

# Giant Coronary Artery Ectasia and its Management: A Case Report

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## Abstract

**Background:** Coronary artery aneurysms are reported in 1.5 to 4.9 percent of the population receiving coronary angiography. Whether there is coronary stenosis or atrial fibrillation, it might result in an acute coronary syndrome. **Case presentation:** The patient was in his usual health when he began to experience pain while watching television an hour before his visit to the emergency department. The patient, a smoker with a history of hypertension, presented at our hospital with significant retrosternal chest pain. A CT angiography of the coronary arteries revealed a large RCA aneurysm thrombus-laden aneurysm. He was given 324 mg aspirin, 400 mcg Nitro-glycerin, 80 mg Atorvastatin, and a Heparin infusion immediately. An emergency RCA bypass grafting procedure was performed after a cardiothoracic surgical team assessed the patient. **Conclusion:** Coronary artery aneurysm is an infrequent disorder that can appear in a variety of ways. Before any further therapy, it should be thoroughly evaluated.

## Introduction:

Coronary artery ectasia (CAE) and coronary artery aneurysm (CAA) are defined as localized or diffuse dilatation of at least 1.5 times the neighboring normal segments of the coronary artery<sup>1</sup>. CAE is defined as dilatation of more than one-third of the length of a coronary artery. In contrast, CAA is defined as dilatation of less than one-third of the length of a coronary artery. The prevalence of CAE is reported to be between 0.3% and 5.3% in patients receiving coronary angiography; similarly, the prevalence of CAA is reported to be between 1.5% and 4.9% in patients undergoing coronary angiography, considering these a rare finding<sup>1</sup>. Due to a lack of large-scale and long-term outcome studies, current guidelines do not contain explicit provisions for treating individuals with STEMI accompanied by an ectatic infarct-related artery (IRA)<sup>2</sup>. In adults, atherosclerosis accounts for almost half of the cases. Post-mortem studies show the presence of atherosclerotic plaque in aneurysmal segments of the affected coronary arteries, corroborating this theory<sup>1,2</sup>. We report a unique case with a massive CAA.

## Case Presentation

A 56-year-old gentleman, a smoker and a known case of hypertension, presented to our department with the acute onset of retrosternal chest pain. The patient was in his usual state of health when he suddenly started enduring pain while watching television 1 hour before his presentation to the emergency department. According to the patient, it was crushing in quality, 8/10 in intensity, and non-radiating. The pain was accompanied by nausea and diaphoresis. Prior to this episode, the patient had no history of similar pain or acute coronary syndrome.

On examination, the patient was hemodynamically stable with a heart rate of 88 beats/min and blood pressure of 154/88 mm of Hg. His ECG delineated ST elevation in leads II, III, aVF, V4, V5, and V6, while ST depression was noted in ECG leads I, aVL, V2, and V3 (Figure 1). Laboratory results showed a WBC count of 4.7 B/L, haemoglobin of 12.6 g/dL, haematocrit of 38.1%, platelet count of 206 B/L, sodium level of 142 mmol/L, BUN 20 mg/dL, protein 6 g/dL, creatinine of 0.91 mg/dl, total bilirubin 0.5 mg/dL, ALP 48 IU/L, AST 13 IU/L and pro- BNP 215 pg/mL. Additionally, troponin I level was substantially elevated to over 8000 ng/l, boosting a solid suspicion of myocardial infarction. Hence, the patient was immediately administered 324 mg of Aspirin and 400 mcg of Nitro-glycerine sublingually, along with 80 mg of Atorvastatin and Heparin infusion. He was taken for urgent catheterization, which revealed a large RCA aneurysm, ectatic LAD, and LCX without any elemental obstructive lesion (Figure 2). Furthermore, a CT angiogram of coronary arteries demonstrated a giant RCA aneurysm filled with a thrombus leading to compression of the right atrium and effacement of superior vena cava (Figure 3).

Besides, his distal RCA was also dilated with curvilinear calcification in its wall. In addition to the above findings on performing a transthoracic echocardiogram, his ejection fraction was 50% with inferior wall hypokinesis. Therefore, the patient was evaluated by the cardiothoracic surgery team, who elected to perform an imperative surgery for resection of the aneurysm and bypass grafting of RCA. Upon surgery, the size of proximal RCA was documented to be 81 by 78 mm. After the surgery patient was started on 25 mg of Metoprolol daily.

## DISCUSSION

This patient had a right CAA and CAE of LAD and LCX. He experienced sudden onset retrosternal chest pain at rest without any exacerbating activity with no prior episode. Initially, he was suspected to be a case of myocardial infarction, but on complete workup, an aneurysm of the right coronary artery was the main culprit causing the symptoms.

With a frequency of 1.2–4.9% and affecting the RCA in 50%, coronary artery aneurysms are usually asymptomatic and discovered by chance during angiography<sup>3</sup>. CAA can be characterised based on morphology or coronary artery distribution, with atherosclerosis accounting for 50% of CAA<sup>4</sup>. Kawasaki illness is responsible for 17% of instances that usually affects infants and children but may emerge in adulthood<sup>5</sup>. Mycotic and infectious septic emboli from illnesses like syphilis and borreliosis are rarer causes, accounting for 11% of CAA. Even more unusual causes of CAA include Marfan's syndrome, arteritides such as polyarteritis nodosa, Takayasu's disease, systemic lupus erythematosus, neurofibromatosis, primary cardiac lymphoma, and congenital conditions<sup>5</sup>. Iatrogenic CAA has also been linked to drug-eluting stents and balloon angioplasty<sup>6</sup>. Angina pectoris, myocardial infarction, sudden death, fistula development, rupture with hemopericardium or tamponade, compression of adjacent tissues, or congestive heart failure can be the presenting condition of a patient with CAA<sup>6</sup>. Furthermore, though extremely rare, CAA can be misleading as para cardiac or intracardiac masses<sup>7</sup>. For the differential diagnosis of an aneurysm, echocardiography, coronary CTA, and magnetic resonance imaging (MRI) are essential. Because of its superior soft-tissue contrast and various manipulable characteristics, MRI is the most sensitive tool for assessing tissue in the case of a tumour. Furthermore, coronary angiography helps confirm the diagnosis of coronary artery aneurysm and myocardial infarction, which aids the surgical approach<sup>8</sup>.

CAA has a mixed prognosis, with a 5-year survival rate of approximately 71 percent<sup>6</sup>. The management of coronary artery aneurysms includes medical intervention, stent insertion and surgical resection<sup>8</sup>. For small asymptomatic coronary aneurysms, conservative or medical therapy is preferable. To reduce the risk of thromboembolic consequences, these patients are treated aggressively with changes in cardiovascular risk factors, antiplatelet medication, and anticoagulation, with 3-monthly monitoring recommended<sup>9</sup>. Surgical intervention is required when CAA and GCAA are causing symptoms. CABG, resection with end-to-end anastomoses, or interposition vein graft are among the surgical options available through a median sternotomy<sup>10</sup>. In individuals with a high surgical risk, coil embolization and percutaneous therapy with covered stent implantation have also been employed as non-surgical options<sup>5</sup>.

## Conclusion

We experienced a rare case with a right coronary artery aneurysm mimicking myocardial infarction. We emphasize the necessity of comprehensive evaluation and accurate diagnosis before further treatment. Aneurysm resection with bypass surgery is highly recommended for symptomatic patients with giant coronary artery aneurysms. Ultimately, this case demonstrates one of the many ways CAA might manifest itself and how it was examined and addressed. It adds to the meagre but valuable database of information about CAA and its management that already exists.

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## ECG



Figure 1: ECG showing ST elevation in leads II, III, aVF, V4, V5, V6 and ST depression in leads I, aVL, V2, and V3.

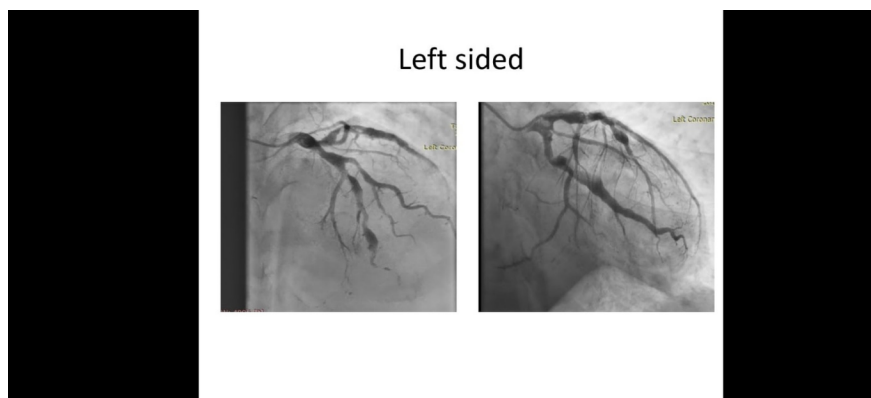


Figure 2: Left sided coronary angiogram showing ectatic LAD and LCX without any elemental obstructive lesion.



Figure 3: CT angiogram of coronary arteries showing a giant right coronary artery aneurysm filled with thrombus causing compression of the right atrium and effacement of superior vena cava.