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Coronary: Case Report

Massive Giant Coronary Artery Aneurysm

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The largest coronary artery aneurysm (CAA) previously documented in the literature is recorded to be 5 × 7 cm. With the aneurysm of this case's patient measuring 11.2 × 9.1 cm, it is significantly larger than what has previously been reported. Because of the lack of statistical data on CAAs, we propose that a large-scale study be undertaken to better understand presenting symptoms, size classification, and options for treatment of CAAs. Our case seeks to showcase the presentation and treatment of an exceptionally large CAA to begin to address the significant deficit in knowledge on this topic.

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Coronary artery aneurysm (CAA) is defined as a localized irreversible dilation of a coronary artery that is at least 1.5 times larger than the adjacent normal segment. Whereas CAA itself is uncommon, even more rare is the giant CAA, which is at least 4 times the size of normal adjacent vessels or >8 mm in diameter.[1] At present, there are no large randomized clinical trials that review data about diagnosis and treatment of CAAs. Because of this deficit in medical knowledge, workup and treatment must be created on a patient-by-patient case, using multidisciplinary teams consisting of cardiologists, cardiothoracic surgeons, radiologists, and internists.[2] Literature review detailing clinical presentations, treatments, and outcomes of patients with giant CAAs indicates some of the largest CAAs to be 7 × 4 cm, 6 × 6 cm, and, the largest yet, 5 × 7 cm.[2-4] Our case describes a patient with an 11.2 × 9.1-cm giant CAA that manifested with only mild neck pain and was successfully treated with coronary artery bypass grafting.

A 76-year-old man with a history of dyslipidemia and emphysema originally presented to his primary care physician with a 3-day history of left-sided neck pain. After workup in the primary care physician's office, including thoracic ultrasound showing what appeared to be a large mass near or on the heart, the patient was sent to the emergency department. On arrival to the emergency department, the patient denied chest pain, dyspnea, and dizziness. Initial workup was all within normal limits (including electrocardiogram, troponin levels, complete blood count, and comprehensive metabolic panel), with the exception of elevated brain natriuretic peptide of 167 pg/mL. Further workup included computed tomography angiography of the chest, which revealed a large mass (estimated in size to be around 9.1 × 7.9 cm) in the region of the aortic annulus contiguous with the right atrium (Figure 1). Cardiac catheterization showed a "severe" right coronary artery aneurysm (Figure 2). Surgical intervention was deemed necessary as the risk of aneurysm rupture and subsequent bleeding in such a large aneurysm would be catastrophic.

The following operation is detailed in a stepwise manner in the included Video attached to this report. In the operating room, percutaneous femoral-femoral bypass was achieved. After sternotomy, the pericardium was divided, and the mass was fully visualized compressing the right ventricle and pushing the heart posterolaterally. Intraoperative measurement of the CAA was determined to be 11.2 × 9.1 cm (Figure 3). The right coronary artery was tied off proximal and distal to the aneurysm, successfully achieving proximal distal control. The heart was arrested, the CAA excised, and

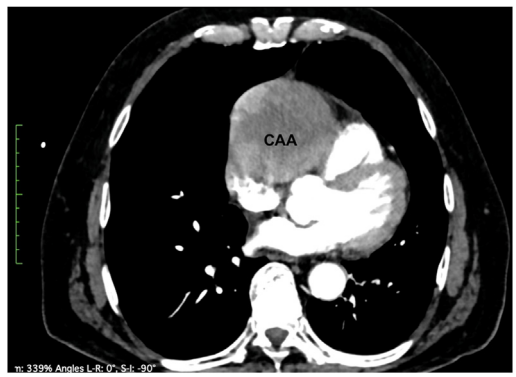

FIGURE 1 Computed tomography angiography scan of the chest showing the giant coronary artery aneurysm (CAA).

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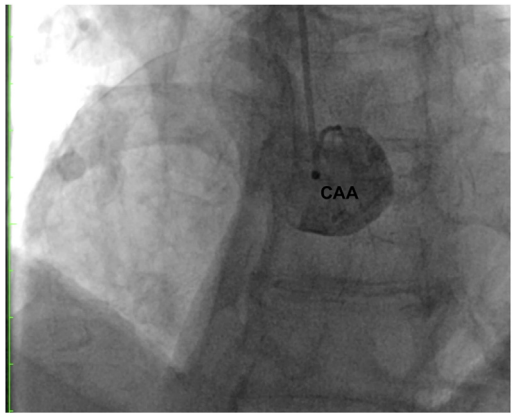

FIGURE 2 Cardiac catheterization indicating filling of the giant coronary artery aneurysm (CAA), seen in the center of the image.

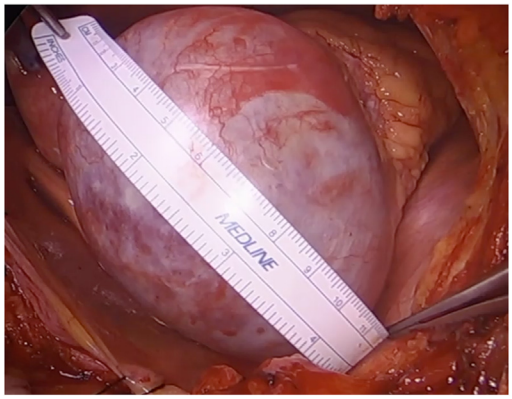

FIGURE 3 Intraoperative image indicating the size of the giant coronary artery aneurysm before resection and coronary artery bypass grafting.

bypass performed using a left great saphenous vein graft. The patient was successfully weaned from cardiopulmonary bypass, and closure was accomplished without complication.

The patient's postoperative course was uncomplicated. Follow-up computed tomography showed that the heart appeared to be within normal limits, without an aneurysm. The patient was discharged home on postoperative day 9 because of health aid assignment delays. He did not have any medical complications that led to an extended hospital stay. When discharged, the patient was progressing well back to baseline. It has now been 3 months since his operation, and he is currently in excellent condition. He reports no shortness of breath, chest pain, neck pain, or exertional fatigue.

COMMENT

This case showcases the presentation, workup, and treatment of a giant CAA, a rare disease process not well discussed on a large scale in the literature. A comprehensive study of CAA in adults could significantly benefit physicians to better understand the unique presentations, classifications, and options for treatment of this disease process. This case is 1 of many that could assist in addressing the deficit in knowledge on CAAs in the literature.

The patient presented with only neck pain, a mild symptom that could easily have been overlooked by a less thorough primary care physician. Without proper clinical suspicion and workup, this patient could have potentially faced an aneurysm rupture, which almost certainly would have resulted in his death. Treating CAAs of this size is easily done with excision of the aneurysm and coronary artery bypass grafting on percutaneous bypass. It is our recommendation that this management be how most giant CAAs are treated in the future because of the ease of the procedure and excellent patient outcome.

The Video can be viewed in the online version of this article [https://doi.org/10.1016/j.atssr.2023.09.001] on http://www.annalsthoracicsurgery.org.

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PATIENT CONSENT
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