

A family member suicide causes “broken heart syndrome” – two cases of the tako-tsubo cardiomyopathy

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Summary

Tako tsubo cardiomyopathy is a reversible form of an acute cardiac dysfunction connected with severe emotional or physical stress. An impact of mood disorders such as anxiety and depression in the tako-tsubo patients is investigated, authors reported its' significantly higher prevalence in this group in the comparison with an acute coronary syndrome group. The exact pathogenesis remains uncertain. It's clinical presentation often mimics an acute ST-segment elevation myocardial infarction (STEMI), without coronary artery obstruction in angiography. This case report presents two female patients hospitalized in the Intensive Cardiac Therapy Clinic, Medical University of Łódź, Poland, due to the tako-tsubo cardiomyopathy. In both cases the stress trigger, preceding the onset of symptoms was a family member suicide.

suicide / tako-tsubo cardiomyopathy

INTRODUCTION

Tako tsubo cardiomyopathy, first described in Japan in 1991 [1], is also known as “stress cardiomyopathy”, “broken heart syndrome” or “apical ballooning syndrome” due to the unique pattern of the left ventricular wall motion abnormalities observed in echocardiography, which resembles an octopus fishing pot (“tako tsubo” in Japanese). The prevalence of this syndrome is estimated as 0.1-2.3% of patients with suspected acute coronary syndrome and is still rising [2]. It mostly affects postmenopausal women (86-100%), with the mean age of 62-75 years [3]. The pathogenesis of this condition is unknown, but there are few potential mechanisms: multi-vessel coronary artery spasm due to the sym-

pathetic activation, impaired cardiac microvascular function and endogenous catecholamine induced myocardial stunning and micro-infarction [4].

The clinical presentation includes sudden onset retrosternal chest pain, dyspnoea and syncope, which in most cases have a coincidence with severe emotional (33-45%) or physical (17-22%) stress [5, 6]. Clinical findings are similar to those in patients with an acute coronary syndrome – electrocardiography (ECG) usually reveals ST-segment elevation, followed by T-wave inversion [2, 3]. Biochemical markers' levels (creatine kinase MB (CK-MB) and troponin T (TnT)) are normal or slightly elevated [2]. The coronary angiography reveals no significant lesions, which excludes coronary artery disease. Echocardiographic image in the tako-tsubo cardiomyopathy is very characteristic, it includes akinesis or dyskinesis of the apex with the hyperkinesis of the basal area of the left ventricle, with its' systolic dysfunction [3, 5].

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Apart from the cases complicated by the pulmonary oedema, cardiogenic shock or malignant arrhythmia the prognosis in patients with the tako-tsubo cardiomyopathy is favourable. Myocardial dysfunction is reversible - patients present clinical and echocardiographical improvement in a few weeks. The left ventricular ejection fraction restores to normal within several days, which confirms the diagnosis [2, 3, 4]. The in-hospital mortality rate is estimated between 1 to 8% [2, 3]. Thirty day mortality rate of 8.6% was reported [7].

CASE REPORT

Case 1. A 81-year old female was admitted with the suspicion of an acute coronary syndrome, with the clinical manifestation of retrosternal, few hours' duration, pressure-like pain. The pain appeared in the significant stress situation – the patient found her 10-year old grandson, who had committed a suicide by hanging.

The medical history revealed: intermittently treated hypertension, obesity and left side mastectomy, due to breast cancer ten years earlier. No additional coronary artery disease risk factors were found.

Physical examination at the admission was unremarkable, blood pressure was 130/70 mmHg, heart rate 92/min. Initial ECG showed sinus tachycardia with ST-segment elevation in I, aVL, V5-V6; Q waves in I, aVL, V5-V6; QS complex in III, aVF and poor R wave progression in precordial leads. It was followed by the T-wave inversion in I, aVL, V1-V6 during subsequent days of the hospitalization.

Initial myocardial necrosis markers' levels were significantly elevated: CK-MB - 70 U/l (normal range 0-26 U/l); TnT – 1.9 ng/ml (normal range < 0.014 ng/ml). The patient underwent an immediate coronary angiography, which revealed no significant coronary artery disease.

Echocardiography performed 24 hours after admission showed significant tako-tsubo-like apical akinesis with slightly reduced left ventricle ejection fraction, after 48 hours the ejection fraction rose, but the wall motion abnormalities were still present.

Because of the persistent depressed mood and sleep disorders, psychiatric consultation was carried out, with the diagnosis of adaptive dis-

turbance with depression features due to severe stress. During the hospitalization the patient felt fatigue and sleepy during the day and suffered from insomnia in the night, she had no appetite and no interest in everyday activities. The patient denied suicidal ideation. Moreover there was a family conflict present between the patient and her son-in-law (the father of the deceased grandchild), she had no support in the family members and blamed them for the situation.

Case 2. A 63-year old, professionally active female, with the history of hypertension and asthma, was admitted due to the two hours' duration chest pain, which occurred after an information about a suicide by hanging of her 27-year old niece. Additional symptoms at the admission were weakness, dyspnea and sweating. Apart from tachycardia, physical examination was unremarkable, blood pressure was 130/70 mmHg, heart rate 120/min. Initial ECG revealed sinus rhythm and ST-segment elevation in leads I, aVL, V1-V6, which was followed by the inversion of the T-wave in leads I, II, aVL, aVF, V2-V6. Laboratory tests showed slightly elevated TnT – 0.718 ng/ml and CK-MB - 33 U/l. An urgent coronary angiography was performed – no significant coronary artery stenosis was found. Echocardiography carried out 24 hours after admission revealed characteristic pattern of akinesis in the distal half of the left ventricle and ejection fraction reduced to 48%, with an improvement after five days.

The patient has not been treated due to mental disorders in the past. During the hospitalization symptom of mood disorders were present – the patient felt sad, hopeless, expressed the wish to join the deceased, but denied the suicidal intentions. She was remembering things connected with the niece and felt guilty for not being able to help her. She was also concentrated on her own health problems and experienced restlessness, unexplained pains and other complaints.

Basing on the clinical features and diagnostic findings, in both patients the tako-tsubo cardiomyopathy was diagnosed. Patients were treated according to the guidelines for the management for STEMI; during the hospitalization there was no recurrence of the chest pain. Both patients were discharged after 7 days of hospital stay, with the recommendation of ambulatory cardiac rehabilitation and psychiatric consultation.

In six-months period both women were in good physical condition, there was no need of hospitalization for any reason. The first patient was still under the supervision of the psychiatrist and treated due to depression.

DISCUSSION

As the tako tsubo cardiomyopathy often mimics an acute myocardial infarction, it is important to take it into account as a differential diagnosis, especially in female patients who underwent severe stress situation.

The range of emotional stress triggers in patients with tako-tsubo cardiomyopathy is very wide - it may occur in connection with such situations as family member death, excessive alcohol consumption, public presentation, quarreling or even travelling, it may also accompany or result from an acute psychiatric condition such as psychosis, panic attack or insomnia [3], which may appear as a primary disorder or due to the same stress trigger.

In few studies an impact of mood disorders such as anxiety and depression in tako-tsubo patients was investigated, authors reported its' significantly higher prevalence in this group in the comparison with an acute coronary syndrome group (21% vs 40%) [8, 9]. Authors suggest that these patients may reveal higher level of catecholamines during stress or have increased sensitivity to catecholamine stimulation. Those correlation requires further studies.

Presented cases confirm the direct impact of stress on physical health, and are the example how the dramatic experience may involve and affect many different participants, leading not only to the mental disorders, but causing life-

threatening disease. Basing on mentioned experience it appear that the younger age, professional activity, and a family support are the factors contributing to cope with the grief after losing a close person.

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