AFMN BIOMEDICINE

CASE REPORT

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GIANT CORONARY ARTERY ANEURYSMS MANAGED WITHOUT SURGERY: A CASE FOR CONSERVATIVE MANAGEMENT

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Giant coronary artery aneurysms are a rare and potentially life-threatening subset of coronary artery anomalies. They are most frequently detected incidentally and can pose significant management challenges due to their unclear natural history and risk of complications. Although aneurysm size often raises concern, current evidence does not uniformly support surgical intervention in all cases. We present the case of a 66-year-old asymptomatic male initially admitted for endovascular treatment of a 72 mm abdominal aortic aneurysm (AAA). Preoperative multidetector computed tomography (MDCT) angiography unexpectedly revealed two giant coronary artery aneurysms: a 75 mm aneurysm in the left anterior descending (LAD) artery and a 48 mm aneurysm in the right coronary artery (RCA). Coronary angiography showed no obstructive coronary artery disease or distal perfusion impairment. Given the absence of symptoms, preserved flow, and high surgical risk, the institutional Aortic Board opted for conservative management. Endovascular aneurysm repair (EVAR) was successfully performed for the AAA. At 12-month follow-up, the patient remained clinically stable, with no progression of coronary aneurysm size or endoleak. This case highlights the importance of individualized decision-making in patients with incidentally detected giant coronary artery aneurysms. In the absence of high-risk features, conservative management with close follow-up may be a safe and effective approach, even in cases with extremely large aneurysms.

Keywords: giant coronary artery aneurysm, endovascular aneurysm repair, conservative management

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INTRODUCTION

Aneurysmal coronary artery disease is seen in 1.5% to 5% of patients undergoing coronary angiography (1–3). Rarely are coronary artery aneurysms (CAAs) large enough to be called giant CAAs (GCAAs). A universally accepted definition of GCAAs does not exist: diameters greater than 20-50mm, or ≥1.5 times the reference vessel diameter, have been proposed, with recent literature further refining these criteria (3–5). These GCAAs are both rare and potentially fatal, predominantly occurring in males (1). They occur in about 0.02% of the general population, in which the right coronary artery (RCA) is most often affected (6). The presence of multiple CAAs located in more than one coronary artery is even more uncommon. The pathophysiology of such aneurysms remains incompletely understood, although most cases are associated with atherosclerosis, congenital heart disease, or vasculitis (7,8). Reported complications include thrombosis and distal embolization, vasospasms, compression of adjacent structures and ruptures that produce ischemia, heart failure, or arrhythmias (2). These risks may be further amplified in cases of extremely large or multiple aneurysms.

CASE PRESENTATION

We report a case of an asymptomatic 66-year-old male who was initially admitted for the surgical treatment of an abdominal aortic aneurysm (AAA) 72 mm in diameter. Routine multidetector computed tomography (MDCT) angiography unexpectedly revealed two GCAAs (Figure 1A): one in the left anterior descending (LAD) artery, measuring 75 mm (Figure 1B), and another in the RCA, measuring 48 mm (Figure 1C). To our knowledge, this represents one of the largest reported LAD aneurysms in the available literature (1–3,5).

Following the discovery, coronary angiography was conducted for further assessment. No significant stenosis of the coronary blood vessels was found. The institutional Aortic Board reviewed the case. Given the high risk associated with surgical interventions for the GCAAs and the presence of calcifications in vessel walls, it was decided to manage the patient conservatively. However, because of the large size of the AAA and the high risk of open surgery, endovascular aneurysm repair (EVAR) was performed. At the 12-month follow-up, the patient was clinically stable and asymptomatic, with no EVAR endoleak detected. There was no notable increase in the size of the GCAAs. Family screening was suggested, given the potential, albeit unclear, contribution of hereditary factors.

GCAAs are a rare subset of coronary artery anomalies, and their optimal management remains a subject of debate (2,9).

In our patient, the decision not to pursue surgical or percutaneous intervention was based on the absence of symptoms, preserved distal flow, no significant obstructive coronary artery disease, and no evidence of embolization or rupture.

However, it is important to acknowledge that aneurysms of extreme size, particularly when multiple, may carry an increased risk of thrombosis, distal embolization, and, rarely, rupture, even in the absence of symptoms. Furthermore, the coexistence of coronary artery disease may further increase the risk of adverse cardiovascular events and may influence management strategies. A case presented by Halapas et al. highlighted that coexisting GCAAs and coronary artery disease may lead to non-ST

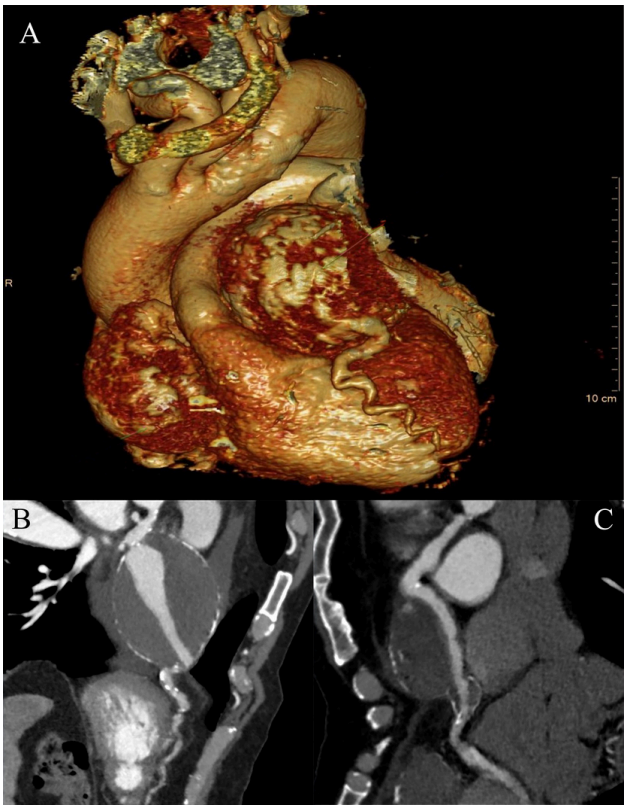

Figure 1. *Routine multidetector computed tomography (MDCT) angiography revealed two giant coronary artery aneurysms (GCAAs). (A) Overview image demonstrating the presence of both aneurysms. (B) Giant aneurysm of the left anterior descending (LAD) artery measuring 75 mm in maximum diameter. (C) Giant aneurysm of the right coronary artery (RCA) measuring 48 mm in maximum diameter.*

myocardial infarction necessitating urgent surgery (10).

The CAESAR registry, the largest prospective dataset on coronary artery aneurysms to date, showed that the majority of patients with both ectasia and aneurysms were managed conservatively (3). Importantly, the study found no independent association between aneurysm size and major adverse cardiovascular events, suggesting that aneurysm morphology and clinical context are more relevant than size alone when considering invasive treatment (3). Similarly, a review by Kawsara et al. suggests that medical management may be considered in selected asymptomatic patients, noting that surgical or interventional treatment should be considered in the presence of ischemia, rupture risk, or significant coexisting stenoses (2). The authors highlight that unnecessary intervention in stable patients may expose them to procedural risks without proven long-term benefit. Keyser et al. also demonstrated good long-term outcomes with selective surgical intervention in symptomatic patients. Their findings support a case-by-case decision-making approach that balances surgical risk against the likelihood of complications such as thrombosis or rupture (7). Taken together, these findings support an individualized, case-by-case approach to management. The patient was treated with long-term antithrombotic therapy consisting of antiplatelet therapy (aspirin) in combination with oral anticoagulation, aimed at reducing the risk of thrombus formation within the aneurysmal segments and subsequent embolization. The choice of regimen was based on aneurysm size, multiplicity, and perceived thrombotic risk, with plans for indefinite therapy and periodic reassessment. Close imaging follow-up was implemented using serial MDCT angiography to monitor aneurysm stability (2).

GCAAs are rare vascular anomalies that pose diagnostic and therapeutic challenges. In asymptomatic patients without ischemia, embolization, or hemodynamic compromise, a conservative approach with antithrombotic therapy and imaging surveillance can be both safe and effective. This case highlights the importance of individualized, evidence-informed decision-making; however, careful risk assessment remains essential, particularly in patients with extremely large or multiple aneurysms.

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Author Contributions

All authors contributed equally to this work. All authors have reviewed the final version of the manuscript and agree with its content.

Statement of Ethics

Complete written informed consent was obtained from the patient for the publication of this study and accompanying images. The Institutional Ethics committee exempted this paper form ethics review.

Statement of Competing Interest

The authors declare no relevant conflicts of interest.

Statement of Data Availability

Not applicable.

Statement of Generative AI Technologies Use

No generative AI was used.

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