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Clinical Image

CLINICAL IMAGE

Giant aneurysm of bilateral coronary arteries with multimodality imaging representations

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Abstract

Giant coronary artery aneurysms are rare, with reported incidence of 0.02–0.2% (Morita H, Ozawa H, Yamazaki S, Yamauchi Y, Tsuji M, Katsumata T, et al. A case of giant coronary artery aneurysm with fistulous connection to the pulmonary artery: a case report and review of the literature. *Intern Med*. 2012; 51:1361–6.). Multiple giant aneurysms involving all three coronary arteries are even rarer. We report a rare case of multiple giant aneurysms involving the right coronary, left anterior descending and left circumflex arteries, supplemented with excellent multimodality imaging representations, i.e. plain radiograph, echocardiography, magnetic resonance imaging and computed tomography coronary angiogram.

INTRODUCTION

Giant coronary artery aneurysm (CAA) is defined as segmental vascular dilatation of a coronary artery beyond 20 mm in diameter [2]. It is a rare condition. The majority of patients are asymptomatic and commonly the aneurysms are found incidentally.

CASE REPORT

A 71-year-old gentleman was referred to our centre for further management of cardiomegaly which was noted on chest radiograph (Fig. 1A). He was initially treated for pneumonia and following that he experienced reduction in effort tolerance for 2 weeks duration. He denied chest pain or other angina symptoms. Clinical examination was unremarkable with a non-displaced cardiac apex.

Electrocardiogram (ECG) showed no significant abnormality. Dobutamine stress echocardiography (DSE) revealed normal myocardial wall motion consistent with absence of regional or global myocardial ischaemia. However, incidental cystic masses were seen adjacent to the right and left atrial free walls (Fig. 1B and C). Cardiac magnetic resonance (CMR) imaging (Fig. 2A–C) and computed tomography coronary angiogram (CTCA) (Fig. 2D–F) demonstrated giant aneurysms with circumferential intramural thrombus of the right coronary (RCA) and left anterior descending (LAD) arteries; with saccular aneurysm of the proximal left circumflex (LCx) artery. On steady state free precision (SSFP) 4-chamber image of CMR, the round hypointense cross cut image of the giant RCA and LCx aneurysms appeared to resemble a mouse's ears. Despite their sizes, the aneurysms did not cause compression to the adjacent cardiac chambers. There was no demonstrable late gadolinium enhancement in all coronary segments, which excluded evidence of myocardial infarction. Multiple dilated venous structures were noted on CTA at the region lateral to the aortic arch, in the aortopulmonary window and at the peritracheal regions likely to represent cavernous hemangioma.

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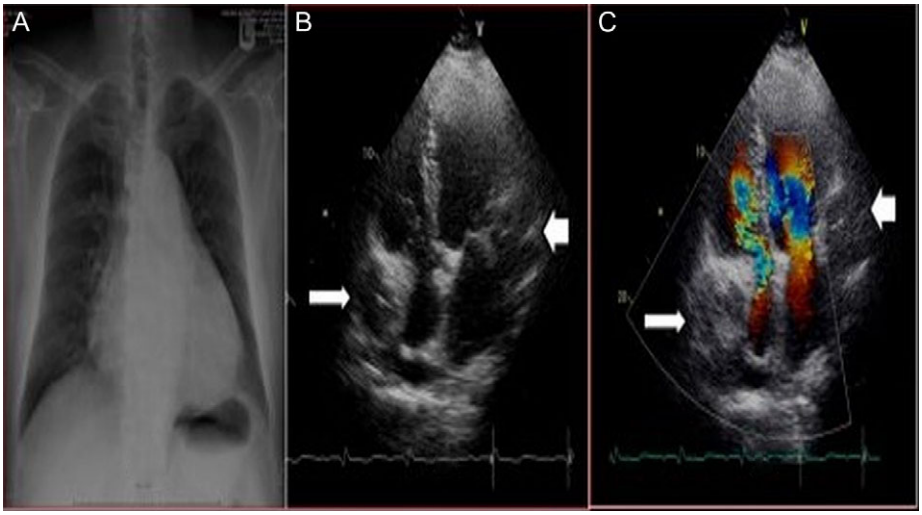

Figure 1: Frontal chest radiograph (**A**) showing cardiomegaly with a cardiothoracic ratio of 0.6 without evidence of cardiac failure. The 2D-echocardiogram image (**B**) demonstrating non-dilated cardiac chambers with normal myocardial wall kinetic and circular cystic masses adjacent to the right (long arrow) and left atrial free walls (short arrow). The cystic masses did not demonstrate colour signal on colour Doppler echocardiogram (**C**).

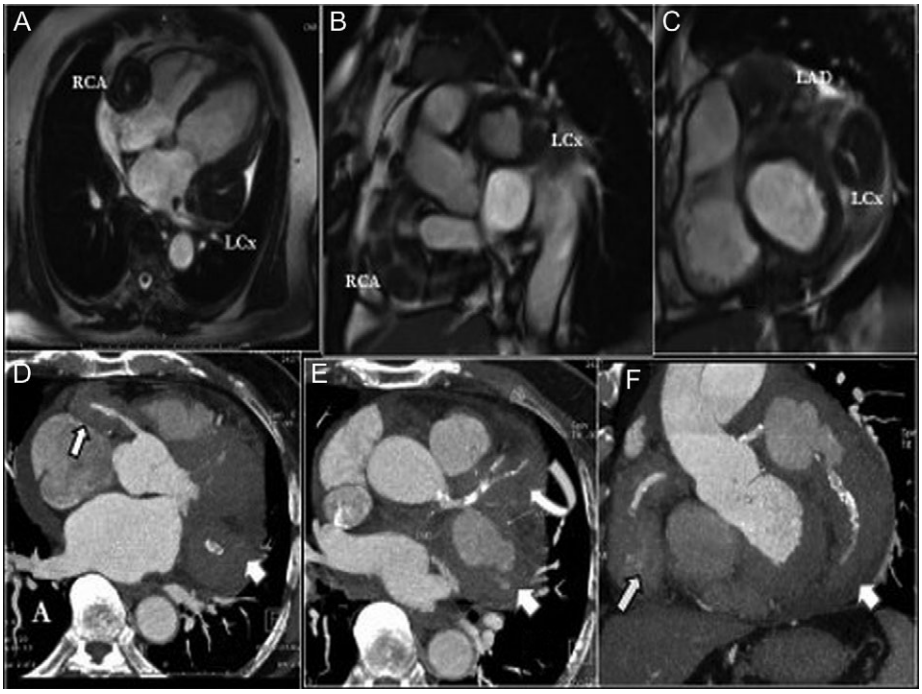

Figure 2: Static images of cine SSFP 4-chamber MRI (**A**) showing hypointense masses with bright central signal, adjacent to the right and left atrial free walls—mimicking mouse ears—representing giant aneurysms of the RCA and LCx with circumferential hypointense intramural thrombi; short axis view at the level of aortic root (**B**) demonstrating C-shaped giant RCA aneurysm with significant luminal narrowing due to intramural thrombus and saccular aneurysm of the proximal LCx; short axis view at the basal left ventricle (**C**) showing cross cut of the giant LCx and LAD aneurysms. MPR CTA Coronary (**D–F**) confirmed the giant aneurysms of the RCA (long arrow), proximal LCx (short arrow), LAD (spiral arrow) and saccular LCx (short arrow) aneurysm.

The patient was treated medically with an antiplatelet drug. No active management was offered as the size of all three CAAs were extraordinarily large. At 1 year follow up, the patient remained stable, symptom-free and classified as class I New York Heart Association (NYHA). His coronary aneurysms were probably related to undiagnosed childhood Kawasaki disease or congenital in origin as all serology results were negative.

DISCUSSION

Giant coronary artery aneurysms are rare, with reported incidence of 0.02–0.2% [1]. Multiple giant aneurysms involving all three coronary arteries are even rarer. CAA refers to vascular dilatation exceeding the normal diameter of the adjacent coronary segment or 1.5 times larger than the diameter of the largest coronary artery [2]. When it is beyond 20 mm in diameter,

it is called giant aneurysm [2]. The most common aetiology of CAAs is atherosclerosis. Other causes include congenital, Kawasaki disease, trauma (including coronary angioplasty), Ehlers–Danlos syndrome, Marfan syndrome, Takayasu arteritis, polyarteritis nodosa, syphilitic aortitis, scleroderma, systemic lupus erythematosus, Behcet disease and fibromuscular dysplasia [3]. In our patient, the aetiology could be undiagnosed childhood Kawasaki disease or congenital, in view of presence of multiple thoracic cavernous hemangioma seen on CTA and negative serology investigations.

The majority of patients with CAA are asymptomatic. Other than short duration of reduced effort tolerance which was most likely due to his lung infection, our patient was symptom-free. Those who are symptomatic may present with symptoms of angina pectoris, myocardial infarction, sudden death, fistula formation, hemopericardium, cardiac tamponade, compression of surrounding structures or even congestive heart failure [3].

At present, there is no standard management guideline of CAA since the incidence is scarce. The choice of optimal therapy is still unknown and controversial. The available treatment options include medical therapy, percutaneous intervention (PCI) and surgical approach [4]. The choice is tailored to the clinical situation of the particular patient. In asymptomatic patients, medical therapy with antiplatelet and/ or anticoagulant drugs are usually chosen to prevent thromboembolic complications. Surgical management is normally reserved for patients symptomatic of obstructive coronary artery disease or embolic phenomena which highly predispose to myocardial ischaemia [5]. PCI using polytetrafluoroethylene-covered stents has emerged as a newer option as it is easy to use [6].

CONCLUSION

Giant CAA is a rare condition and it is even rarer when multiple coronary arteries are involved [1]. The most common aetiology is atherosclerosis, followed by congenital and various connective tissue diseases [3]. The majority of patients with coronary artery aneurysms are asymptomatic. The available treatment options include medical therapy, PCI and surgical approach [4]. The choice of optimal therapy is still unknown and controversial.

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CONFLICT OF INTEREST STATEMENT

There is no conflict of interest to declare.

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ETHICAL APPROVAL

No approval is required.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

GUARANTOR

Suzana Ab Hamid is the guarantor of this article.

AUTHORS' CONTRIBUTION

All the authors made substantial contribution to the preparation of this manuscript and approved the final version for submission.

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