 **Di Bella G**, Minutoli F, Zito C, Recupero A, Donato R, Carerj S, Coglitore S, Lentini S. Calcified disease of the mitral annulus: a spectrum of an evolving disease. *Ann Cardiol Angeiol (Paris)* 2011; **60**: 102-104 [PMID: 21277560]

**P-Reviewer:** Patanè S, Rostagno C **S-Editor:** Wen LL **L-Editor: E-Editor:**

**E:\A 4 编辑\9495\Figure.tif**

**Figure 1 Photograph.** A-D: Cardiac magnetic resonance showed hypointense areas located in left atrium and atrio-ventricular plane (red arrows); B: Partial obstruction of superior pulmonary vein; E, F: Cardiac computed tomography showed the presence of a mass suggestive of calcium in left atrial (red arrows), atrioventricular groove and aortic left ventricular outflow (white arrows).