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A Case Report of Left Ventricular Posterior Aneurysm

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Abstract

Background: Although the exact incidence is unknown, left ventricular aneurysms are most frequently seen after acute myocardial infarction. Early diagnosis of ventricular aneurysms is important because they are known to expand and occasionally rupture. Most of ventricular aneurysms occur in the apex or anterior wall of the left ventricle, only 3% of aneurysms are posterior or inferior.

Case summary: An 81-year old woman was hospitalized due to dizziness for more than 10 days. She had a medical history of hypertension. Color Doppler echocardiography revealed left ventricular posterior wall limitation expansion with thinning of the ventricular wall and disappearance of movement. Computed tomography angiogram of coronary arteries revealed moderate stenosis of proximal Left Circumflex Artery (LCX), and complete occlusion from the middle of the LCX artery.

Discussion: LV aneurysm is an uncommon complication of AMI; patients with LV aneurysms are associated with the higher burden of ventricular arrhythmias, mural thrombus, and congestive heart failure. It is important for us to keep this diagnosis in mind when we encounter a patient with findings of ventricular aneurysm.

Keywords: Aneurysm; Myocardial infarction; Pseudoaneurysm; Case report; Coronary angiography

Learning point Cardiac ultrasound is currently the most extensive examination method for diagnosing ventricular aneurysms. Coronary angiography (CAG) and/or computed tomography angiogram is usually diagnostic and is the next step in management, combined with echocardiography findings.

Introduction

A Left Ventricular (LV) aneurysm is an uncommon complication following Acute Myocardial Infarction (AMI) that is thought to complicate about 1/3 of all Q-wave AMI. Data from studies performed about 2 decades ago demonstrated decrease in the incidence of LV aneurysms, primarily due to the introduction of thrombolytic therapy [1,2]. Most of ventricular aneurysms occur in the apex or anterior wall of the left ventricle, only 3% of aneurysms are posterior or inferior [3]. Patients with LV aneurysms are at an increased risk for ventricular arrhythmias, mural thrombus, and congestive heart failure [4]. A description of certain clinical and morphologic findings in an elderly patient with "giant" aneurysm on the posterior wall of the left ventricle is the purpose of this report.

Case Presentation

An 81-year old woman was hospitalized due to dizziness for more than 10 days. She had a medical history of hypertension. Results of the physical examination were as follows: heart rate was 72 beats per minute, blood pressure was 107/60 mm Hg (1 mmHg = 0.133 kPa), respiratory rate was 20 beats per minute, and oxygen saturation was 99%. She was conscious, with no cyanosis of the lips, no enlargement of the jugular vein, no palpable superficial lymph nodes, clear lungs, regular heart rhythm, no murmurs on cardiac auscultation, a soft abdomen with no tenderness and rebound pain, no tapping pain in the liver or kidney, and no edema in either of the lower limbs. Supplementary examination. Electrocardiogram (ECG): sinus rhythm, T waves change (Figure 1); Color Doppler echocardiography revealed left ventricular posterior wall limitation expansion (4cm*1.5cm) with thinning of the ventricular wall and disappearance of movement (considering the formation of previously myocardial infarction and ventricular aneurysm); left atrial diameter (anterior-to-posterior) of 36, left ventricular diameter (anterior-to-posterior) of 50 mm, right atrial diameter of 30 mm (left-to-right), and right ventricular diameter(left-to-right) of 25 mm; Spontaneous intracardiac flow imaging revealed left ventricular ejection fraction 55% (Simpson method), left ventricular diastole function E /A <1 (Mitral valve orifice blood flow) (Figure 2); blood routine, high-sensitivity troponin-T, brain natriuretic peptide, D-dimer, renal function, liver function have no obvious abnormalities.

Chest Computed Tomography (CT) showed proliferation and calcification in the upper lobes of the lungs; brain MRI revealed bilateral frontal parietal white matter and basal ganglia lacunars

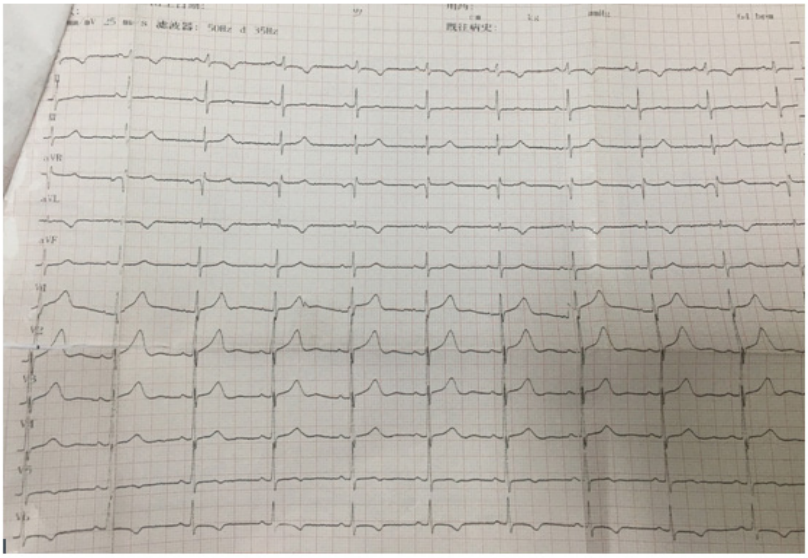

Figure 1: Electrocardiogram (ECG): sinus rhythm, sinus rhythm, T waves change.s

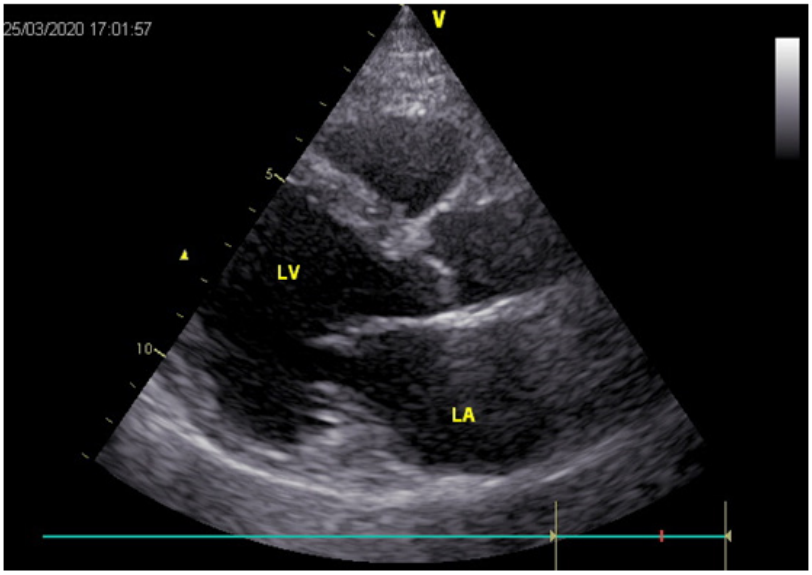

Figure 2: Color Doppler echocardiography. Left ventricular posterior wall limitation expansion with thinning of the ventricular wall and disappearance of movement (considering the formation of previously myocardial infarction and ventricular aneurysm).

infarction; Computed tomography angiogram of coronary arteries revealed a local bulge on the posterior wall of the left ventricle (Figure 3A); the Right Coronary Artery (RCA) dominance, no significant lesions in the RCA and Left Anterior Descending Artery (LAD); moderate stenosis of proximal Left Circumflex Artery (LCX), and complete occlusion from the middle of the LCX artery (Figure 3B).

After admission, the patient was given treatment for antiplatelet, blood pressure control, and ventricular rate control, lipid-regulating, and other symptomatic support. The patient and her family declined to further treatment based on the age factor and no obvious chest pain, chest tightness, palpitations and other symptoms. After 1 year of follow-up, the patient remained in good condition.

Discussion

Ventricular aneurysm is a disease that the ventricular wall of the infarct site bulges outward under the influence of ventricular cavity pressure, accompanied by disappearance of ventricular wall motion or paradoxical motion after myocardial infraction. Although the exact incidence is unknown, most ventricular aneurysms are related to coronary atherosclerosis. Other causes include post-cardiac surgical, congenital defects,

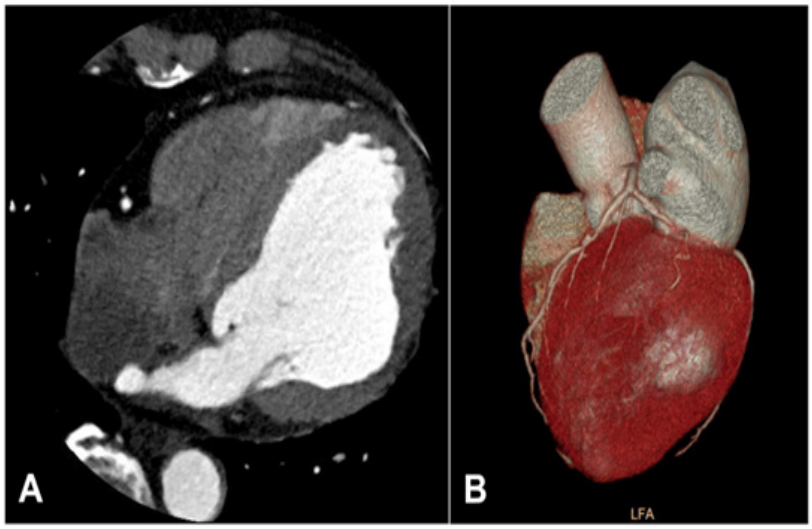

Figure 3: Computed tomography angiogram of coronary arteries. A, showed a local bulge on the posterior wall of the left ventricle (horizontal axis); B, revealed moderate stenosis of LCX, and complete occlusion from the middle of the LCX artery.

arrhythmogenic right ventricular dysplasia, acute myocarditis, and constrictive pericarditis [5]. Early diagnosis of ventricular aneurysms is important because they are known to expand and occasionally rupture [6]. Friedman, et al [7]. Previously described the echocardiographic finding of ventricular aneurysm as a bulge visible in the ventricular wall, with a double impulse as the aneurysmal sac expands late in systole. Cardiac ultrasound is currently the most extensive examination method for diagnosing ventricular aneurysms. Coronary Angiography (CAG) and/or computed tomography angiogram is usually diagnostic and is the next step in management, combined with echocardiography findings, CAG also helps differentiate true aneurysm from pseudo aneurysm to guide treatment. A true aneurysm will reveal coronary arteries that cover the thinned ventricular wall [3].

It can also be diagnosed by auxiliary examinations such as electrocardiogram, Cardiac Magnetic Resonance (CMR) imaging with gadolinium, nuclear magnetic resonance, and ventriculography. For patients with a clear diagnosis of acute MI, early reperfusion therapy can save viable myocardium, inhibit ventricular remodeling, and prevent the occurrence of ventricular aneurysms. According to different conditions, the treatment of ventricular aneurysm is divided into conservative medical treatment (reperfusion therapy, drug treatment) and surgical treatment (repairing the volume and shape of the ventricle) [8]. The prognosis is closely related to the extent of the left ventricular myocardium and the volume of the aneurysm.

This patient was admitted to hospital presented with dizziness. The cause of her coronary artery occlusion was unknown prior to this hospitalization. The patient and her family declined to undergo further treatment based on the age factor and no obvious chest pain, chest tightness, palpitations and other symptoms. LV aneurysm is an uncommon complication of AMI; patients with LV aneurysms are associated with the higher burden of ventricular arrhythmias, mural thrombus, and congestive heart failure. It is important for us to keep this diagnosis in mind when we encounter a patient with findings of ventricular aneurysm.

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Consent:The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

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