CASE REPORT

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Multiple giant coronary artery aneurysms detected by transthoracic echocardiography

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Abstract: Coronary artery aneurysms are rare abnormalities diagnosed mostly by the use of coronary angiography or multi-detector computed tomography. They can be also visible on transoesophageal echocardiograms. Giant aneurysms, if large enough, may be found on transthoracic echocardiography. Coronary aneurysms usually remain silent. Nevertheless, since they may result in life-threatening complacations, e.g. myocardial infarction or even sudden death, available treatment strategies should be applied.

Key words: coronary artery aneurysm, echocardiography, multi-detector computed tomography

INTRODUCTION

Coronary artery aneurysms are rare abnormalities resulting mostly from atherosclerosis. Usually silent, they are found occasionally during angiography or multi-detector computed tomography (MDCT). Of uncertain course, coronary artery aneurysms may result in life-threatening complications, such as an acute myocardial infarction or even sudden death. If diagnosed early enough they may be treated surgically with a very good result [1]. We describe the case of a 75-year-male patient with coronary artery aneurysms.

The patient with the history of hypertension, lipid disorders, atrial fibrillation and ischaemic stroke was admitted to the Department of Internal Medicine because of another episode of atrial fibrillation. Since the patient reported symptoms suggestive of chronic heart failure sinus rhythm was restored with intravenous infusion of amiodaron at the dose of 450 mg. The patient underwent transthoracic echocardiography (TTE) to verify the suspicion of heart failure. On imaging an epicardial tumour was found at the level of the mitral annulus on four-chamber view (Figure 1).

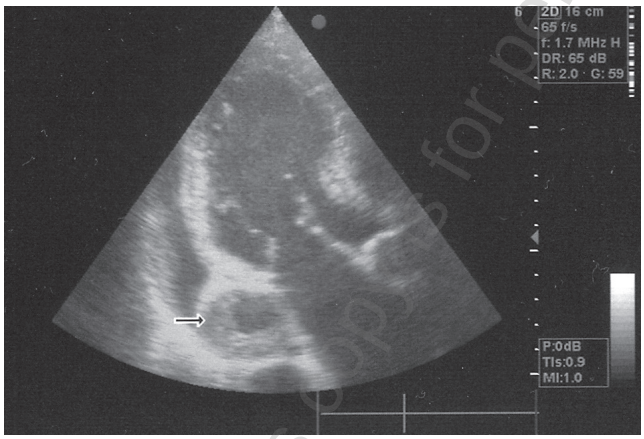

Figure 1 Echocardiography of giant coronary artery aneurysm (black arrow) in 3 chambers view.

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MDCT was performed subsequently to discover the nature of the tumour and its relation to the heart. Multiple coronary artery aneurysms, including our tumour, were found and diagnosed during MDCT (Figures 2 and 3).

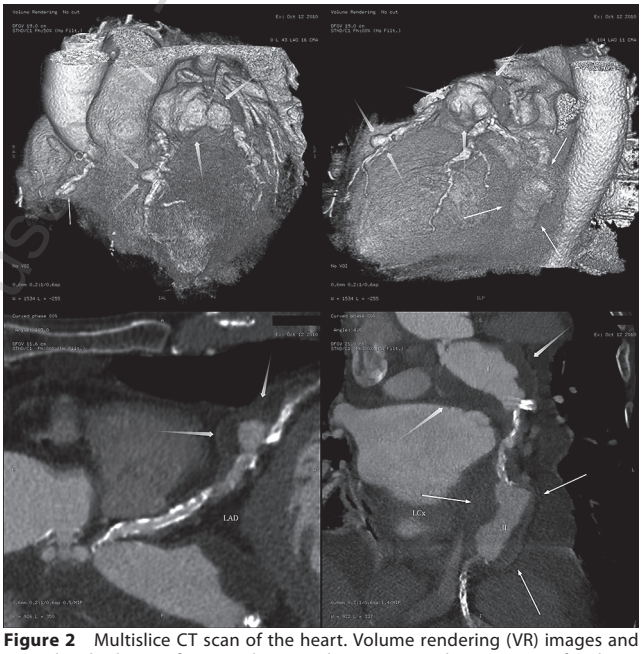

Figure 2 Multislice CT scan of the heart. Volume rendering (VR) images and curved multiplanar reformatted images demonstrates: the aneurysm of mid LAD (blue arrows), the aneurysm of the proximal LCx (green arrows) and the aneurysm of mid LCx (white arrows); white spots reflect calcified atherosclerotic plaques.

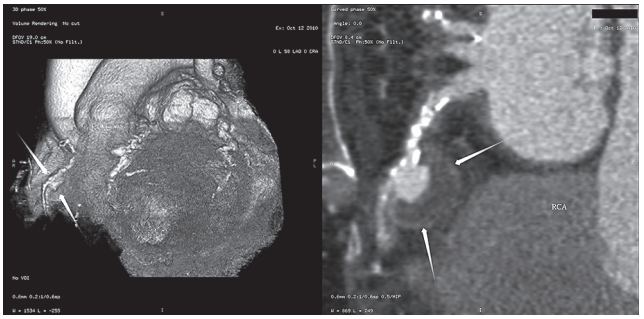

Figure 3 Multislice CT scan of the heart. Volume rendering (VR) image and curved multiplanar reformatted image demonstrating an aneurysm of the RCA (yellow arrows) with white spots reflect calcified atherosclerotic plaques.

One aneurysm, 25 mm long and diameter of about 20 mm, affected the proximal part of the right coronary artery (RCA). The RCA within the aneurysm was partially closed by the thrombus and the remaining part of the RCA was not filled with contrast. Two aneurysms were found within the left circumflex artery. One 40 mm wide and 70 mm long, with the thrombus 14 mm wide, affected the proximal part of the left circumflex artery (LCx), and the other, 40 mm wide and 65 mm long, with the thrombus 14 mm wide, affected the distal part of the LCx. An aneurysm of the left anterior descending artery, 18 mm wide and 15 mm long. with a thrombus 6 mm wide, was found within the medium part of the vessel.

The patient was sent to cathlab for coronary angiography before possible surgical treatment. Unfortunately, several hours after the procedure, sudden cardiac arrest due to asystole occurred and the patient died before further treatment could be applied.

DISCUSSION

Coronary artery aneurysms are quite rare abnormalities, defined as a dilated coronary artery exceeding the diameter of the normal adjacent vessel by 1.5-2 times [1, 2]. If diameter of an aneurysm is larger than 20 mm it is called a giant aneurysm [3]. The natural history of coronary artery aneurysms is uncertain [1]. More common in men, they may develop as the result of underlying atherosclerosis, vasculitis, such as in Kawasaki disease, or connective tissue disorders, previous interventional procedures, especially after drug-eluting stent implantation, ephedrine products or cocaine use [3-8]. Few cases of mycotic coronary artery aneurysms have been described [9]. Aneurysmal formation is the consequence of luminal dilation and remodelling, sometimes with fistulas to the heart chambers, especially the coronary sinus and the right atrium [3, 10-12]. Usually silent, coronary artery aneurysms may produce dyspnoea or angina with typical ST-changes on ECG. The prognosis of coronary artery aneurysms is poor unless diagnosed early. Complications include acute myocardial infarction and sudden death resulting from previous rupture of an aneurysm, with subsequent cardiac tamponade, as well as thrombosis and embolisation [4, 13-17]. Small coronary artery aneurysms are a quite common finding on coronary angiography [18]. They are also occasionally revealed during echocardiography, especially by the transoesophageal technique, MDCT or MR [2, 16, 19-22]. Most coronary artery aneurysms are treated surgically with simultaneous resection of an aneurysm and grafting of the affected artery [10, 13, 23-25]. Aneurysms may also be left intact for further thrombosis [10]. Aneurysms which complicate drug-eluting stent implantation may be treated with the use of covered stents [4]. Endovascular treatment of coronary artery aneurysms with embolisation via a microcoil has been reported [12]. No further treatment attempts could be made in the presented case because of the patient's sudden death.

REFERENCES

1. Meraj PM, Makaryus AN, Boxt LM: An unusual combination of myocardial bridging and coronary artery aneurysm identified on 64-detector coronary angiography. *Int J Cardiovasc Imaging* 2007, **23**, 649-53.
2. Ozcan O, Canbay A, Vural M, Diker E, Aydogdu S: Left main coronary artery aneurysm: report of three cases. *Cardiovasc Revasc Med* 2007, **8**, 278-80.
3. Marla R, Ebel R, Crosby M, Almassi GH: Multiple giant coronary artery aneurysms. *Tex Heart Inst J* 2009, **36**, 244-246.
4. Bajaj S, Parikh R, Hamdan A, Bikkina M: Covered-stent treatment of coronary aneurysm after drug-eluting stent placement: case report and literature review. *Tex Heart Inst J* 2010, **37**, 449-454.
5. Flanagan CM, Kaesberg JL, Mitchell ES, Ferguson MA, Haigney MC: Coronary artery aneurysm and thrombosis following chronic ephedra use. *Int J Cardiol* 2010, **139**, 11-3.
6. Oishi T, Fujieda M, Shiraishi T, Ono M, Inoue K, Takahashi A, Ogura H, Wakiquchi H: Infliximab treatment for refractory Kawasaki disease with coronary artery aneurysm. *Circ J* 2008, **72**, 850-852.
7. Rocafort AG, Castellanos LC, Hernandez JE: Right coronary artery giant aneurysm. *Eur J Cardiothorac Surg* 2009, **35**, 534.
8. Yeu BK, Menahem S, Goldstein J: Giant coronary artery aneurysms in Kawasaki disease – the need for coronary artery bypass. *Heart Lung Circ* 2008, **17**, 404-406.
9. Kalangos A, Julia PL, Ozler A, Jebara VA, Fabiani JN, Sezerman O: Successful surgical treatment of a coronary artery mycotic aneurysm. *Ann Thorac Surg* 1994, **58**, 1521-1523.
10. Hajj-Chahine J, Haddad F, El-Rassi I, Jebara V: Surgical management of a circumflex aneurysm with fistula to the coronary sinus. *Eur J Cardiothorac Surg* 2009, **35**, 1086-1088.
11. Komoda S, Komoda T, Ivanitskaia-Kuehn E, Dreysse S, Pasic M, Hetzer R: Giant aneurysm of the right coronary artery and fistula to the coronary sinus. *Gen Thorac Cardiovasc Surg* 2010, **58**, 78-81.
12. Roncalli J, Marachet MA, Rousseau H, Favuel JM: Left-circumflex coronary artery to right atrium fistula with saccular aneurysm and its endovascular treatment. *Cardiovasc Revasc Med* 2007, **8**, 114-115.
13. Rognoni A, Ferrero V, Teodori G, Ribichini F: Successful surgical treatment of a giant coronary aneurysm communicating with the right atrium. *J Cardiovasc Med* (Hagerstown) 2007, **8**, 1061-1064.
14. Meraj PM, Makaryus AN, Boxt LM: An unusual combination of myocardial bridging and coronary artery aneurysm identified on 64-detector coronary angiography. *Int J Cardiovasc Imaging* 2007, **23**, 649-653.
15. Kimura S, Miyamoto K, Ueno Y: Cardiac tamponade due to spontaneous rupture of large coronary artery aneurysm. *Asian Cardiovasc Thorac Ann* 2006, **14**, 422-424.
16. Okmen AS: Left main coronary artery stenosis associated with extremely long fusiform aneurysm. *Int J Cardiol* 2007, **121**, 97-99.
17. Stazka J, Olszewski K, Krawczyk E: Successful treatment of giant coronary artery aneurysm mimicking right atrium thrombus – a case report. *Ann Univ Marie Curie Sklodowska Med* 2004, **59**, 307-309.
18. Wells TA, Peebles CR, Gray HG: Giant left anterior descending coronary artery aneurysm. *Int J Cardiol* 2008, **126**, e27-28.
19. Pyszel A, Skoczyńska A, Derkacz A, Poreba R, Magott-Derkacz A, Andrzejak R, Zembala M: Giant coronary aneurysm successfully treated with surgery – a case report. *Kariol Pol* 2007, **65**, 54-57.
20. Chen YT, Hwang CL, Kan MN: Large, isolated, congenital aneurysm of the anterior descending coronary artery. *Br Heart J* 1993, **70**, 274-275.
21. Channon KM, Wadsworth S, Bashir Y: Giant coronary artery aneurysm presenting as a mediastinal mass. *Am J Cardiol* 1998, **82**, 1307-1308.
22. Chazov E, Akchurin R, Lepilin M, Agapov A, Belvaev A, Partiqulov S, Gibadulina I: Giant aneurysm of the coronary artery. *Int Angiol* 1991, **10**, 106-111.
23. Mawatari T, Koshino T, Morishita K, Komatsu K, Abe T: Successful surgical treatment of giant coronary artery aneurysm with fistula. *Ann Thorac Surg* 2000, **70**, 1394-1397.
24. Inan K, Ucak A, Onan B, Hastaoglu O, Temizkan V, Yilmaz AT: Combined surgical approach to multiple giant coronary artery aneyrysms. *Heart Surg Forum* 2009, **12**, E294-296.