A giant coronary artery ectasia successfully managed conservatively

Waqas Ullah a, Mishal Shaukat b, Asrar Ahmad d, Zain Ali e, Maryam Mukhtar and Mamoon Ur Rashid

aInternal Medicine, Abington Hospital- Jefferson Health, Abington, PA, USA; bRawalpindi Institute of Cardiology, Rawalpindi, Pakistan; cAdventHealth Orlando, Orlando, FL, USA

ABSTRACT
Coronary artery aneurysms (CAA) is a rare condition characterized by abnormal dilatation of the coronary arteries. We present a case of a 77-year-old gentleman who presented with atypical chest pain and was found to have elevated cardiac enzymes. He underwent diagnostic left heart catheterization which revealed left main CAA and significant left circumflex stenosis. The patient was administered medical therapy and was discharged home in a stable condition. The purpose of this report is to highlight a rare case of a large CAA which was successfully managed conservatively.

1. Introduction
Coronary artery aneurysm (CAA) is defined as a localized luminal dilatation measuring at least 1.3 to 2 times the diameter of a normal coronary artery. The reported prevalence of CAA ranges from 1.9% to 10% [1]. Coronary artery aneurysm predominantly affects the male population, with a male to female ratio of 3:1. Patients with CAA are at an increased risk of having distal coronary artery embolization due to turbulent blood flow. Most cases in the literature are managed with a revascularization approach (coronary artery bypass graft (CABG) or percutaneous coronary intervention (PCI)). In the present study, we have identified factors responsible for severe ectasias and an approach towards its management.

2. Case presentation
A 77-year-old male presented to the emergency department with right-sided chest pain for 2 days. The pain was present at rest and radiated to the left side of his chest. He was given aspirin and three sublingual nitroglycerin tablets by the emergency medical services (EMS) personnel en route to the hospital that decreased his pain. He denied any light-headedness, shortness of breath, cough, fever, headache, nausea or vomiting. He had a history of smoking, hypertension, chronic kidney disease, and gout.

On presentation, the patient was afebrile with a blood pressure of 141/67 mmHg. He had a low heart rate of 60 beats per minute (BPM). Further examination of his chest, abdomen and nervous system showed no abnormalities. Laboratory investigation showed a hemoglobin of 14 g/dL, platelets 181,000/mL, brain natriuretic peptide (BNP) 802 pg/mL, creatinine kinase MB (CK-MB) 12.8 U/L, troponin 184 ng/mL, creatinine 1.8 mg/dL, and thyroid-stimulating hormone (TSH) 4.32 mIU/L. His electrocardiogram (EKG) showed sinus rhythm with first-degree atrioventricular block and no ST-T wave changes. Echocardiography was done which showed no hypokinesia and no other abnormalities. His TIMI score was 6 which prompted an invasive intervention. He underwent left heart coronary catheterization the following day under monitored local anesthesia. He was found to have a large and ectatic left main coronary artery (LMCA), about 102 mm in diameter. (Figure 1) He also had 80% stenosis of the left circumflex artery (LCX). He was initially started on heparin infusion for therapeutic anticoagulation. His LCX artery was stented with a drug-eluting stent (DES). Post-procedure he was started on aspirin, clopidogrel, carvedilol, and atorvastatin. He refused any further intervention such as coronary artery bypass graft (CABG).

He tolerated the procedure well and was discharged home the next day on guideline-directed therapy including dual antiplatelet therapy (DAPT). At the 6 months and one year follow up the patient...
was found to have no progression of the ectasia and was asymptomatic.

3. Discussion

Approximately 0.9% to 4.9% of the patient population undergoing coronary angiography are found to have CAA and it is more commonly seen in men. Right coronary artery (RCA) is the most common site for CAA [1]. The most common cause of CAA is atherosclerosis; followed by Kawasaki disease, polyarteritis nodosa, systemic lupus erythematosus, infection, trauma, angioplasty, and congenital malformations. Coronary artery ectasia can also occur as a complication of coronary artery stenting and has been increasingly reported as a complication of drug-eluting stenting [2]. Here we present an idiopathic case of CAA with a surprisingly giant size which presented with chest pain. Our patient denied a history of vasculopathy, Kawasaki disease, connective tissue disorders and chest trauma making the diagnosis very challenging.

We did a comprehensive literature search and found that many cases of CAA have been reported previously. The majority of these cases were managed with CABG. The biggest CAA with a maximum diameter of 180 mm was described by Gupta et al which was also managed with CABG [3]. Our study marks a case of 102 mm CAA, which is the second-largest ectasia described in the literature. To our knowledge, ours is the first case of a giant CAA that was managed conservatively.

Giant CAA may be detected noninvasively with the use of echocardiography, computed tomography (CT), and magnetic resonance imaging (MRI) [4]. A presumptive diagnosis made on non-invasive tests should be confirmed by coronary angiography [4]. Coronary angiography also enables one to exclude coronary occlusion due to thrombosis and coronary artery dissection which are the two main differentials of CAA. Coronary angiography further reveals the precise anatomy, size, and position of the aneurysm, which helps define the range of management and surgical procedure. In our patient the echocardiography was negative even though CAA on coronary angiography was massive, underscoring the unreliability of non-invasive diagnostic techniques.

According to ACCF/ACR/AHA/NASCI/SCMR 2010, expert consensus document, cardiovascular magnetic resonance imaging (CMR), magnetic resonance coronary angiography (MRCA) may be used for identifying coronary artery anomalies and aneurysms. It may be particularly useful in younger individuals with signs or symptoms of myocardial ischemia to identify anomalous origins of coronary arteries [5]. However, the gold standard for the diagnosis of coronary aneurysms remains x-ray coronary angiography [4]. In light of obtaining precise details from coronary angiography, there was no need to perform CMR and MRCA in the described case.

Treatment options of CAA consist of medical, surgical, and percutaneous approaches. To prevent thromboembolic complications, antiplatelet and/or antithrombotic drugs should be considered [6]. Excision of CAA with CABG is the most frequently performed procedure as the treatment of giant CAA, especially with a diameter exceeding 50 mm [7]. There is no data to suggest the long-term survival of post-CABG patients and patients treated conservatively. In our case, the patient’s chest pain was due to LCX stenosis, while the LMCA ectasia was asymptomatic, which explains why the patient was symptom-free after LCX stenting. Our patient refused CABG surgery and responded well to conservative management despite ectasia of the left main vessel,
and showed no symptoms at 6 months follow up, which makes it a unique case. The surgical approach remains the standard treatment of choice for giant coronary ectasias, however, conservative management might also be beneficial, especially in high-risk patients. Large scale studies are needed to determine the effect and prognosis of different management techniques.

4. Conclusion

Giant CAAs exceeding 100 mm are extremely rare, and MRCA is a useful noninvasive method in confirming the diagnosis. Coronary angiography seems to be more accurate than conventional echocardiography and can delineate the anatomy of CAA. Coronary artery bypass grafting is the treatment of choice for giant CAA, provided there is no prohibited risk for surgery. Conservative management in difficult cases might be equally efficacious, and further studies are required to determine its true merit.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Waqas Ullah http://orcid.org/0000-0002-4850-0309
Mishal Shaukat http://orcid.org/0000-0002-2669-2936
Zain Ali http://orcid.org/0000-0002-5457-9420
Maryam Mukhtar http://orcid.org/0000-0003-4870-3269
Mamoon Ur Rashid http://orcid.org/0000-0002-3843-4352

References

[1] Crawley PD, Mahlow WJ, Huntsinger DR, et al. Giant coronary artery aneurysms: review and update. Tex Heart Inst J. 2014 Dec;41(6):603–608.
[2] Nichols L, Lagana S, Parwani A. Coronary artery aneurysm: a review and hypothesis regarding etiology. Arch Pathol Lab Med. 2008;132:823–828.
[3] Gupta A, Devagorou V, Makhija N. Giant congenital coronary aneurysm of the left anterior descending artery. Thorac Cardiovasc Surg. 2010;58:368–369.
[4] Pahlavan PS, Niroomand F. Coronary artery aneurysm: a review. Clin Cardiol. 2006;29:439–443.
[5] Hundley W, Bluemke DA, Finn JP, et al. Accf/Acr/Aha/nASci/ScMr 2010 expert consensus document on cardiovascular magnetic resonance: a report of the American college of cardiology foundation task force on expert consensus documents. J Am Coll Cardiol. 2010;55:2614–2662.
[6] Cohen P, O’gara PT. Coronary artery aneurysms: a review of the natural history, pathophysiology, and management. Cardiol Rev. 2008;16:301–304.
[7] Ramos S, Mata K, Martins C, et al. Giant right coronary artery aneurysm presenting as a para-cardiac mass. Cardiovasc Pathol. 2008;17:329–333.