

Giant aneurysm of the right coronary artery with fistula to right atrium

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Abstract. – Coronary artery aneurysms are rare entities with a prevalence of 0.15%-4.9%. Giant coronary artery aneurysms are known as more than 2 to 5 cm in size. We present a case of 74 year-old female who was admitted to our clinic with chest pain and dyspnea. Coronary angiography demonstrated a giant right coronary artery (RCA) aneurysm with a significant left-to-right shunt. The patient underwent an open heart surgery. During the exploration, an aneurysm of 40 mm in diameter of the RCA was seen. The aneurysmatic RCA was excluded and continuously closed with the support of intra-aortic balloon pump (IABP). The patient was discharged on the 13th postoperative day without any complication.

Key Words:

Giant, Aneurysm, Right coronary artery, Fistula.

Introduction

Coronary artery aneurysm (CAA) is an uncommon condition defined as a dilatation of a coronary artery exceeding 1.5 times the diameter of the patient's largest coronary vessel¹. Giant coronary artery aneurysms are uncommon and are defined as more than 20 to 50 mm in size and rarely found as a primary condition^{2,3}.

The most common cause of coronary aneurysms is atherosclerosis in adult population and Kawasaki disease in children. Other causes include lupus erythematosus, trauma, syphilis or idiopathic origin of coronary fistula⁴. Important complications related to CAA include myocardial infarction and sudden death due to embolisation, dissection or mechanical obstruction⁵. Prognosis and treatment primarily depend on the severity of the underlying obstructive coronary

disease. Treatment options are oral anticoagulation, resection, stent application and exclusion with or without bypass⁶.

Case Report

A 74 year-old female patient presented with sudden onset of dyspnea and chest pain. Her medical history was unremarkable except for her recently developed right heart failure, while there was no family history of cardiac disease except hypertension. An electrocardiogram (ECG) was taken immediately after admission and revealed atrial fibrillation (CHADS-Score was 2). Clinically, she had a New York Heart Association Functional Classification (NYHA) score of III-IV.

Echocardiography (ECHO) showed a significantly dilated right atrium (diameter, 55 mm). Left ventricular ejection fraction (LVEF) was calculated as 40%. ECHO also demonstrated 1st degree tricuspid valve regurgitation without any other organic heart defect.

The gradient across the tricuspid regurgitation was 50 mm Hg, so that the patient had pulmonary artery hypertension of more than 60 mmHg. In addition, the RCA was visibly dilated more than 2cm with a shunt to the right atrium. This was also seen on coronary angiography (Figure 1).

The patient underwent open heart surgery through median sternotomy. Intraoperatively, a 40 mm dilated right coronary artery was found (Figure 2). The fistula could not be located. Thus, the coronary was closed at its origin and at its dilated end several times for indirect closure of the shunt (Figure 3). Bypass grafting was not performed due to the tiny distal caliber of the peripheral RCA. An intra-aortic balloon pump (IABP) was placed for hemodynamic support.

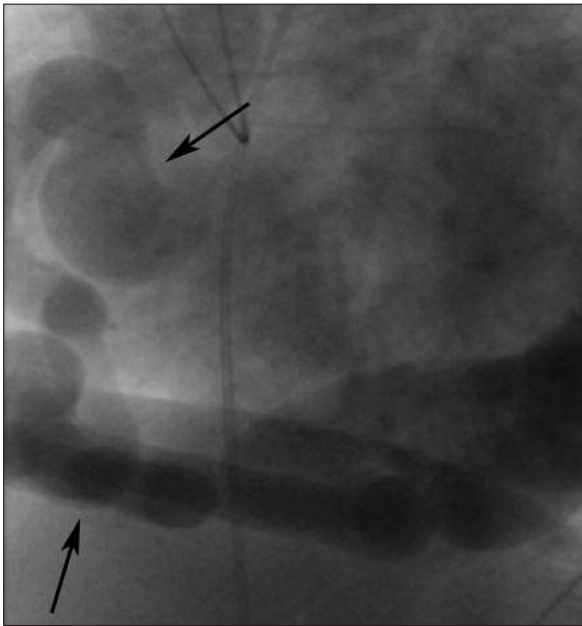


Figure 1. Coronary angiography showing a large aneurysm of the right coronary artery; upper arrow shows ostium of the RCA and lower arrow shows distal RCA.

The patient was transferred to the cardiac intensive care unit without any complication under low dose support of dobutamine.

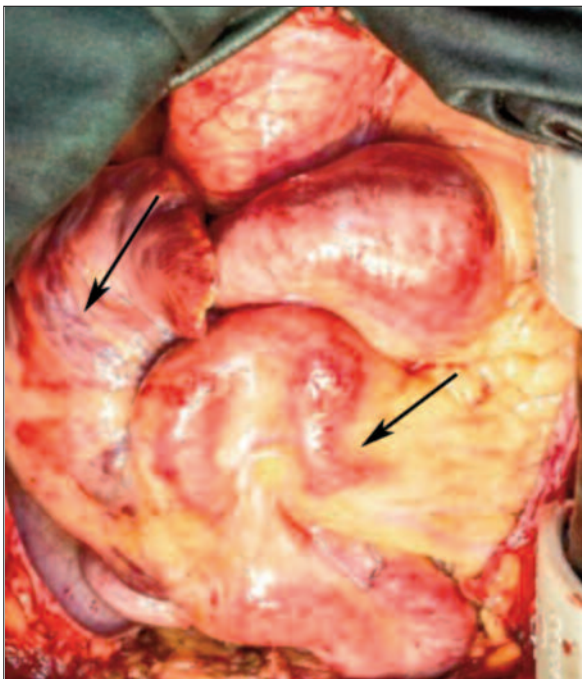


Figure 2. Intraoperative view of aneurysmatic and elongated RCA (upper arrow) and dilated right atrium (lower arrow) due to left-to-right shunt

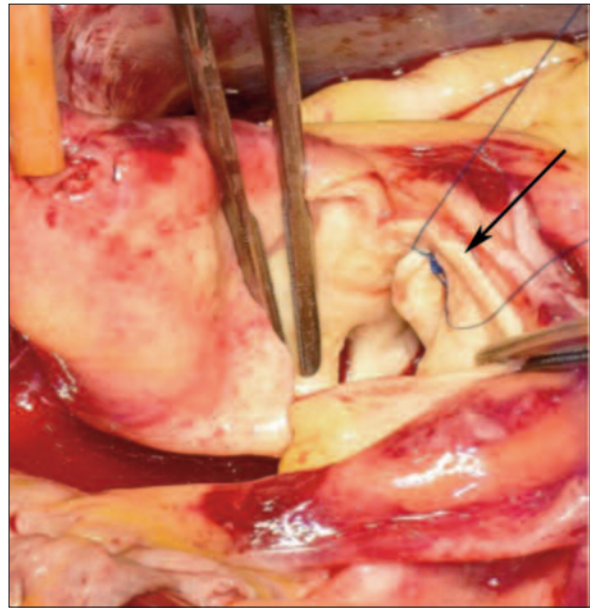


Figure 3. Closure of the orifice of RCA with continuous sutures.

On postoperative day 13, the patient was discharged home on medical treatment including antihypertensive and anticoagulation agents.

Discussion

Giant aneurysm of coronary arteries is rare. Despite the presence of more and more diagnostic tools like cardiac computed tomography or cardiac magnetic resonance tomography the number of publications during the last decade are limited. Online database search at the “PubMed” for “coronary artery aneurysm” and “giant” revealed almost one hundred publications during the last two decades. However, most publications are during the last three years.

There are thrombotic complications with occlusion and myocardial infarction of the RCA described⁷. Furthermore, intensive atherosclerotic changes with coronary artery diseases with non-ST-myocardial infarction were reported, too⁸. The majority of the cases were successful surgically treated. Surgical treatment is usually recommended because of the possibility of acute thrombosis of the aneurysm, distal embolism into the right coronary artery, compression of the heart and rupture⁹.

Our case is a patient with right coronary artery aneurysm with a fistula connecting to the right atrium close to the vena magna cordis. There is only one similar case of a 5 years old child described as an accidental finding¹⁰. Usually patients with RCA aneurysm younger than 20 years are asymptomatic. Accordingly, the presented case is a highly symptomatic older patient with a high likelihood of coronary heart disease. However, the patient history revealed no risk factor for coronary artery disease except hypertension and, in fact, there was no coronary artery disease in coronary angiography.

In conclusion, surgical treatment seems still the treatment of choice, especially in patients with shunts. Bypass grafting depends on the feasibility; IABP may be useful to support hemodynamics if bypass grafting is not performed.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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