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(CASE REPORT)

Left ventricular pseudoaneurysm: A case report and literature review

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Abstract

Left ventricular pseudoaneurysms are rare but clinically significant, often developing after transmural myocardial infarction, surgery, trauma, or infection. Despite their rarity, they pose a high risk of spontaneous rupture, making early detection and diagnosis crucial. Symptoms such as heart failure, chest pain, and dyspnea can be present, but diagnostic imaging is typically required, as clinical signs are neither sensitive nonspecific. The gold standard for diagnosis remains angiography of the left ventricle and coronary arteries, though advances in noninvasive imaging (e.g., echocardiography, CT scan, and especially cardiac MRI) now allow better differentiation between pseudoaneurysms and true aneurysms. Due to the high risk of rupture, surgical repair is generally recommended for symptomatic pseudoaneurysms, though no standardized guidelines exist for follow-up imaging. Advances in imaging techniques have greatly improved the diagnostic process, enabling more accurate and timely interventions.

Keywords: Pseudoaneurysm; Left ventricle; Cardiac imaging; CT scan; Echocardiography

1. Introduction

Left ventricular (LV) pseudoaneurysm is a result of rupture of the ventricular free wall but contained by the overlying adherent pericardium or scar tissue, it can be presented in a non-specific manner, complicating and delaying the diagnosis. The differential diagnosis with the true LV aneurysm remains difficult and depends on Imaging Modalities.

The patient described in this paper demonstrates that heart CT scan may provide a safe and accurate diagnostic method to visualize pseudoaneurysms and make a therapeutic decision without delaying the surgical act.

2. Case report

We report the case of an 80 years old man without cardiovascular risk factors, known as a coronary patient since 2005 under medical treatment who presented an effort angina stage II of CCS classification with a dyspnea stage II of NYHA classification without other associated signs.

The clinical examination found a conscious patient, eupneic with BMI at 18.21kg / m^2, the cardiovascular examination found a BP at 121 / 51mmhg with heart rate at 56 cpm with a mitral regurgitation murmur without any other clinical findings.

EKG showed regular sinus rythm with negative T waves in inferior and pointed T waves in anterior territory

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Transthoracic echocardiography (figure 1) showed non-enlarged, non-hypertrophied LV with akinesia of the basal and mid-wall segments complicated by a 15/16 mm pseudoaneurysm free of thrombus with an ischemic mitral regurgitation. The ejection fraction estimated at 63% with an important pulmonary hypertension probabililty .

A heart CT scan with multiple reconstructions (figure 2) has shown an Ischemic heart disease with necrosis and pseudoneurysm of posterior LV wall (18/15mm) with Pleural effusion.

Coronary angiography showed a tritroncular lesions with significant stenosis of the first diagonal artery and the first marginal artery and the second segment of the right coronary artery. Patient was discharged under medical treatment after refusal of surgery

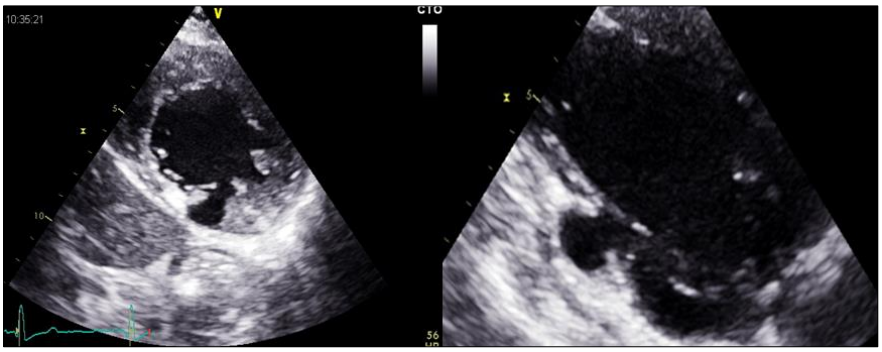

Figure 1 Transthoracic echocardiography screenings revealing the pseudoaneurysm of inferior wall of LV

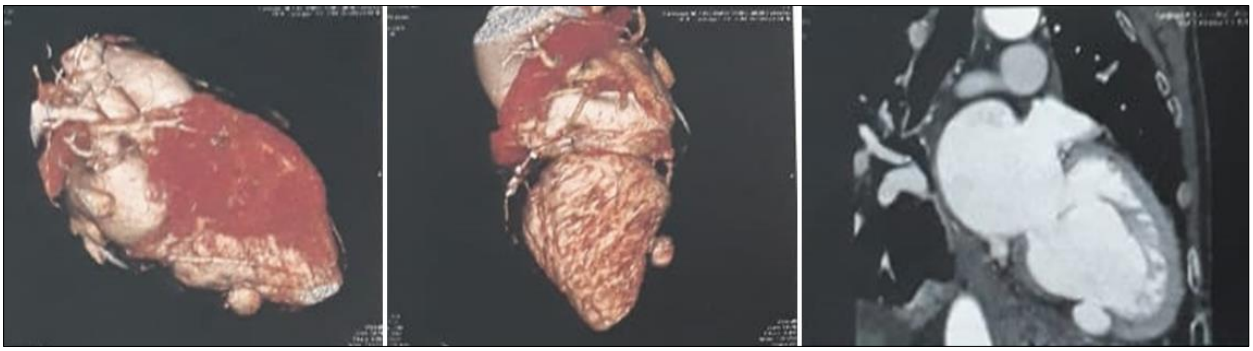

Figure 2 A heart CT-scan screenings visualizes the shape and dimension of the pseudoaneurysm of LV

3. Discussion

Left ventricle pseudo aneurysm occur most often after transmural myocardial infarction. These unusual cardiac lesions, in contrast to true ventricular aneurysms are prone to spontaneous rupture. Thus, the detection of left ventricular false aneurysm is clinically and therapeutically important even in the asymptomatic patient. (1)

The myocardial infarction accounted for most LV pseudoaneurysms followed by cardiac surgery, trauma, and infection. Inferior myocardial infarctions account for approximately twice as many cases as anterior myocardial infarctions. (2)

The most frequently reported symptoms are heart failure, chest pain and dyspnea, with other non specific complaints such as cough, altered mental status, and dizziness. The physical examination finds a new to-and-fro murmur, but Thirty percent of patients don't have a detectable murmur. Electrocardiographic and chest X-ray abnormalities are present in 95% of patients. (2)

As discussed above, the signs and symptoms in the population at risk are neither sensitive nor specific for aneurysm or pseudoaneurysm. Therefore, imaging is usually required to diagnose or to identify the presence of other pathology

accounting for the patient's signs and symptoms. Angiography of the left ventricle and coronary arteries was considered to be the best available test for the diagnosis of LV pseudoaneurysm. (2)

Transthoracic 2D echocardiography Initial evaluation may be unrevealing; therefore, the use of CT scan and MRI remains a good alternative (3). The high spatial Resolution and tissue characterization of cardiac MRI make it ideal for evaluation of pseudoaneurysm of the ventricles and for distinguishing pseudoaneurysm from true aneurysms. In such cases, the use of late gadolinium enhancement to identify the location and transmural extent of prior infarcts is particularly valuable (1). Cardiac CT offers high spatial resolution and provides an excellent visualization of the LV myocardium, coronary arteries, and bypass grafts. After diagnosis, no guidelines address whether to pursue follow-up imaging Cardiac pseudoaneurysms are rare but clinically significant lesions (1).

Although often challenging to diagnose, advances in noninvasive imaging improve the ability to distinguish aneurysm from pseudoaneurysm. Most symptomatic require surgical repair.

4. Conclusion

Left ventricular pseudoaneurysms are rare but dangerous, with a high risk of rupture. Early diagnosis through imaging, especially MRI, is crucial. Symptomatic cases typically require surgical repair.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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