

Out of hospital cardiac arrest due to spontaneous left ventricular rupture

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A 63-year-old female patient was referred to our cardiac unit following an out of hospital cardiac arrest. Emergency medical personnel at the scene initiated cardiopulmonary resuscitation (CPR) and defibrillation for ventricular fibrillation (VF) (Figure 1) with restoration of circulation. The patient had not reported chest pain or any other symptoms prior to the cardiac arrest.

She had been intubated on the scene requiring mechanical ventilatory support and arrived at the hospital fully sedated. Her blood pressure was normal without the aid of vasopressors. Her clinical examination was unremarkable.

Findings on her admission ECG was consistent with left ventricular hypertrophy by Cornell criteria as well as ST segment depression of < 1mm in the inferior leads with T wave inversion

(Figure 2). Echocardiography revealed severe global left ventricular systolic dysfunction in keeping with her recent resuscitation with a small apical dyskinetic area. Colour flow Doppler evaluation revealed no communication with the right ventricle or other structures. Coronary angiography showed unobstructed coronary arteries without any area of suspected plaque rupture. The patient was extubated after 24 hours and the left ventricular function normalised on transthoracic echocardiography. The apical segment of the septum remained abnormal and cardiac computed tomography (CT) was requested to further evaluate the apex. The CT revealed a contained rupture of the left ventricle (LV) at the apex forming a pseudo-aneurysm (Figure 3).

The pseudo-aneurysm was confirmed during surgery and successfully repaired (Figures 4 and 5). The macroscopic evaluation of the ruptured LV wall revealed normal myocardium without any necrosis or fibrosis. No predisposing disease could be identified and it was concluded that this was most likely a case of spontaneous left ventricular rupture.

Rupture of the LV free wall and inter-ventricular septum is a well-known complication of myocardial infarction. LV free wall rupture is seen in up to 30% of patients who die in hospital after myocardial infarction.⁽¹⁾ It is a much rarer complication of Takotsubo cardiomyopathy.⁽²⁾

Spontaneous LV rupture, however, is an extremely uncommon finding. Contained LV rupture has been reported in a patient presenting with chest pain precipitated by weightlifting⁽³⁾ and an isolated case of LV rupture due to CPR has also been reported.⁽⁴⁾ This is unlikely to be the cause in our patient given that she presented with VF without a significant pericardial effusion.

Conflict of interest: none declared.

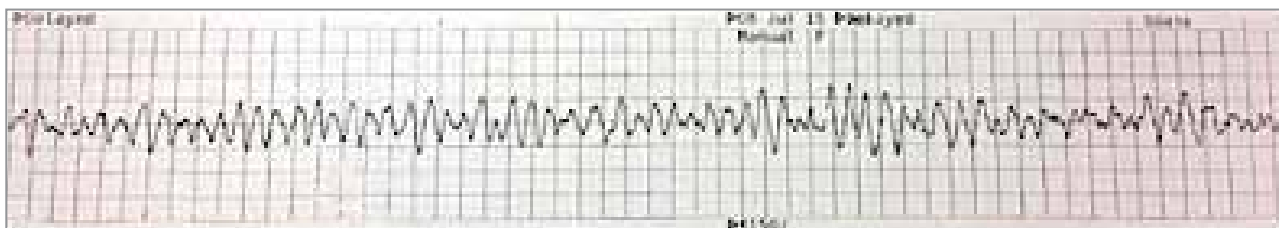


FIGURE 1: Peri-resuscitation ECG showing ventricular fibrillation.

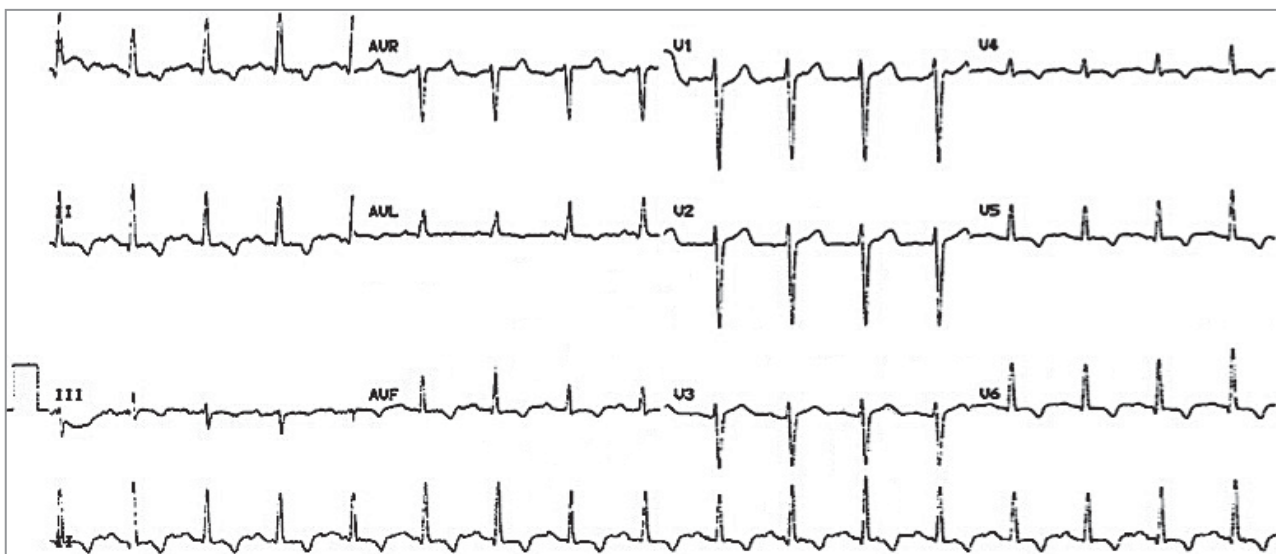
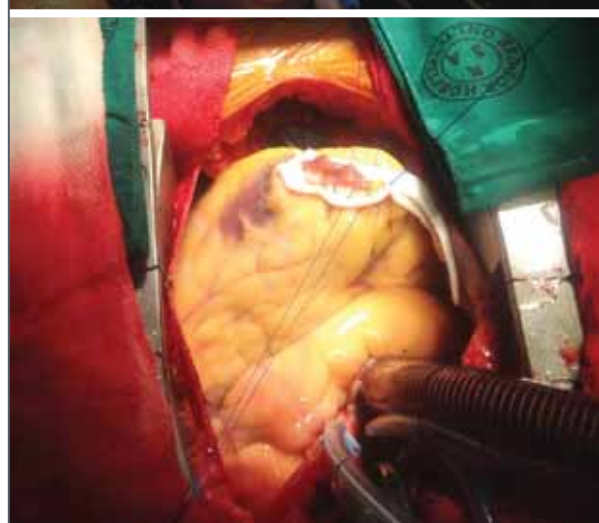


FIGURE 2: Admission ECG.



FIGURE 3: CT image of the left ventricle showing apical defect with extravasation of contrast into pericardial space.



FIGURES 4 and 5: Left ventricular rupture pre- and post-surgical repair.

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