

*Case report***Takotsubo Cardiomyopathy-Unusual Cause of Chest Pain in Patients on Hemodialysis**

Ivana Juric and Nikolina Basic-Jukic

School of medicine, University of Zagreb, Department of nephrology, arterial hypertension, dialysis and transplantation, University hospital centre Zagreb, Zagreb, Croatia

Abstract

Takotsubo cardiomyopathy is rather rare entity among patients on hemodialysis with very few cases reported in the literature to date. This syndrome is characterized with transient left ventricular dysfunction and apical motion abnormality with the absence of coronary artery disease and by clinical features it is mimicking acute coronary syndrome. It almost always follows high level of emotional or physical stress. Although rarely described, it should be considered as a differential diagnosis in patients on hemodialysis presenting with the symptoms of acute coronary syndrome, especially in the setting of acute stress. It is possible the condition is underdiagnosed giving the wide range of its clinical presentations.

To the best of our knowledge there are 11 cases and here we present 12th case and the review of the literature.

Keywords: Takotsubo cardiomyopathy, hemodialysis, physical stress

Introduction

Takotsubo cardiomyopathy is characterized by transient left ventricular dysfunction and apical motion abnormality with the absence of coronary artery disease. Its clinical presentation resembles acute coronary syndrome [1]. It is rather rare entity among patients on hemodialysis with very few cases reported in the literature to date [2]. To the best of our knowledge there are 11 cases and here we present 12th case and the review of the literature.

Case report

At the age of 61 patient with end stage renal disease due to polycystic kidney disease started peritoneal dialysis treatment. After 11 months of treatment, she developed umbilical hernia and was switched to hemodialysis. In the mean time she started workup to be listed

for kidney transplantation. Due to repeated urinary tract infections followed by hematuria as well as the size of her polycystic kidneys right sided nephrectomy was performed followed by left sided nephrectomy after 9 months. After 14 months on hemodialysis she presented in emergency room with left sided chest pain and general weakness one day after her regular dialysis treatment. Initial ECG showed 2 mm ST elevation in V2-V6 leads (Figure 1) with elevated cardioselective enzymes. Acute coronary syndrome was suspected and coronary angiography followed revealing no significant obstruction of coronary arteries. Echocardiography revealed akinesia of all apical myocardial segments and significant systolic dysfunction (LV EF=30 %) (Figure 2). She was diagnosed with Takotsubo cardiomyopathy and treated with β -blocker, ACEi and ASK. She remained stable, with no chest pain, no significant arrhythmias recorded and follow up echocardiography performed on day 4 after admission showed almost complete systolic function recovery (LV EF=55%) with minimal apical akinesia, and ECG finding showed no abnormalities. Further follow up echocardiogram after 1 month showed normal systolic function with no apical akinesia whatsoever. Seventeen months later she was successfully transplanted with excellent outcome. This is the 12th case of Takotsubo cardiomyopathy in patients on hemodialysis followed by complete recovery and successful kidney transplantation.

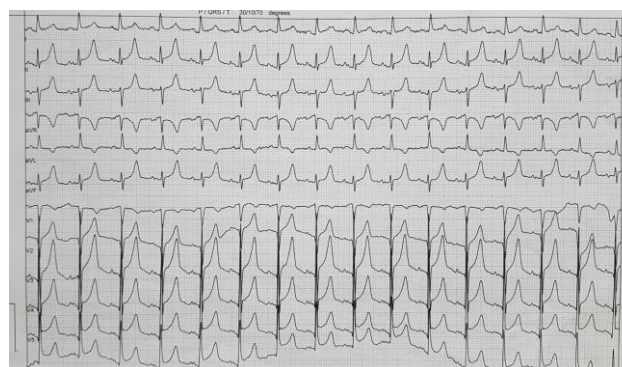


Fig. 1. ECG finding finding at the time of diagnosis

Correspondence to:

Nikolina Basic-Jukic, Department of nephrology, arterial hypertension, dialysis and transplantation University hospital centre Zagreb, Kispaticeva 12, 1000 Zagreb, Croatia; E-mail: nina_basic@net.hr, nbasic@kbc-zagreb.hr

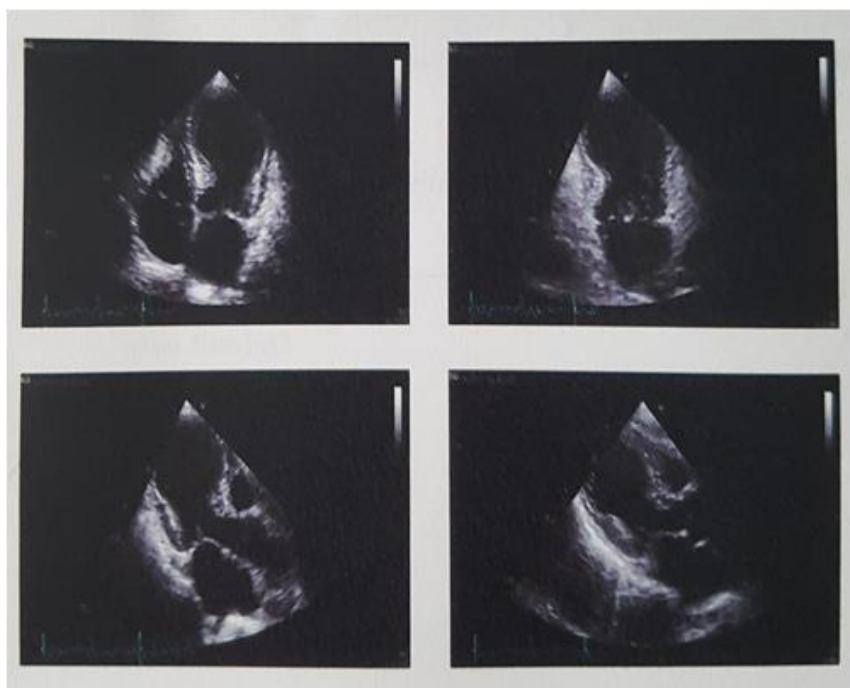


Fig. 2. ECHO finding at the time of diagnosis

Discussion

Takotsubo cardiomyopathy is syndrome characterized with clinical signs mimicking acute coronary syndrome, typical transient left ventricular apical ballooning with left ventricular dysfunction, ECG changes by means of ST segment elevation or T-wave inversion and elevated levels of cardioselective enzymes without any angiographic evidence of obstructive coronary artery disease (3). It almost always follows high level of emotional or physical stress and predominantly affects postmenopausal women [4,5]. The term takotsubo has been introduced in 1990. It is the Japanese term for ancient traps for octopus (tako=octopus, tsubo=a pot)

introduced to describe typical left ventricular silhouette in patients presenting with the syndrome [6,7]. Giving all these features the syndrome is also known as broken heart syndrome, stress induced cardiomyopathy and transient left apical ballooning syndrome [8-10]. The prevalence has been reported to be 1-2% of all patients presenting with ACS and it has been shown to increase with the increased awareness and access to early invasive coronary angiography [11].

The exact pathophysiological mechanism remains undetermined but it has been postulated that sympathetic hyperactivity with elevated catecholamine levels play key role in pathogenesis of Takotsubo car-

Table 1. Data from patients reported into the literature

| Author | Sex | Age | Symptom | Inducing factor | HD (years) | Outcome |
|---------------------|-----|-----|---|-------------------------------------|------------|-----------|
| Tsigaridas | f | 55 | Chest pain and substernal heaviness during dialysis | N/A | 2 | recovered |
| Bhogal | f | 75 | Chest pressure and heaviness during HD session | Family illness | 5 | recovered |
| Garea Garcia-Malvar | f | 55 | Chest pain-middle chest after HD session | Seizure | N/A | recovered |
| Shin 1 | f | 54 | Dyspnoea | Pneumonia | N/A | recovered |
| Shin 2 | f | 68 | Dyspnoea | Infectious colitis | N/A | recovered |
| Shin 3 | m | N/A | Dyspnoea | Pneumonia | N/A | recovered |
| Muratsu 1 | f | 63 | No symptoms | Seizure | 32 | recovered |
| Muratsu 2 | f | 59 | Fatigue | Family illness | 12 | recovered |
| Takemoto | f | 61 | Chest pain and dyspnoea during HD session | Cervical spondylosis surgery | 20 | recovered |
| Fukui | f | 84 | Chest discomfort | Abrupt smoking cessation after 60 y | 2 | recovered |
| Kusaba | m | 65 | left shoulder pain | Headache and fever-MRSA meningitis | 9 | recovered |
| Our patient | f | 63 | Chest pain | Family situation | 1 | recovered |

diomyopathy [12,13]. Patients with chronic kidney disease and on hemodialysis are at increased risk for cardiovascular morbidity and mortality, predominantly due to coronary artery disease [14]. In addition, sympathetic activity and catecholamine levels are increased in these patients [15,16]. Furthermore, patients on hemodialysis exhibit significant level of psychological stress as a consequence of physiological changes due to their illness that significantly affects their lifestyle and quality of life, and many of them also exhibit anxious or depressive symptoms [17,18]. Thus, patients on hemodialysis could be a group of patients with increased risk for Takotsubo cardiomyopathy in a setting of additional acute physical and/or emotional stress [2,19].

To the best of our knowledge there are 11 cases of Takotsubo cardiomyopathy in patients on maintenance hemodialysis in the literature to date. Vast majority of patients, including our case were female [10-12]. The age ranged from 54 to 84 years. In most of the patients there was physical or emotional preceding stressful event. Most of the patients presented with symptoms: half of them presented with chest pain, 3 patients had dyspnoea, 1 patient presented with severe left shoulder pain while only 2 patients were asymptomatic. All patients recovered completely [20-27] (Table 1).

Conclusion

Takotsubo cardiomyopathy should be considered as a differential diagnosis in patients on hemodialysis presenting with the symptoms of acute coronary syndrome, especially in the setting of acute stress. It is possible the condition is underdiagnosed giving the wide range of its clinical presentations. In this group of patients with otherwise high cardiovascular mortality it has favourable prognosis.

Conflict of interest statement. None declared.

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