



Suicidal left ventricle: a case report

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Abstract: We report a case of “Takotsubo cardiomyopathy” following attempted suicidal partial hanging. Takotsubo cardiomyopathy is a syndrome characterized by transient regional systolic dysfunction of the left ventricle (LV). Takotsubo cardiomyopathy was first described in 1990 in Japan. From a registry of 3,265 patients with troponin-positive ACS a prevalence of 1.2 percent was reported. Takotsubo cardiomyopathy is frequently in women and mainly in older adults. The patient presented with chest pain after the suicidal attempt, electrocardiography (ECG) showed ischemic changes in the anterior leads. Echocardiography performed, which revealed that the LV showed ballooning and hypokinesia of the apical segments, and the Troponin test was positive. Coronary angiogram considering the possibility of the acute coronary syndrome was done, which showed only minimal plugging in the left anterior descending artery. However, the LV angiogram revealed the classical features of Takotsubo cardiomyopathy. Cardiac magnetic resonance imaging (MRI) was also performed, which also confirmed the diagnosis. After three days of hospitalization, the patient was discharged with proper Psychiatric Counseling, and during the follow-up, the LV contractility had completely recovered. Takotsubo cardiomyopathy should always be considered in patients presenting with abnormal ECG during various scenarios of physical and emotional stress.

Keywords: Takotsubo cardiomyopathy; stress cardiomyopathy; suicidal hanging

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Introduction

Stress cardiomyopathy is called as takotsubo cardiomyopathy, apical ballooning syndrome, stress-induced cardiomyopathy, and broken heart syndrome. Stress cardiomyopathy is a syndrome characterized by transient regional systolic dysfunction of the left ventricle (LV), mimicking myocardial infarction, but in the absence of angiographic evidence of obstructive coronary artery disease. It is provoked by an episode of emotional or physical stress. Increasing numbers of cases have been reported, arising in various circumstances of physical or mental stress, however only a few cases after suicide attempt have been documented. We present a case of Takotsubo

cardiomyopathy, which occurred with a partial neck hanging in a suicide attempt. We present the following article in accordance with the CARE reporting checklist (available at <http://dx.doi.org/10.21037/jxym-20-85>).

Case presentation

A 65-year-old woman brought to our hospital with an alleged history of hanging from the ceiling at her home due to interpersonal conflict with her husband, however incomplete due to immediate rescue by her relatives, had a history of transient loss of consciousness of 15 minutes duration. After preliminary treatment at the local hospital, she regained consciousness and then complained of

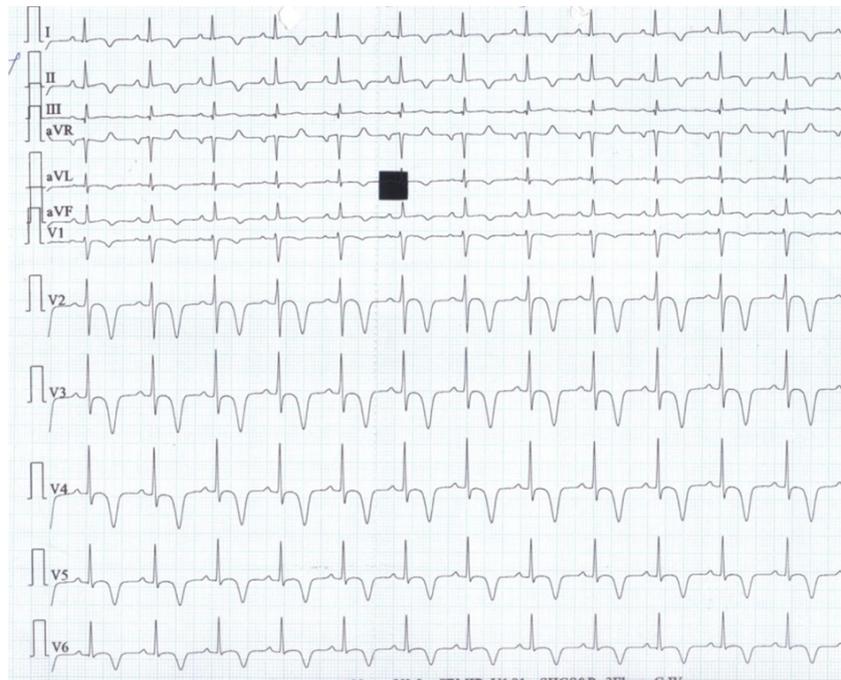


Figure 1 ECG showed sinus rhythm, deep T wave inversions in V₁-V₆. ECG, electrocardiography.

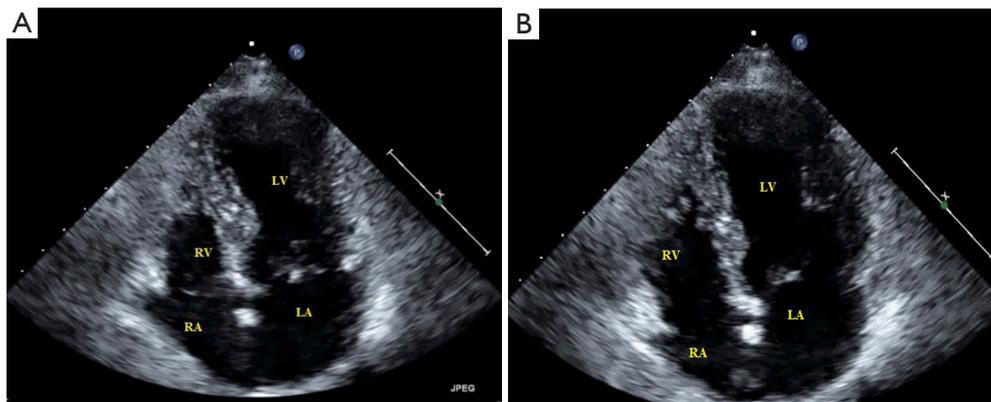


Figure 2 2D echocardiography showed dilated LV and akinesia of LV apical segments. LV, left ventricle.

retrosternal pain and neck pain. She later referred to the cardiac care center due to electrocardiography (ECG) changes and elevated cardiac enzymes with suspicion of acute MI. There is no history of hypertension, diabetes mellitus, heart disease, or any other significant illness. She presented to the cardiac hospital after 24 hours of the event. On examination, she was conscious oriented, GCS-E4M6V5, with ligature mark over her neck; pulse rate was 98/min, normal volume, and character; blood pressure was 128/80 mm of Hg. On auscultation, heart sounds

were normal; lungs were clear; clinically, there was no evidence of cervical spine injury, which was confirmed by neck X-ray & cervical spine magnetic resonance imaging (MRI). Her ECG showed sinus rhythm, deep T wave inversions in V₁-V₆ (Figure 1). His troponin T level was 0.214 ng/mL (N<0.01), C.K. was 858 U/L, C.K. MB was 33 U/L. She was also found to have dyslipidemia. Other laboratory investigations were unremarkable. 2D echocardiography showed akinesia of LV apical segments with normal-hypercontractile mid & basal segments

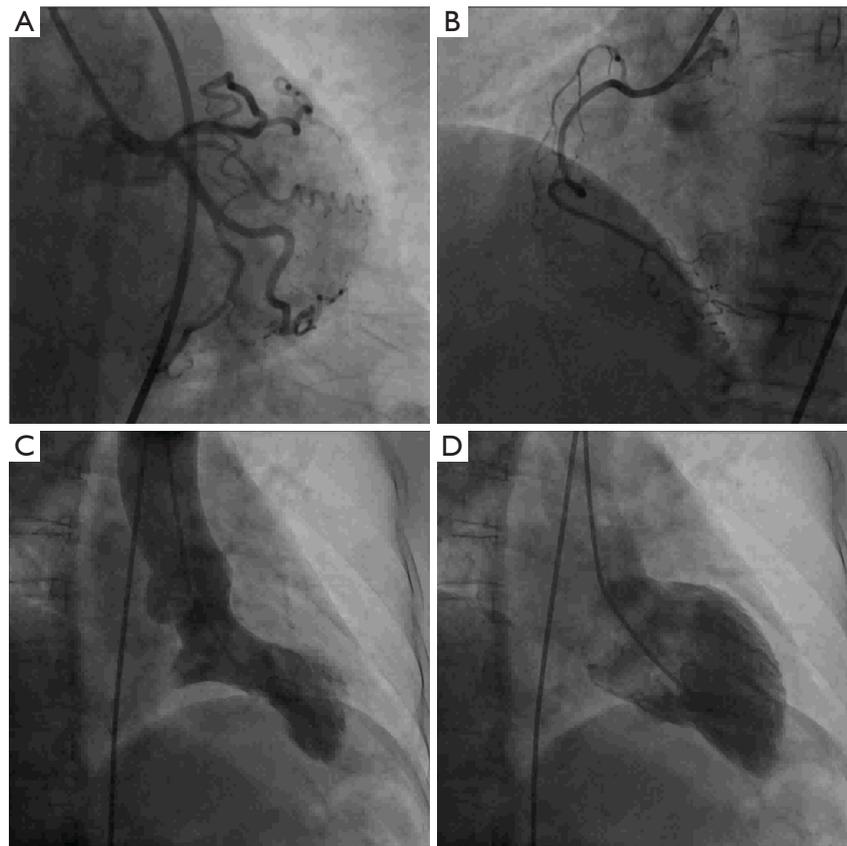


Figure 3 Angiogram images. (A) Left coronary angiogram showed only minimal plaquing in proximal left anterior descending artery. (B) Right coronary angiogram showed normal right coronary. (C,D) Left ventricular angiogram done in RAO 30 view showed systolic apical ballooning of the LV reflecting depressed mid and apical segments and hyperkinesis of the basal wall. LV, left ventricle.

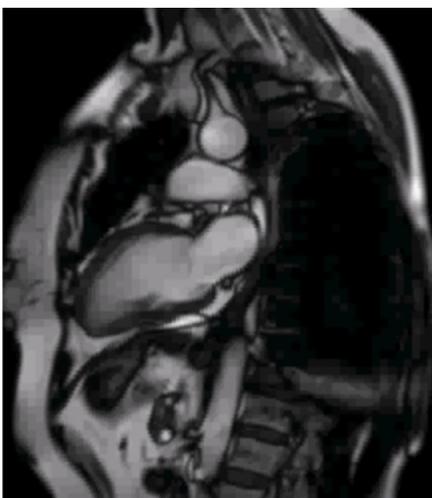


Figure 4 Cardiac MRI showed the absence of significant Late gadolinium enhancement, and the mid anterior wall dyskinetic, bulging outwards on systole. MRI, magnetic resonance imaging.

and an Ejection fraction of 45% (*Figure 2A,B*). She was initially treated as per the ACS line of management. She underwent a Coronary angiogram, which showed only minimal plaquing in proximal Left anterior descending artery (*Figure 3A*). The right coronary angiogram showed normal right coronary (*Figure 3B*). The Left ventricular angiogram done in RAO 30 view showed systolic apical ballooning of the LV reflecting depressed apical and mid segments, and hyperkinesis of the basal wall (*Figure 3C,D*). Also, Cardiac MRI performed, which showed similar appearance and absence of significant late gadolinium enhancement (LGE) (*Figure 4*). The patient was discharged after getting Psychiatric Counselling from the hospital after three days. 2D echocardiography was done after the first and second month during follow-up, which showed complete normalization of LV function (*Figure 5A,B,C*). All procedures performed in studies involving human participants were in accordance with the ethical standards

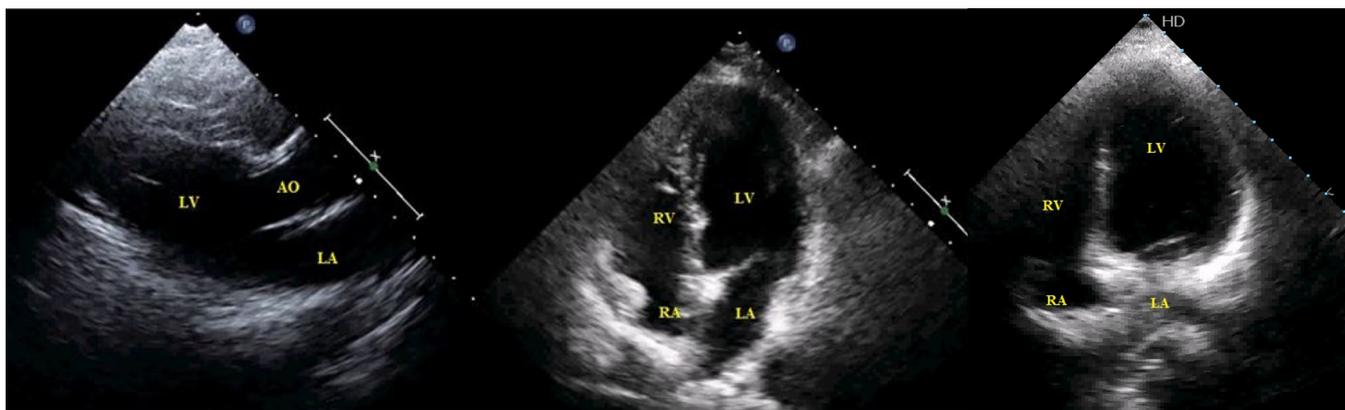


Figure 5 2D echocardiography parasternal long-axis view showed normal LV and apical four-chamber view showed normal LV. LV, left ventricle.

of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient.

Discussion

In 1990 takotsubo cardiomyopathy was first reported in Japan and has since been increasingly acknowledged around the world. From the enrolment of 3,265 patients with troponin-positive ACS prevalence of 1.2 percent was reported (1). Stress cardiomyopathy is most commonly reported in women than men and occurs mainly in elderly persons (2). The pathogenesis of this disorder is not well understood. Postulated mechanisms include catecholamine excess (3), coronary artery spasm, and microvascular dysfunction. Its association with emotional or physical stress (4,5), suggest that this disorder may be caused by diffuse catecholamine-induced microvascular spasm or dysfunction, resulting in myocardial stunning, or by direct catecholamine-associated myocardial toxicity (6). Stress cardiomyopathy is frequently triggered by an acute medical illness or intense physical or emotional stress. There are only a handful of cases reported in the literature of stress cardiomyopathy arising after a neck hanging (7). ST-segment elevation in ECG is frequently observed. In the anterior precordial leads ST-segment elevation is most commonly seen and often is similar to that seen with an acute ST-elevation MI. In most patients with stress cardiomyopathy, Serum cardiac troponin levels are also elevated (8). In Takotsubo cardiomyopathy for patterns of LV involvement has been described: (I) classical type,

(II) inverted type, (III) mid-ventricular type, and (IV) localized type. Among them, most frequently reported is the classic pattern with apical LV ballooning. The regional wall motion abnormality extends beyond the territory perfused by a single epicardial coronary artery. Coronary angiography typically demonstrates either mild to moderate coronary atherosclerosis or healthy vessels. LV Angiogram, in the classical type, shows systolic apical ballooning of the LV, reflecting depressed mid and apical segments, and there is often hyperkinesis of the basal walls. LGE on CMR imaging is generally absent in stress cardiomyopathy in contrast to MI in which transmural LGE or severe subendocardial is seen (9,10). Stress cardiomyopathy may be diagnosed and evaluated with the help of cardiovascular magnetic resonance (CMR) imaging, mainly when the echocardiogram is technically insignificant, and there is concurrent coronary heart disease. Stress cardiomyopathy is generally a transient disorder that requires inpatient care with cardiology services. Treatment is mainly supportive and continues like traditional treatment and resolution of the physical or emotional stress until the spontaneous return of left ventricular function, which most often occurs within 21 days of the onset of the syndrome. However, some patients may develop acute complications such as shock and acute heart failure. Patients recovered systolic ventricular function within one to four weeks, who survived the acute episodes (11). Stress cardiomyopathy should always be considered in patients presenting with abnormal ECG during various scenarios of physical and emotional stress, and its careful evaluation is necessary as it is a disease with relatively favorable prognosis.

Conclusions

Stress cardiomyopathy should always be considered in patients presenting with abnormal ECG during various scenarios of physical and emotional stress, and its careful evaluation is necessary as it is a disease with relatively favorable prognosis.

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Footnote

Reporting Checklist: The authors have completed the CARE reporting checklist. Available at <http://dx.doi.org/10.21037/jxym-20-85>

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/jxym-20-85>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient.

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