

Case Report

Fishing Pot for Trapping Octopus-Acute Emotional Distress: An Under-Recognized Manifestation with Morbid Consequences/Outcomes

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Initial Psychiatric Evaluation:

The patient is 58-year-old Caucasian female, married with no prior psychiatric history and no significant medical comorbidities presented in office for psychiatric evaluation requesting medication for symptoms of anxiety and depression.

During evaluation patient shared her recent history of hospitalization triggered by an emotionally distressing experience at work where she was yelled at by her supervisor on a trivial issue. Patient reportedly left her work in despair and anguish, crying but while driving back home when she realized that she had a difficult time focusing while driving and developed palpitations accompanied with chest pain and diaphoresis compelling her to divert to a hospital ER

Patient underwent a comprehensive evaluation which showed small ST-segment elevation (about 1 mm)/ changes in V1-V3 and biphasic T wave changes in V1-V4 with sinus rhythm in her 12 lead EKG. Patient was also noted to have elevated cardiac enzymes and therefore was admitted for further cardiac diagnostic work up and management. Patient's other laboratory diagnostic workup, including complete blood work, lipid profile, and comprehensive metabolic panel (CMP) was unremarkable.

During her hospitalization patient underwent echocardiography which revealed left ventricular systolic dysfunction with marked regional wall motion abnormalities, but no coronary disease was found on cardiac catheterization. Reviewing of cardiologist record revealed no evidence of MI, however after 24-hours after angiography patient developed contrast induced nephropathy with elevation of serum creatinine 0.5 mg/dl. Patient was treated

with hydration, isotonic sodium chloride solution.

Patient was diagnosed with Takotsubo cardiomyopathy (TCM) during her hospitalization and was treated with medications, including beta-blockers carvedilol, aspirin, and Zetia for cholesterol, and Pantoprazole for GERD

Patient responded to the above-mentioned treatment and was discharged after five days of hospitalization without any complication. At patient's follow-up visit with her cardiologist six weeks after hospital discharge, patient returned to her baseline; her all the symptoms had disappeared, and follow-up echocardiography showed significant improvement in the left ventricular systolic function with normal wall motion.

Patient shares that she has been an anxious person all her life but prior to her recent hospitalization she was able to function independently and carry herself well in public. Now when she goes for job interviews, she feels extremely nervous, develops tremors, with increase palpitations, even though she is on a medication prescribed by her cardiologist that lowers her heart rate. Patient also reports panic-attack-like symptoms where she feels a choking like sensation finding her gasping for air, further elaborating that it happens very infrequently and in an unexpected fashion many at times in social settings (e.g. during a meeting, interview). Patient reports flashbacks of her traumatic experience when she developed her cardiac symptoms.

Patient endorses occasionally smoking cannabis, in addition to occasional use of alcohol, but denies any other illicit drug use. She denies any psychotic, obsessive compulsive, manic, hypomanic symptoms. Denies suicidal/homicidal ideation, intent or plan, denies any prior history

of self-harm. Denies psychiatric hospitalization or with no prior history of following up with a psychiatrist or ever being diagnosed with any psychiatric illness. She was not on any medical or psychotropic medications. She Reported occasional smoking of marijuana, and occasional use of alcohol

In reference to social history, patient reported- She was born and raised in Ohio. Her parents got divorced when she was 4 years old, and she witnessed their arguments and fist fighting, but overall, she reported that she had an uneventful childhood, and she gets along with both parents. Her parents have been cordial throughout her life, despite their own differences with each other. She gets along with her siblings as well. She has been married for 36 years. Reported that she has a supportive husband. She never had any legal issues. She denies any physical or sexual abuse. She finished high school and she worked in a medical office as a medical assistant throughout her life.

Mental Status Examination (MSE): The patient was alert and oriented to time, place, and person. Well groomed. Appears stated age, with good hygiene. She was calm and cooperative. Psychomotor activity was normal with fair eye contact. Speech was of increased rate occasionally, but normal rhythm and volume. Mood was anxious and the affect was congruent with mood. Thought process was logical and goal directed. Thought content was negative for suicidal ideation, homicidal ideation, hallucinations, or delusions at this time. Insight and judgment were fair.

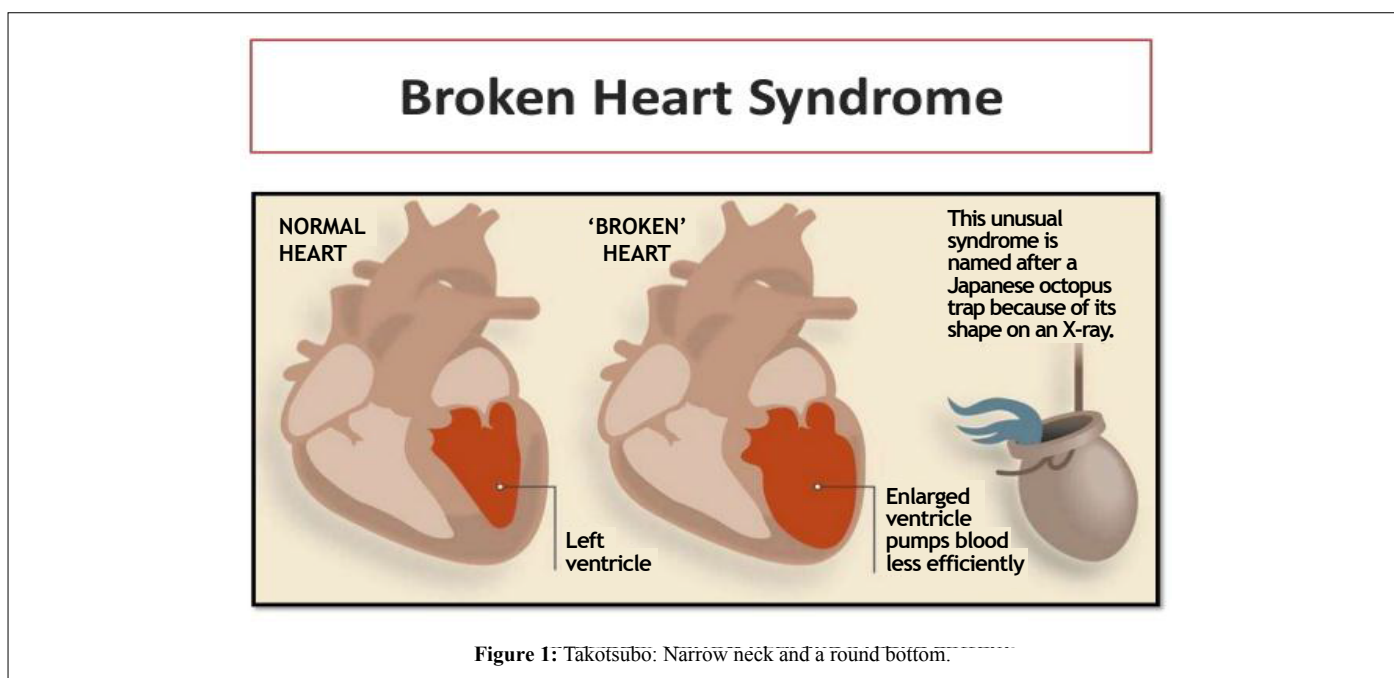
Impression/Dx:

- Unspecified anxiety disorder
- r/o Generalized anxiety disorder and PTSD
- panic attacks

Treatment Plan:

- Patient started initially on Zoloft 25 mg for two weeks, and later dose augmented to 50 mg for symptoms of anxiety and depression
- Discussed with the patient use of propranolol for social anxiety, but patient is already taking carvedilol and reported that she has some issue with her sinus rhythm, patient was encouraged to follow-up with her primary care physician. In the meantime, we will give her seven pills of Klonopin 0.5 mg; that should last her one month, as she as instructed to take it only in case of panic attack
- Provided education about risk factors associated with long-term benzo use, including dependence, tolerance as well as cognitive decline
- Discussed risks versus benefits of taking and not taking medication, including common side effects, and reinforced the importance of adherence
- Counseled patient regarding the detrimental effects drugs and alcohol can have on physical and mental health and advised the patient to abstain
- Encouraged to utilize coping mechanisms such as relaxation, exercise, and mindfulness yoga therapy

Introduction: TCM, also known as apical ballooning syndrome, stress-induced cardiomyopathy, and broken heart syndrome, is associated with emotional and physical stress. TCM caused by catecholamine-induced microvascular spasm or dysfunction (1) Patients mainly present with abrupt onset of chest discomfort, palpitations mimicking acute myocardial infarction (MI) in clinical settings. TCM also manifested by transient mild left ventricular dilation and dysfunction.



TCM is first described in Japan by Sato in 1990 (2). His colleague Dote in 1991 named it Takotsubo because the shape of the left ventricle resembles a Japanese octopus trap, with a round bottom and narrow neck (3). The incidence of TCM to be 1-2% of all patients presenting with acute coronary syndrome (ACS) (4)

Figure 1: Takotsubo: Narrow neck and a round bottom.

Pathogenesis: To date, the exact mechanism of TCM is unknown. The trigger is an intense emotional or physical stress such as catastrophic news, death of a relative, arguments, natural disasters (including Tsunamis), war, or even surgery can precipitate TCM (4) although the pathogenesis is not well understood, but several theories exist. TCM caused by the heart's reaction to a surge of stress hormones particularly, adrenaline, which causes heart damage by causing temporary constriction of the large or small arteries of the heart. The release of catecholamine leads to transient left ventricular systolic dysfunction via an increase in intracellular calcium and oxygen-free radicals, epicardial microvascular spasm, or direct injury to myocytes. (4, 5) Therefore, catecholamine excessive levels and B-adrenergic receptor stimulated apoptosis in cardiac myocytes, mediated by reactive oxygen species/kinase-dependent activation of the mitochondrial pathway are main theories implicated in the pathogenesis of TCM (4, 5). It's also possible that some drugs such as Epinephrine (EpiPen, EpiPen Jr.), Duloxetine (Cymbalta) Venlafaxine (Effexor XR) Levothyroxine (Synthroid, Levoxyl) may cause TCM by causing a surge of stress hormones.

Risk factors: There are various risk factors associated with TCM.

Gender: The condition affects women far more often than men, possibly due to association with estrogen.

Age: Most people who presented with TCM are older than 50 years.

A history of a neurological condition. People who have a head injury or epilepsy have a higher risk of TCM.

A previous or current psychiatric disorder, such as anxiety or depression, are associated with higher risk of TCM.

Discussion

Clinical features of TCM can be ranging from chest pain to hypotension and even cardiogenic shock. ECG findings include ST elevation or T wave inversion resembling acute coronary syndrome, but with normal or non-flow limiting coronary artery disease. TCM is associated with various arrhythmias ranging from benign QTc prolongation to severe life threatening ventricular arrhythmias. Due to acute presentation of this condition, most patient undergo urgent echocardiogram to identify underlying cause of this syndrome. Typical findings on echocardiography involve akinesia of the apex of the left ventricle and hyperkinesia of the base of the heart.

Additionally, the release of cardiac enzymes is

disproportionate to the extent of regional wall motion abnormality. Among patients with TCM, transient right ventricular dysfunction is linked to more complications, more extended hospitalization, and overall worsening of left ventricular systolic dysfunction. Recently, cardiac MRI has been increasingly used to diagnose TCM and to differentiate it from acute coronary syndrome (4). Treatment of TCM is often supportive based on patient's clinical presentation. However, beta-blocker and angiotensin-converting enzyme inhibitor or angiotensin II receptor blocking agent are mainstay of routine clinical practice.

In our patient, the use of b-blockers has been encouraged due to the possible abnormal response to excessive catecholamine. Recognizing and managing stress in life may also be important in helping to prevent TCM, though there's currently no evidence to prove this. Our patient had TCM due to stressful situation, and she was encouraged to utilize coping mechanisms such as relaxation, exercise, and mindfulness yoga therapy on daily basis.

Further, research indicates about 90% patients presenting with TCM are post-menopausal women. TCM should be on high index of suspicion in postmenopausal women. Estrogen has cardio protective properties, and this fact leads to the concept that postmenopausal women lack cardio protective effect of estrogen and, therefore, vulnerable to exaggerated response to circulating catecholamine. A research by Uehara et al. (6) showed that when ovariectomized rats without estradiol supplementation exposed to immobilization stress, they demonstrated significant increases in the heart rate and reduction in LV function in comparison to rats that had estradiol supplementation only. This high prevalence of TCM in post-menopausal women suggests a role for estrogen therapy investigated in future studies. It's also possible that patient may have TCM recurrence if they exposed to another stressful event. However, the odds of recurrence are less.

Summary/Conclusion

TCM is a reversible cardiomyopathy with a generally positive and favorable outcome in most of the patients. Previous research indicates various mechanisms that potentially contribute to the TCM pathogenesis, but the exact mechanism is still not known. Regardless of the underlying cause, patients with the TCM deserve special attention because this extensive distribution of wall motion abnormalities leads to potential complications, including pulmonary edema, hypotension, and heart failure. Although the main stay of management in patients with TCM is supportive. There is no consensus on pharmacological management of TCM due to the rarity of this condition and scarcity of randomized controlled trials (RCTs). Conservative treatment frequently leads to rapid resolution of symptoms. There is a need of additional research/ RCTs and development of national registry to better understands TCM prognosis, role of estrogen, and relaxation therapies in the management of TCM.

Although TCM is a rare condition, psychiatrist seldom see patients with broken heart syndrome in clinical settings, but it should be on high index of suspicion for correct diagnosis. Early recognition and treatment are the key to successfully treat this condition and to avoid expensive procedures and imaging studies.

Conflict of Interest Statement: The authors confirm that there is no conflict of interest regarding the publication of this article.

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