Left ventricular pseudoaneurysm: imaging

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DESCRIPTION

Left ventricular (LV) pseudoaneurysm is a rare but potentially fatal complication of myocardial infarction (MI) which needs to be differentiated from true LV aneurysm.¹ Most of the LV pseudoaneurysms post MI are located at the inferior and posterolateral wall (82% of all post MI pseudoaneurysms).^{1,2} We hereby present an anterolateral LV pseudoaneurysm post MI, which makes it even a rarer entity.

A 78-year-old frail woman, a known case of diabetes mellitus type 2 and hypertension, presented to the emergency department with worsening dyspnoea of 2 weeks' duration. She had a history of chest discomfort 1 week prior to the onset of dyspnoea, which resolved with some medication prescribed by the local doctor. On presentation, she was orthopneic with saturation of 82% at room air and had mean arterial pressure of 76 mm Hg. She had a gallop rhythm with bilateral widespread crepitations in the chest. N-terminal pro-B-type natriuretic peptide, troponin T and creatine kinase MB were 6980 pg/mL (normal <300 pg/mL), 0.56 ng/mL (normal <0.4 ng/mL) and 42 IU/L (normal 5–25 IU/L), respectively. Reverse transcription PCR for COVID-19 was negative. Transthoracic 2D echocardiography revealed an ejection fraction of 20% with a large anterolateral pseudoaneurysm which was confirmed on 3D echocardiography (figure 1A–D). Her electrocardiogram revealed QS in V1–V6, I and aVL (figure 2). She was managed with antiplatelets, anticoagulation, non-invasive ventilation and diuretics. After haemodynamic stabilisation, she was taken up for coronary angiography and ventriculography. Coronary angiography revealed diffuse disease of the left anterior

Figure 2 Twelve-lead Electrocardiogram.

descending artery. Anterolateral pseudoaneurysm was confirmed on left ventriculography (video 1) and cardiac MRI (video 2). The patient was offered surgery; however, the relatives and the patient wanted medical management only. At 3 months' follow-up, the patient is alive and can do activities of daily living with minimal dyspnoea.

LV pseudoaneurysm, post MI, has a reported incidence of less than 2%, with inferior and posterolateral wall being the most common locations (82% of all MI), which makes LV anterolateral pseudoaneurysm extremely rare.^{1,2} It may also occur after cardiac surgery, endovascular interventions and trauma.² The most common presentation is dyspnoea (15%) followed by chest pain (13%), arrhythmias/syncope (10%) and systemic embolism (6%).^{1,2} While 10% of the cases may be discovered incidentally, it can also present with cardiac tamponade and sudden cardiac arrest.² Unlike the true aneurysm, it carries a very high risk of

Figure 1 Transthoracic echocardiography (TTE) 2D, parasternal long axis (PLAX) and apical four-chamber (A4C) views showing pseudoaneurysm (A,B). TTE 3D, PLAX and A4C views showing pseudoaneurysm (C,D). Coronary angiography showing diffusely diseased left anterior descending artery (E).

Video 1 Left ventriculogram showing anterolateral pseudoaneurysm. Course of catheter: right femoral artery→common iliac artery→aorta→aortic root→left ventricle.

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Video 2 Cardiac MRI (vertical long axis) showing left ventricular pseudoaneurysm.

rupture (30%–45%).^{3 4} In majority of the cases, transthoracic echocardiography is sufficient for diagnosis. Besides the typical location, neck diameter ratio of ≤ 0.7 favours pseudoaneurysm on imaging.^{3 4} Since our patient had anterolateral pseudoaneurysm which is very rare, we did contrast ventriculography and cardiac MRI to confirm the diagnosis and plan a possible surgical approach.^{3–5} Most symptomatic pseudoaneurysms require

urgent invasive management; the mortality reaches 50% on medical therapy, which is halved with surgical intervention.^{3 4} In patients with high surgical risk, percutaneous closure of LV pseudoaneurysms can be tried, provided it is anatomically feasible.⁶

Our patient had a post MI LV anterolateral pseudoaneurysm which is rare and had a relatively less aggressive course, though long-term follow-up is awaited. In atypical cases, multimodality imaging may be required to confirm the diagnosis.

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Learning points

- ▶ Left ventricular pseudoaneurysm is a rare, but potentially fatal complication of myocardial infarction, which requires differentiation from true aneurysm.
- ▶ Multimodality imaging may sometimes be required to differentiate the pseudoaneurysm from true aneurysm and to plan the surgical management.

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