

CASE REPORT

Multiple giant aneurysm in coronary arteries

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ABSTRACT

Coronary artery aneurysms are abnormal dilatation of the coronary arteries. The etiology is still not fully understood. They are usually asymptomatic and diagnosed incidentally. Arrhythmias, unstable angina, myocardial infarction or sudden cardiac death may occur in symptomatic patients. Invasive and noninvasive vascular imaging techniques are used in diagnosis. Conventional coronary angiography, an invasive imaging method, is considered as the gold standard. Coronary computed tomography angiography is a noninvasive method that enables accurate assessment of aneurysm size and location. Treatment options include surgical approach, percutaneous coronary intervention and medical treatment. However, due to limited literature information, it is still unclear for clinicians how to approach patients with coronary artery aneurysm. In this article, we aimed to present a case of multiple giant coronary artery aneurysms detected in two coronary arteries, together with Coronary computed tomography angiography findings.

Keywords: Coronary aneurysms, Coronary angiography, Tomography

ÖZET

Koroner arterlerde çoklu dev anevrizma olgusu

Koroner arter anevrizmaları koroner arterlerin anormal genişlemesidir. Etiyolojisi hala tam olarak anlaşılamamıştır. Genellikle asemptomatiktir ve tesadüfen teşhis edilir. Semptomatik hastalarda aritmiler, kararsız angina, miyokard enfarktüsü veya ani kardiyak ölüm görülebilir. Tanıda invaziv ve noninvaziv vasküler görüntüleme teknikleri kullanılır. İnvaziv bir görüntüleme yöntemi olan konvansiyonel koroner anjiyografi altın standart olarak kabul edilir. Koroner bilgisayarlı tomografi anjiyografi, anevrizma boyutunun ve yerinin doğru bir şekilde değerlendirilmesini sağlayan noninvaziv bir yöntemdir. Tedavi seçenekleri arasında cerrahi yaklaşım, perkütan koroner girişim ve tıbbi tedavi yer alır. Ancak sınırlı literatür bilgisi nedeniyle, klinisyenlerin koroner arter anevrizması olan hastalara nasıl yaklaşmaları gerektiği hala belirsizdir. Bu yazıda, iki koroner arterde tespit edilen çoklu dev koroner arter anevrizma olgusunu, koroner bilgisayarlı tomografi anjiyografi bulgularıyla birlikte sunmayı amaçladık.

Anahtar kelimeler: Koroner anevrizması, Koroner anjiyografi, Tomografi

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INTRODUCTION

Coronary artery aneurysms (CCAs) are abnormal dilatation of the coronary arteries. Currently, CCA is defined as a coronary artery dilatation ≥ 1.5 times the diameter of the adjacent normal segment [1]. In adults, CAAs are defined as giant when their diameter exceeds four times [2] the reference vessel or is greater than 20 mm [3], whereas in children, giant CAAs are defined as having a diameter ≥ 8 mm [4]. The etiology is not yet fully understood. According to various angiographic studies, the incidence varies between 0.15% and 5.3%. [5,6]. It is observed more frequently in men than in women [6] and more common in the proximal or middle segments of the coronary arteries [7]. Most are asymptomatic and diagnosed incidentally [8-10]. Arrhythmias, unstable angina, myocardial infarction or sudden cardiac death may occur in symptomatic patients [10]. In this presentation, we aimed to present a case of multiple giant coronary artery aneurysms detected in two coronary arteries, together with Coronary computed tomography angiography (CCTA) findings.

CASE REPORT

A male patient in his sixties was admitted to our hospital with chest pain and a preliminary diagnosis of coronary artery disease. It was learned that in his medical history, he was followed up and treated with the diagnoses of hypertension, type 2 diabetes and anterior MI. He had a 55 pack/year smoking habit. And he underwent aortic femoral bypass graft surgery in 2022. Echocardiography (ECHO) revealed apicoseptal hypokinesia and EF was 52%. The patient underwent CCTA. Coronary computed tomography angiography examination revealed a 45 mm diameter thrombosed aneurysm at the origin of the RCA and three saccular aneurysms along the LAD, the largest of which was located at the origin, 32 mm in diameter, and partially thrombosed (Figure 1,2).

Because the patient had multiple CAAs in two major coronary arteries, surgical intervention was indicated. However, due to comorbidities, surgery was considered high risk. Therefore, medical therapy and follow-up were recommended. At six months of follow-up, cardiac MRI demonstrated stable aneurysms.

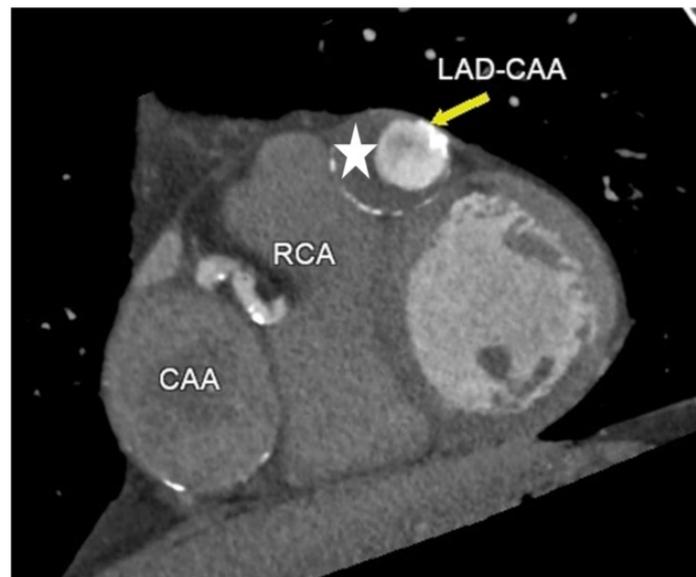


Figure 1: Coronary artery aneurysms (CCAs) at the origin of the right coronary artery (RCA) and left coronary artery (LAD). The yellow arrow indicates the CAA at the LAD origin and the white star indicates the thrombus within.

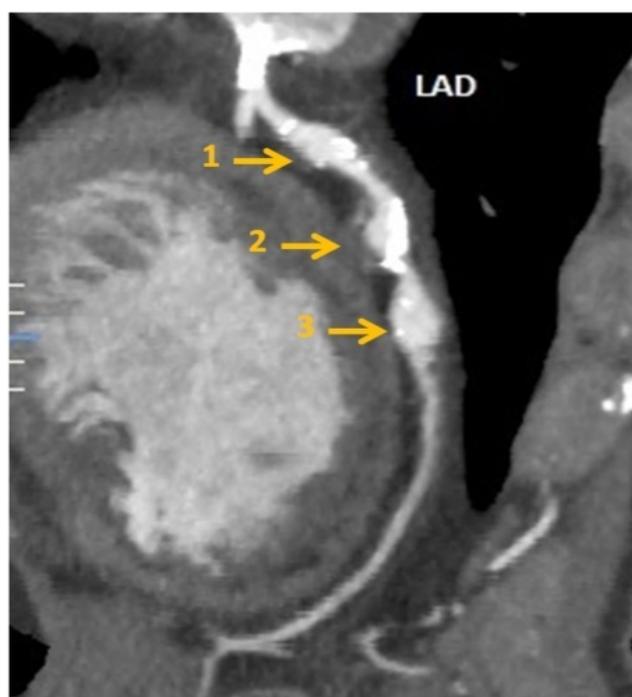


Figure 2: Three CAAs (yellow arrows) are observed along the LAD trace.

DISCUSSION

Vascular imaging methods are used in the diagnosis of coronary artery aneurysms. These are invasive and noninvasive techniques, each with certain advantages and disadvantages. Conventional coronary angiography (CAG) is an invasive method most commonly used and considered the gold standard in the evaluation of coronary artery diseases [11]. Conventional coronary angiography can determine the shape (fusiform or saccular), size and location of aneurysms. It can also help understand whether they cause complications such as myocardial perfusion abnormalities, fistula formation or extrinsic mass effect on the coronary arteries. Moreover, this method can also help decide on the treatment method. However, this method can only evaluate the blood flow within the lumen, it does not provide information about the aneurysm wall. Therefore, the true size of the CAA cannot always be fully assessed with this method. When blocked by thrombus or plaque, it even prevents its visualization [11]. Intravascular ultrasonography (IVUS) provides transmural images of the coronary arteries, allowing assessment of both the arterial wall and lumen. This method also allows distinction between true aneurysms, pseudoaneurysms, and aneurysm mimickers due to complications such as plaque rupture [12]. Coronary computed tomography angiography (CCTA) is a noninvasive method. It allows the evaluation of the actual size of the aneurysm, its location, thrombus or calcifications within the aneurysm, and complications if any [13,14]. Noninvasive and radiation-free methods such

as ECHO and coronary magnetic resonance angiography (CMRA) can also be used to diagnose CAAs. However, the literature indicates that these methods are more effective in diagnosing CAAs in larger proximal segments of the coronary arteries, which limits their use [11,15,16]. In our patient, we detected multiple CAAs in LAD and RCA on CCTA examination.

Treatment options include medical therapy, percutaneous coronary intervention (PCI), and surgical approach [17]. Treatment options for CAAs include medical therapy, percutaneous coronary intervention (PCI), and surgical approaches [13]. Nevertheless, the natural history and pathophysiology of CAAs remain poorly understood, and the absence of randomized trials or large-scale data in both symptomatic and asymptomatic patients presents significant challenges for clinical management. The recently published Coronary Artery Aneurysm Registry (CAAR) has addressed important aspects of CAA treatment and evaluated both short- and long-term outcomes [56]. However, as current recommendations are primarily based on small case series and observational studies, therapeutic strategies should be individualized following a comprehensive clinical and anatomical assessment. In our case, although surgical intervention was indicated due to multiple giant CAAs in two major coronary arteries, the presence of comorbidities rendered surgery high risk. Therefore, medical therapy and close follow-up were considered the most appropriate management strategy.

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