

Giant Right Coronary Artery Aneurysm with Arteriovenous Fistula

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Introduction

Coronary artery aneurysm (CAA) is defined as a dilation that exceeds the normal diameter of the adjacent artery or the diameter of the patient's largest coronary artery by 1.5 times.¹ Some authors consider a giant coronary aneurysm when the diameter is > 20 mm, whereas the American Heart Association defines giant aneurysms as those > 8 mm. Giant CAA is a rare pathology with an approximate incidence of 0.02%.² We report a case of giant right coronary artery aneurysm with fistula to the coronary sinus, appearing as a giant "mass".

Case report

A 72-year-old female patient was admitted to our service with asthenia, dyspnea, mental confusion, and weight loss. She had a previous history of systemic arterial hypertension, diabetes mellitus, hypothyroidism, and Alzheimer's disease. She was on Aradois 50 mg/day, Syntroid 25 mcg, and a multivitamin. Upon physical examination, she had normal hemodynamic parameters (heart rate 75 bpm and blood pressure 118/81 mmHg), low oxygen saturation (80%), and temperature of 36 °C. To assist diagnosis, chest computed tomography angiography was requested, revealing findings compatible with bilateral acute pulmonary thromboembolism, in addition to right coronary artery ectasia with a voluminous rounded mass in the distal segment, of undetermined etiology. Investigation continued with angiotomography of the coronary arteries. The study was conducted on a 320-channel scanner (Aquilion One/Prism, Canon), showing significant right coronary artery ectasia (10 mm in diameter), calcified plaques that did not promote significant luminal reduction, and a large, partially thrombosed aneurysmal formation in the distal third measuring 80 × 67 mm. Communication between the aneurysm and the coronary sinus (arteriovenous fistula) was also observed (Figures 1, 2, and 3). Cardiac magnetic resonance imaging was performed, corroborating the diagnosis of CAA and demonstrating compression of the right ventricle by the voluminous mass with preserved biventricular function, in addition to the absence of myocardial fibrosis/necrosis (Figure

4). Surgical correction of the CAA was indicated; however, due to the patient's age and comorbidities, family members opted for expectant treatment. One year after diagnosis, the patient had an episode of chest pain and was hospitalized with suspected coronary syndrome. Coronary cineangiography was performed, without signs of obstructive coronary disease, and, in this study, the CAA was not characterized (Figure 5). It should be noted that cases of aneurysm filled with thrombus may not be detected by invasive coronary angiography.

Discussion

The most frequent etiology of CAA is atherosclerotic (likely etiology of the reported case). Other causes include congenital heart disease (for example, Kawasaki disease), trauma, percutaneous coronary intervention, arteritis (for example, syphilis or Takayasu arteritis), mycotic infection, and connective tissue disorders (for example, Ehlers-Danlos syndrome).³ The most affected sites are the proximal and middle portions of the right coronary artery and the proximal portion of the anterior descending and circumflex coronary arteries.⁴

Most patients with CAA have asymptomatic clinical presentation, and detection occurs as an incidental finding during imaging tests. When symptomatic, these aneurysms may present as acute coronary syndromes or mimic other conditions, such as ascending aorta or pulmonary trunk

Keywords

Coronary Vessel Anomalies; Tomography, X-Ray Computed; Ventricular Dysfunction, Right; Coronary Aneurysm

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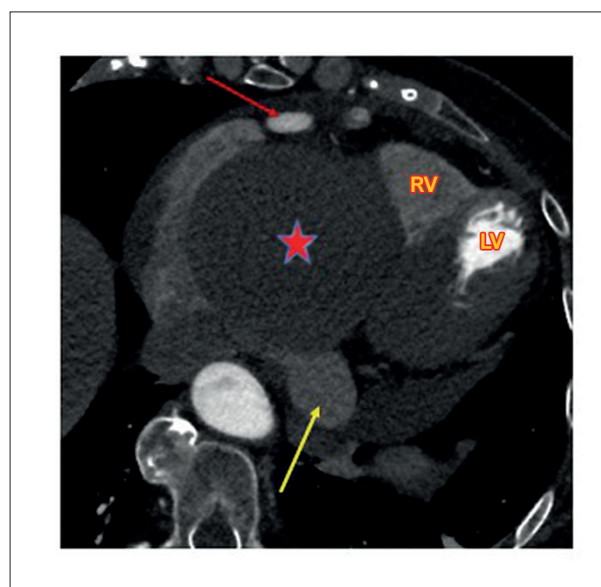


Figure 1 – Axial view of angiotomography demonstrating the voluminous aneurysm (red star), right coronary artery ectasia (red arrow), and dilated coronary sinus communicating with the aneurysm (yellow arrow). LV: left ventricle; RV: right ventricle.

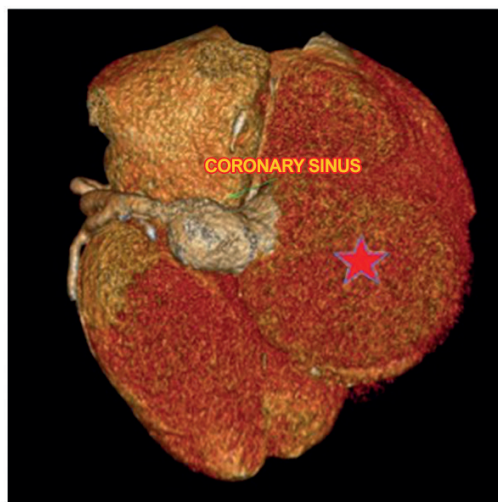


Figure 2 – Three-dimensional reconstruction of angiotomography showing dilated coronary sinus (green arrow) and giant right coronary artery aneurysm.

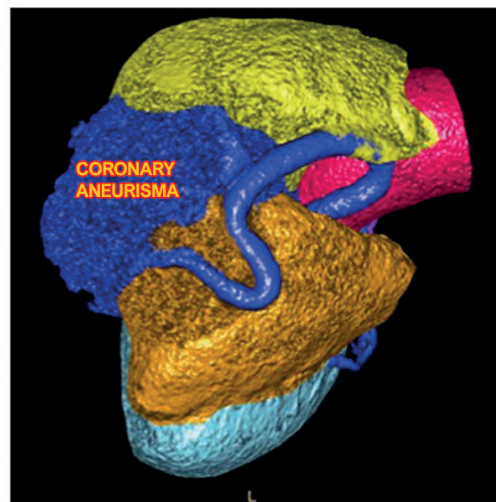


Figure 3 – Three-dimensional reconstruction of angiotomography showing ectasia and giant right coronary artery aneurysm.

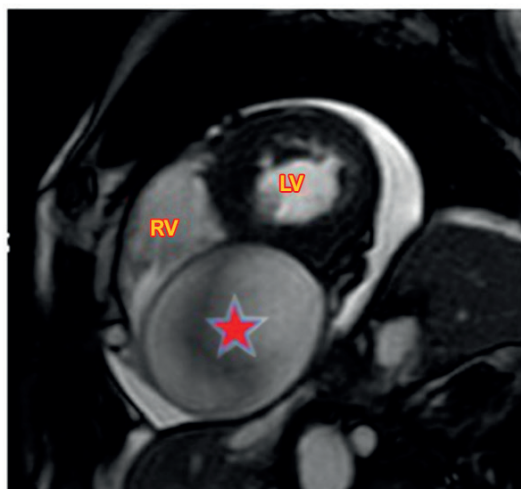


Figure 4 – Short-axis cardiac magnetic resonance imaging showing the voluminous right coronary artery aneurysm (red star). LV: left ventricle; RV: right ventricle.



Figure 5 – Coronary cineangiography demonstrating right coronary artery ectasia, with no evidence of aneurysm in the study.

aneurysms, pericardial cysts, cardiac tumors, and thymomas.⁵ Myocardial infarction may occur due to low-flow state ischemia, thrombosis, or distal embolization.⁶ Fistulas between the aneurysm and a cardiac chamber are also possible complications depending on the size of the aneurysmal sac. The association of CAA with coronary sinus fistula is not uncommon, with some cases already described in the literature.⁷ Diagnosis is made by angiotomography of the coronary arteries or by invasive angiography. Clinical management can vary from the

pharmacological approach with anticoagulants and antiplatelet agents to endovascular management with stents, or even surgery with resection and graft reconstruction.⁸

Author Contributions

Conception and design of the research and writing of the manuscript: Siqueira MEM; critical revision of the manuscript for intellectual content: Dias MI, Uski ACVR, Aguiar Filho LF.

Case Report

Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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Study Association

This study is not associated with any thesis or dissertation work.

Ethics Approval and Consent to Participate

This article does not contain any studies with human participants or animals performed by any of the authors.

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