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Case Report

Left ventricular aneurysm as long-term complication of Takotsubo cardiomyopathy: is it still a benign disease?—case report

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Abstract

Takotsubo cardiomyopathy is considered a benign syndrome that presented by transient characteristic left ventricular dysfunction with a variety of wall-motion abnormalities that resolve completely after few weeks. In this report, a 67-year-old female—who was diagnosed by Takotsubo cardiomyopathy after emotional stress 2 years ago—presented by shortness of breath that associated with palpitation and chest pain. Echocardiogram showed paradoxical septal motion with aneurysmal anterior septal walls. Myocardial perfusion imaging reveled no perfusion defects suggestive of ischemia. Cardiac magnetic resonance imaging reveled outpouching aneurysm of anterior septal wall with no delayed gadolinium enhancement. Heart team had recommended medical therapy. Patient was improved at follow-up visits. In conclusion, Takotsubo cardiomyopathy should be reconsidered as benign disease with short- and long-term outcome and complications.

INTRODUCTION

Takotsubo cardiomyopathy has gained global recognition after its first description in Japan where derived its name from the Japanese word takotsubo (octopus pot) to describe the characteristic ballooning of the left ventricular (LV) apex. The disease is characterized by transient LV dysfunction with a variety of wall-motion abnormalities [1]. It accounts for 2% of ST-segment elevation infarcts, with most cases described in postmenopausal women. The most common clinical presentations are chest pain and dyspnoea (67.8 and 17.8%, respectively). The onset of symptoms was often preceded by emotional or physical stress (26.8% and 37.8%, respectively) [2]. However, after nearly 30 years of extensive efforts for better understanding of this disorder, current knowledge remains limited. Despite the unknown cause of it, the role of the brain–heart axis in the pathogenesis of the disease has been described [3]. Furthermore, the role of catecholamine excess in its pathogenesis has been long debated [4]. Takotsubo cardiomyopathy is generally recognized as a benign disorder. However, patients are at risk for recurrence even years after the first event, and data on in-hospital and long-term outcomes are limited [5].

CASE REPORT

A 67-year-old female with history of hypertension, dyslipidemia and ex-smoking was admitted to hospital with shortness of breath that associated with palpitation and chest pain. Patient denied any recent physical or emotional stresses. Electrocardiogram (ECG) revealed sinus rhythm with known left bundle branch block (LBBB). Laboratory tests including cardiac enzymes were within normal ranges. Transthoracic echocardiogram (TTE) showed normal LV systolic function (EF 56%), diastolic dysfunction grade-I, and paradoxical septal motion with aneurysmal anterior septal walls (Fig. 1). Following guideline of suspected ischemic heart disease diagnostic algorithm, it was recommended to perform pharmacological stress myocardial perfusion imaging (MPI) which reveled no perfusion defects suggestive of ischemia were detected (Fig. 2). Early invasive strategy was not recommended in such patient according to guidelines. So, guideline-directed medical therapy was

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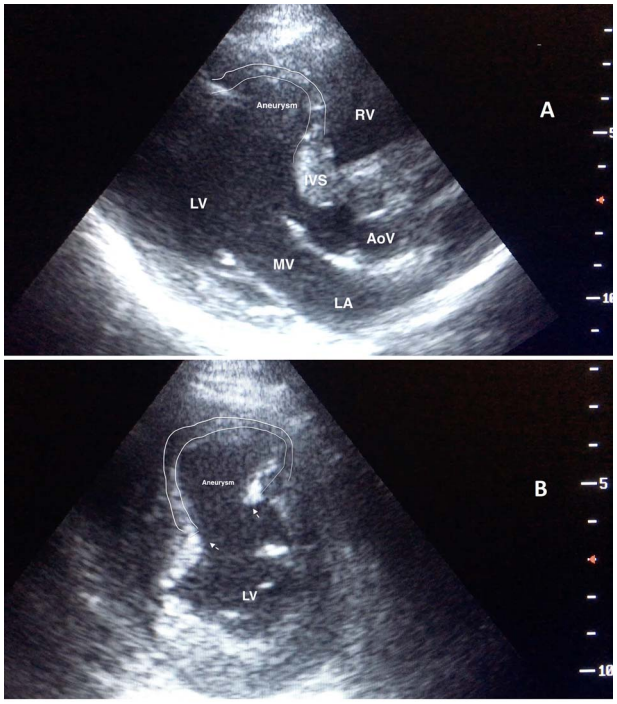

Figure 1. Transthoracic echocardiogram (TTE) for the patient after 2 years of her diagnoses by Takotsubo stress cardiomyopathy. It reveled outpouching of anterior septal wall aneurysm (indicated by white curved lines) in parasternal long axis view (A). Additionally, left ventricular aneurysm (indicated by white curved lines) with wide neck (indicated by white arrows) is shown in parasternal short axis view at level of papillary muscles (B). AoV, aortic valve; LA, left atrium; MV, mitral valve; LV, left ventricle; RV, right ventricle; IVS, interventricular septum.

initiated. Cardiac magnetic resonance imaging (MRI) was performed that reveled outpouching of anterior septal wall with no myocardial edema, no inflammatory changes, no intramural tumors and no myocardial fatty infiltration; delayed gadolinium enhancement showed no macroscopic scars or thrombus (Fig. 3). Two years ago, she had emotional marital stress then she complained about severe crushing chest pain and was admitted into another hospital. Her ECG did not show any significant ischemic changes despite already present LBBB. Her cardiac enzymes were normal. She performed stress-ECG for 6 min that was terminated by severe dyspnea but no chest pain with ST-segment depression in inferior leads. Coronary angiography was done and demonstrated normal coronary arteries (Fig. 4) but was complicated by right femoral hematoma. Predischarge TTE showed near-normal LV systolic function (EF 51%), diastolic dysfunction grade-I, and paradoxical septal motion with apical hypokinesia and ballooning (diagnosed as Takotsubo stress cardiomyopathy). Patient was discharged on Ramipril 5 mg, Bisoprolol 10 mg, Atorvastatin 40 mg and Aspirin 81 mg. Additionally, patient has been reassured regarding good prognosis of the disease with no need for close follow-up of the condition.

Regarding patient's current compliant, heart team had discussed the results of investigations and recommended for medical therapy. Patient was discharged on Bisoprolol 10 mg, Olmesartan 20 mg, Amlodipine 5 mg and Rosuvastatin 20 mg. Patient was improved with no dyspnea or chest pain at follow-up visits.

DISCUSSION

Takotsubo cardiomyopathy has a clinical presentation similar to an acute coronary syndrome. Actually, most patients experienced with chest pain or dyspnea. Usually, the ECG at presentation shows ST-segment elevation but T wave inversion and pathological Q waves are present in majority of patients. Therefore, initial diagnosis and treatment of patients in the emergency room remains challenging. Unfortunately, there are no clinical, radiological or laboratory characteristics that certainly diagnose this syndrome. However, postmenopausal women with a history of recent emotional or physical stress, and with the typical profound wall-motion abnormalities; despite normal coronary arteries on angiography should raise suspicion for it. Furthermore, proposed Mayo's diagnostic criteria for the syndrome had evolved and should be used.

Multimodality imaging plays a pivotal role in managing the case of Takotsubo cardiomyopathy. Several variants have been described based on the regions of LV wall-motion abnormality. Typically, Takotsubo is characterized by ballooning apical akinesis/hypokinesis associated with basal hyperkinesis. Although, reversed variant of Takotsubo is rare and characterized by the basal akinesis/hypokinesis associated with apical hyperkinesis. However, other patterns of LV wall-motion abnormality have been reported [6]. Cardiac MRI is appropriate to evaluate LV function and wall-motion abnormalities, and to confirm the absence of delayed gadolinium enhancement. This helps differentiation of Takotsubo from other differential diagnosis as myocardial infarction and myocarditis, both pathologies associated with delayed gadolinium enhancement. There is limited consensus in long-term management, although it is reasonable to treat patients with β-blockers and ACE inhibitors during the ventricular recovery period. However, no data support their continuous use for the prevention of recurrence or improvement of survival rate [7].

Fortunately, the prognosis is favorable for patients with takotsubo cardiomyopathy who survived the initial episode using symptomatic and supportive measures. LV systolic function usually returns to normal range within a few weeks [8]. However, recent studies have found that Takotsubo patients had a similar long-term outcome compared with age- and sex-matched acute coronary syndrome patients. Additionally, these outcomes also vary according to the preceding trigger, and patients with events triggered by emotional stress had a favorable short- and long-term prognosis. Thus, Takotsubo cardiomyopathy is a much more complex syndrome than previously thought, and should be classified according to the underlying trigger event to accurately risk stratify and predict short- and long-term

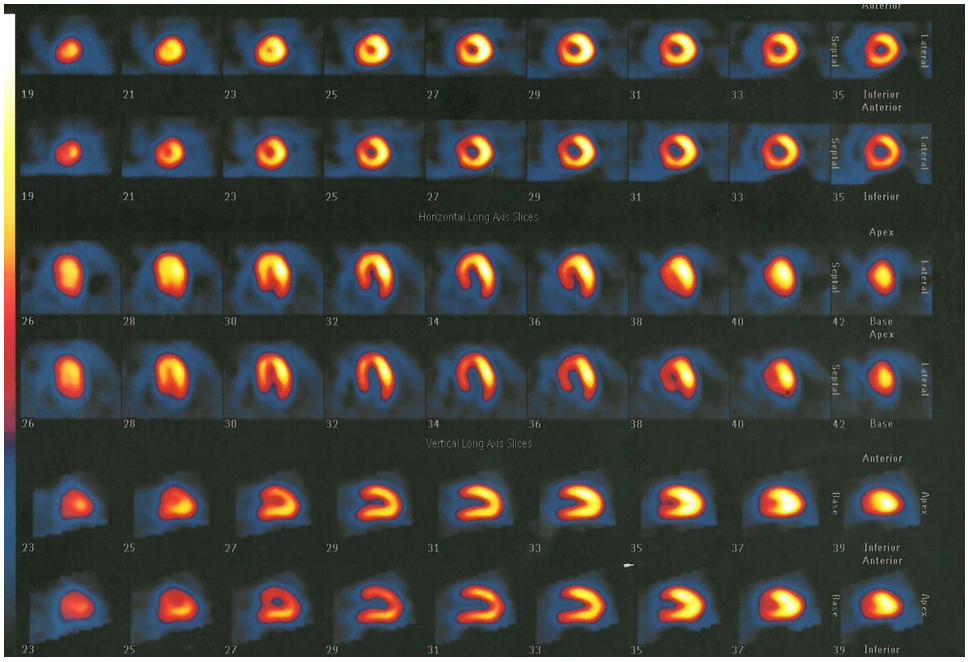

Figure 2. Myocardial perfusion imaging (MPI) shows no perfusion defects suggestive of ischemia were detected in 67-years-old female patient—who was diagnosed by Takotsubo cardiomyopathy 2 years ago—presented by anterior septal aneurysm by echocardiogram.

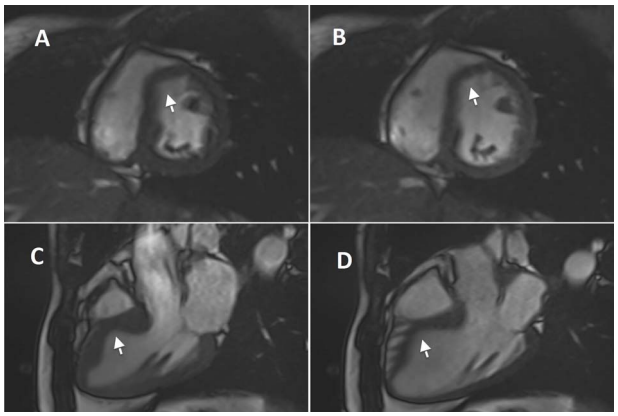

Figure 3. Cardiac magnetic resonance imaging (MRI) reveled outpouching of anterior septal wall aneurysm (indicated by arrow) in axial cuts at level of papillary muscles in systole (A) and diastole (B). Additionally, left ventricular aneurysm is shown in sagittal cuts in systole (C) and diastole (D).

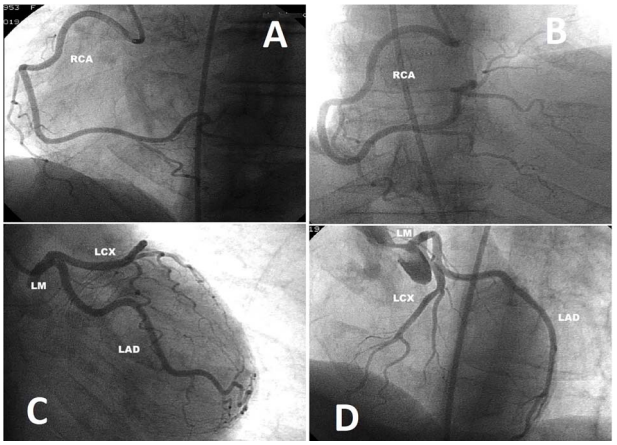

Figure 4. Coronary angiography demonstrated normal coronary arteries at initial presentation of patient diagnosed by Takotsubo cardiomyopathy. (A) and (B) shows normal right coronary artery whereas (C) and (D) shows normal left coronary artery in various planes and on cranial or caudal angulations. RCA, right coronary artery; LM, left main; LAD, left anterior descending; LCX, left circumflex.

outcomes for each patient individually. Furthermore, the new classification (InterTAK Classification) could be useful in predicting Takotsubo outcomes [9].

There are published rare cases with serious complication of LV dysfunction after Takotsubo cardiomyopathy. These serious complications ranged from cardiogenic shock, persistent LV aneurysm that even required resection and LV plasty, ventricular septal perforation with septal dissection, and cardiac rupture that may lead to death [10]. Therefore, careful observation with appropriate treatment of complication is needed for prevention of catastrophic serious outcomes.

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CONFLICT OF INTEREST STATEMENT

None declared.

ETHICAL APPROVAL

The case study was approved by local hospital ethical committee and with Helsinki Declaration and its later amendments or comparable ethical standards.

CONSENT

Full verbal and written informed consent had been obtained from the patient for submission of this manuscript for publication.

GUARANTOR

Dr Ali Elzieny is acting as a guarantor for this manuscript.

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