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A rare case: A giant right coronary artery aneurysm mimicking a paracardiac mass

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Abstract

Giant coronary artery aneurysms are extremely rare pathologies that can be confused with paracardiac and mediastinal masses, which are usually diagnosed incidentally. In this case report, an 83-year-old patient with a 70x35 mm thrombosed right coronary artery aneurysm misdiagnosed as a paracardiac mass will be discussed in light of the literature.

Keywords: Coronary, Giant, Paracardiac

Introduction

Giant coronary artery aneurysms are extremely rare pathologies. An increase in diameter of at least 1.5 times from the adjacent arterial segment indicates an aneurysm. Coronary artery aneurysms are more common in male patients and in the right coronary artery [1]. Herein, we report an 83-year-old male presenting with a right paracardiac mass, suspected to be a malignant tumor in the emergency department, who was finally diagnosed with a right giant coronary artery aneurysm.

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Informed Consent
The authors stated that the written consent was obtained from the patient presented with images in the study.

Conflict of Interest
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Figure 1: Chest X-Ray revealed a suspicious mass image in the right paracardiac area

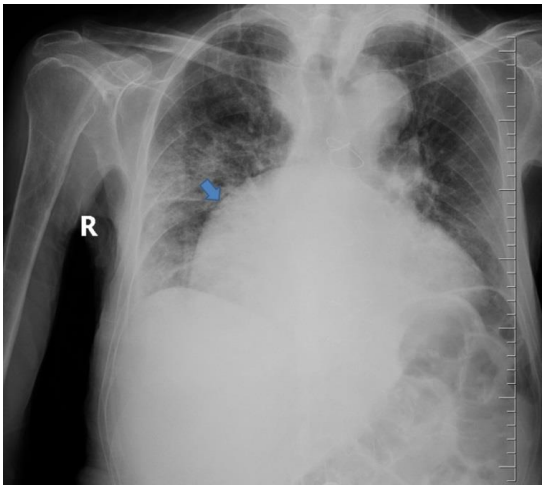


Figure 2: In coronal view, Contrast-enhanced CT angiography revealed a giant coronary artery aneurysm (70x35mm) compressing the right atrium and the right ventricle

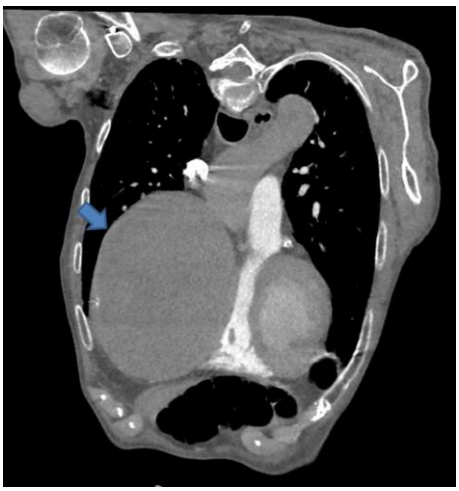


Figure 3: A: Unenhanced Thorax CT revealed a giant coronary artery aneurysm in the axial image -arrow, B: Contrast-enhanced CT angiography revealed a giant coronary artery aneurysm in the right coronary artery in the axial image, and consolidation areas in both images-dashed arrow

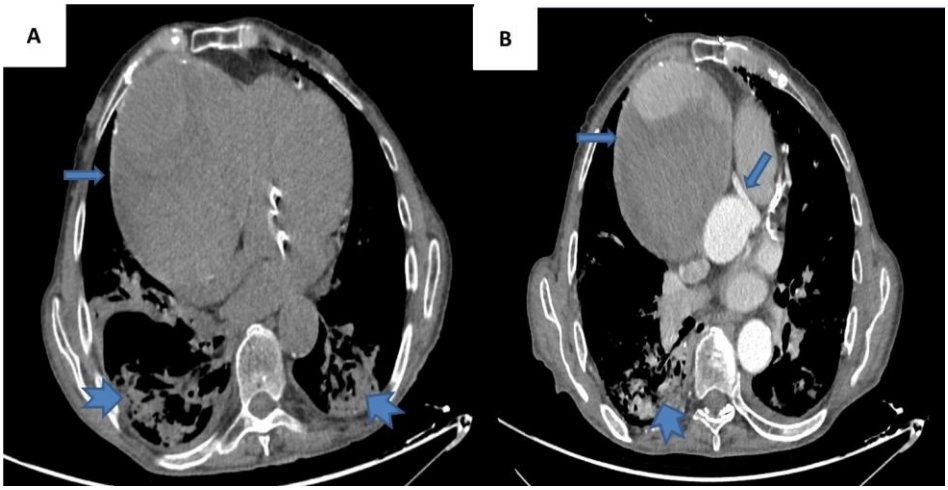
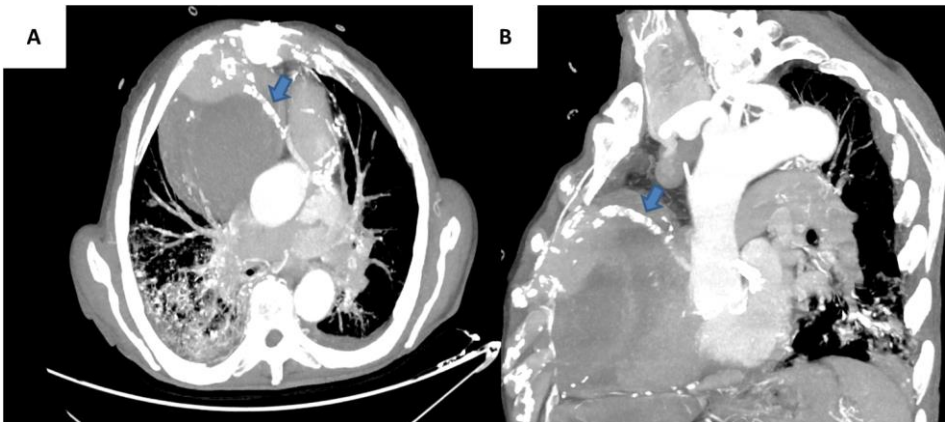


Figure 4: Giant coronary artery aneurysm and right coronary artery in axial MIP image (A) and sagittal MIP image (B) on contrast-enhanced CT angiography



Case presentation

An 83-year-old male patient with hypertension, coronary artery disease, and a previous CABG operation (17 years ago) was admitted to the emergency department of our hospital with complaints of shortness of breath and cough. On physical examination, fine crackles were heard in the basal segments of both lungs, and a lesion with a suspicious mass appearance in the right paracardiac region was observed in the posteroanterior chest radiograph (Figure 1). In the non-contrast thorax computed tomography (CT) obtained with the preliminary diagnosis of pneumonia, a large soft tissue was seen to extend from the right paracardiac area to the right hemithorax, and a CT angiography was performed with the differential diagnosis of a mass or an aneurysm. The lesion, a 70x35 mm giant right coronary artery aneurysm, showed contrast filling in the arterial phase, but was mostly thrombosed (Figures 2, 3, 4). Echocardiography revealed an aneurysmatic dilatation compressing the right atrium more than the ventricle, and there was no gradient increase or flow alternans. No hypotension was observed during patient follow-up. Due to the patient's age and comorbidities, additional surgical intervention was not considered, and he was followed up with recommendations.

Discussion

Coronary artery aneurysm was first described by Charles Bougon in 1812 [2]. Today, coronary artery aneurysms (CAA) refer to a dilated vascular structure that increases at least 1.5 times in size compared to the adjacent arterial segment [3]. The giant CAA incidence ranges between 0.02-2% [4]. The diameter limit for giant aneurysms is controversial in the literature, and the most commonly accepted limit for adults is ≥2 cm [5].

The common feature of CAAs is congenital or acquired weakening of the vascular wall structure and secondary dilatation [6]. In pathological examinations, thinning in the media layer of the vascular wall is typical [7]. It is examined in three main categories according to the pathogenesis of CAA, as follows: Atherosclerosis, and inflammatory and non-inflammatory processes. While the most common cause in adulthood is atherosclerosis, the most common cause in children is Kawasaki disease [9].

Our patient had no underlying vasculitis, collagen tissue disease, or infectious processes and no family history. He underwent CABG 17 years ago due to occlusion in four vessels, and no aneurysm was detected in his routine follow-up. Damage to the vascular wall secondary to the previous operation and chronic atherosclerosis process may be the underlying factors.

Atherosclerosis is the most common predisposing factor for CAA, it is more common in males, generally seen in the 7th decade and at an older age compared to other factors [10]. Atherosclerotic aneurysm patients are generally asymptomatic. Whether the presence of CAA is an independent risk factor for death in these patients is still controversial [10, 11]. Although most patients are asymptomatic and diagnosed incidentally, serious complications such as angina pectoris, sudden death, fistulae, pericardial tamponade, compression of the surrounding vascular structures, or congestive heart failure can be observed in the patients with CAA [12].

ECG-triggered CT angiography, MR/MR angiography, transthoracic echocardiography and cardiac angiographic catheterization are used for diagnosis. The structure and shape of the aneurysm, its morphological features, aneurysm diameter, wall calcification, luminal stenosis, and the presence of significant stenosis in other coronary arteries should be assessed. Differential diagnoses include sinus Valsalva aneurysms, venous grafts, and pathologies originating from the heart, pericardium, and mediastinum [13].

A surgical approach is frequently recommended for giant CAAs. Its treatment includes aneurysm ligation and distal bypass grafting, isolated coronary artery bypass grafting, aneurysm plication and patching with the saphenous vein. Invasive procedures cannot be performed on certain patients due to comorbidities. Antiplatelet and antithrombotic therapy were recommended to prevent the formation of an intact thrombus and distal embolization in patients who cannot undergo surgery [14].

Nowadays, less invasive percutaneous treatments have come to the fore on selected patients. Especially Polytetrafluoroethylene (PTFE) coated stents were used for this purpose and have proven successful in some patient groups. However, more comprehensive studies are required regarding the long-term results [15].

Conclusion

Giant coronary artery aneurysms are extremely rare pathologies that can be confused with mediastinal and cardiac masses. The correct diagnosis is very important to avoid severe complications of a biopsy, such as catastrophic bleeding. For this reason, CT and CT angiography play a key role in its diagnosis.

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