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An acutely confusing diagnosis

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Abstract

Case of Takotsubo cardiomyopathy with domestic abuse as the cause of acute stress.

Keywords: Takotsubo cardiomyopathy; Stress cardiomyopathy; Broken heart syndrome; Echocardiogram; Electrocardiogram.

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Description

A 60-year-old female with a past medical history of alcohol misuse, chronic pancreatitis and Barrett's oesophagus presented to the emergency department with an acute confusional state. Clinical examination demonstrated a normal cardiorespiratory system but 2 cm hepatomegaly and a pyrexia of 38.1°C. Investigations included a normal CT head, a chest X-ray with chronic emphysematous changes and blood tests showing abnormal liver function (ALT 329 U/L and ALP 133 IU/L), raised urea (12.0 umol/L), CRP (33.3 mg/L) and neutrophilia (8.6 x 10^9/L). Her additional confusion screen was unremarkable and abdominal ultrasound found diffuse fatty liver infiltration. Given the diagnosis remained unclear, an Electrocardiogram (ECG) was performed (Figure 1). This prompted measurement of troponin, raised at 2259 ng/l. A focused point of care echocardiogram was then performed at the time of admission (Figure 2) and following which she was treated with dual anti-platelets, beta blockers, ACE inhibitors and SGLT-2 inhibitors and a direct oral anticoagulant. She declined to undergo invasive angiography and remained haemodynamically stable throughout her admission.

Discussion

The patient was diagnosed with takotsubo cardiomyopathy. ECG changes include transient precordial ST elevation and T wave inversion, without reciprocal changes along with QTc prolongation (Figure 1). Transthoracic echocardiogram (TTE) images show the classic features of apical ballooning with basal hyperkinesia. The initial study (Figure 2) depicted severe left ventricular systolic dysfunction (LVSD) along with mural thrombus. Subsequent TTE 3 weeks after admission (Figure 3) showed LV function had completely normalised and thrombus had dissipated. During her admission, she disclosed she had been physically abused, and safeguarding concerns were raised. Although

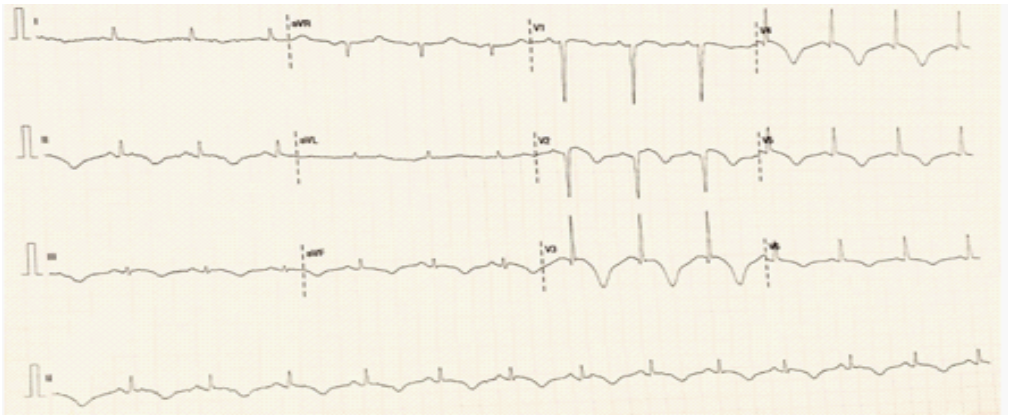

Figure 1: ECG changes included transient precordial ST elevation and T wave inversion without recipocal changes along with QTc prolongation.

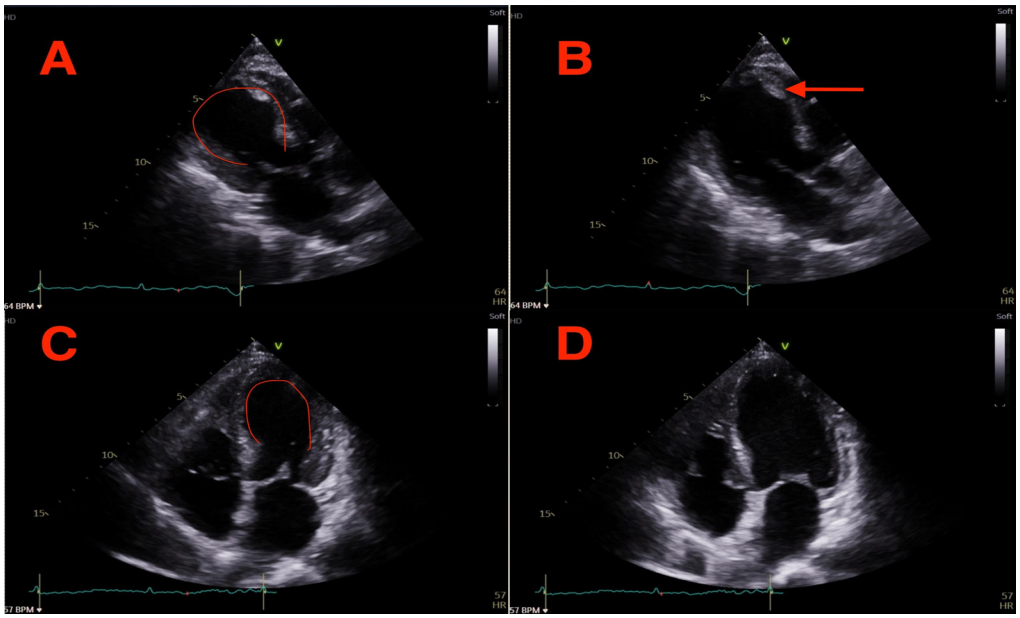

Figure 2: Echocardiogram at the time of admission with explanations. **(A)** Parasternal long axis at the end of systole **(B)** Parasternal long axis at the end of diastole **(C)** 4 chamber view at the end of systole **(D)** 4 chamber view at the end of diastole. The distinctive octopus trap-shaped appearance of the heart is indicated by markings on images A and C. Additionally, a red arrow highlights the presence of a left ventricular thrombus.

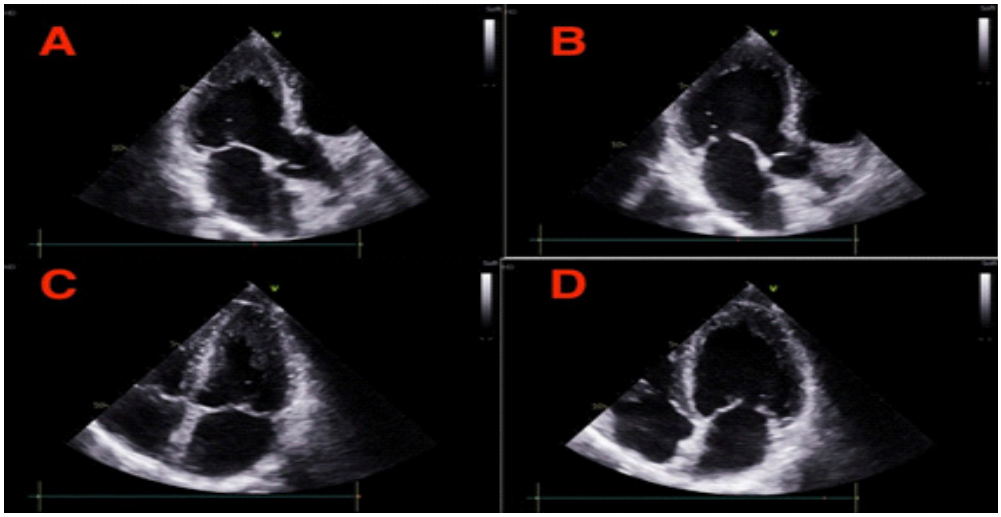

Figure 3: Second echocardiogram performed after 3 weeks **(A)** Parasternal long axis at the end of systole **(B)** Parasternal long axis at the end of diastole **(C)** 4 chamber views at the end of systole D: 4 chamber view at the end of diastole.

domestic violence is commonly cited as a potential stressor in takotsubo cardiomyopathy [1-3] to the authors knowledge, this is the second case reported [4].

We calculated the InterTAK Diagnostic Score for this patient. This score, developed by the International Takotsubo Registry, helps clinicians estimate the likelihood of Takotsubo cardiomyopathy (TCM). It is based on seven parameters—female sex, emotional trigger, physical trigger, absence of ST-segment depression (except in lead aVR), psychiatric disorders, neurologic disorders, and QT prolongation—weighted according to their diagnostic relevance, with a maximum score of 100 points. A score above 70 corresponds to a 90% probability of TCM rather than acute coronary syndrome (ACS). This patient's score was 80 [5].

Possible differential diagnoses included dilated cardiomyopathy (DCM), acute coronary synrome (ACS) or fulminant myocarditis (FM). Typically, ECG findings in DCM include prolonged QRS duration & TTE findings include left or biventricular dilation with globally impaired function which would not normalise so rapidly. ACS would present with regional and evolving ECG changes and fixed antero-apical LV impairment with thinning on TTE. ECG in FM includes low voltage QRS due to myocardial oedema or ST elevation mimicking coronary occlusion and TTE findings typically include severe LVSD but with septal thickening indicating myocardial oedema and patients usually require mechanical circulatory support as a bridge to recovery.

Declarations

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Patient consent: Obtained.

Data availability statement: Data sharing not applicable as no datasets generated and/or analysed for this study.

Competing interests: None declared.

Contributorship statement: AS and TC conceived the presented idea and wrote the first draft, which was revised by DW. All authors discussed and contributed to the final manuscript.

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