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Psychosis-Induced Takotsubo Syndrome

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Abstract

Background: Takotsubo Syndrome (TS) is an acute and reversible wall motion abnormality of the left or right ventricular myocardium, most commonly induced by emotional or physical stress. Mood and anxiety disorders are the most common mental triggers to TS.
Objective: The relationship between psychotic affective disorders and Takotsubo syndrome has been described very rarely.
Methods: The authors describe the case of a 55-year old woman with a previous history of depression and alcohol abuse, who presented to the emergency department with an acute psychotic episode that triggers an asymptomatic Takotsubo Syndrome.
Results/Conclusions: The authors wants to alert to the atypical presentation of TS and the multidisciplinary management crucial to favorable outcome.

Keywords: Takostubo cardiomyopathy; Catecholamines; Mental illness; Psyhcotic disorder; Antipsychotics

Case Description

We present the case of a 55-year-old female patient with past history of a non-specified depressive disorder with irregular psychiatric follow-up, as well as a history of alcohol dependence. One month prior to the admission she underwent an orthopedic knee surgery and decided to suddenly stop both the alcohol intake and the psychiatric medication. The surgery was uneventful, and she was discharged home. Until the presentation on emergency department the family reported subtle behavioral changes, as repetitive actions and slight irritation. She was brought to the ED after suddenly displayed erratic and frantic behavior, claiming that one of her children was going to be assaulted, despite every proof otherwise. On physical examination she was severely agitated and in acute distress with paranoid speech. The remaining examination was unremarkable and a cerebral computer tomography scan didn't show any lesions. The laboratory results reveal only a light anemia and leukocytosis with a negative C reactive protein (Table 1).

With necessity of beginning sedative medication an electrocardiogram (ECG) was performed revealing a sinusal rhythm with a ST elevation on leads V2 and V3. A high sensitivity I troponin becomes high elevated with no elevation on brain natriuretic peptide (Table 1). A summary echocardiogram showed LV systolic dysfunction with apical akinesia. She was admitted to the Cardiology Unit, where she stay asymptomatic on cardiac aspect, with maximum troponin I-hs on the second day. A coronary angiography performed that day didn't show any significant coronary disease but the left ventriculography reveals apical and mid-wall hypokinesis suggestive of TS (Figure 1).

She started on acetylsalicylic acid 100mg/day, bisoprolol 2.5mg/day and lisinopril 2.5mg/day with good clinical evolution and resolution of the ECG abnormalities. An echocardiogram at day 9 showed recovery of LV systolic function and she was

discharged from cardiology unit with assessment 1 month later for revaluation. Related to psychiatric disease, the patient continued to exhibit altered behavior and paranoid speech, experiencing primary persecutory delusions, delusional perceptions and delusional memories. She was then transferred to a Psychiatric inpatient service under treatment risperidone 2mg/day. During her stay at the Psychiatric unit, the patient did not tolerate risperidone's side effects of sedation and motor retardation, so it was switched to aripiprazole with good response, with residual primary delusion until the end of the admission. The patient was discharged home with the diagnosis of schizoaffective disorder.

Table 1: *Blood serum analytical results at the emergency department, on cardiology unit at day 2 and at discharge.*

	Emergency department	Day 2 of admission	Discharge	Reference value	Unit
Hemoglobin	11,2		10,7	12,0-16,0	g/dL
Mean globular volume	92,6			87-103	fL
Leucocytes	16,41		7,64	4,0-11,0	x109/L
Neutrophiles	85,1			53,8-69,8	%
Lymphocytes	9,1			22,9-36,6	%
Platelets	412		274	150-400	x109/L
Urea	19		21	10-50	mg/dL
Creatinin	0,89		0,69	0,51-0,95	mg/dL
Sodium	133		141	135-137	mEq/L
Potassium	3,5		4,5	3,5-5,1	mEq/L
C reactive Protein	4,2			<3,0	mg/L
Creatine kinase	115			10-149	U/L
Myoglobin	371			<146	ng/mL
Troponin I - hs	1285	8216		<16	ng/L
Brain natriuretic peptide (BNP)	18,3			<100	pg/mL

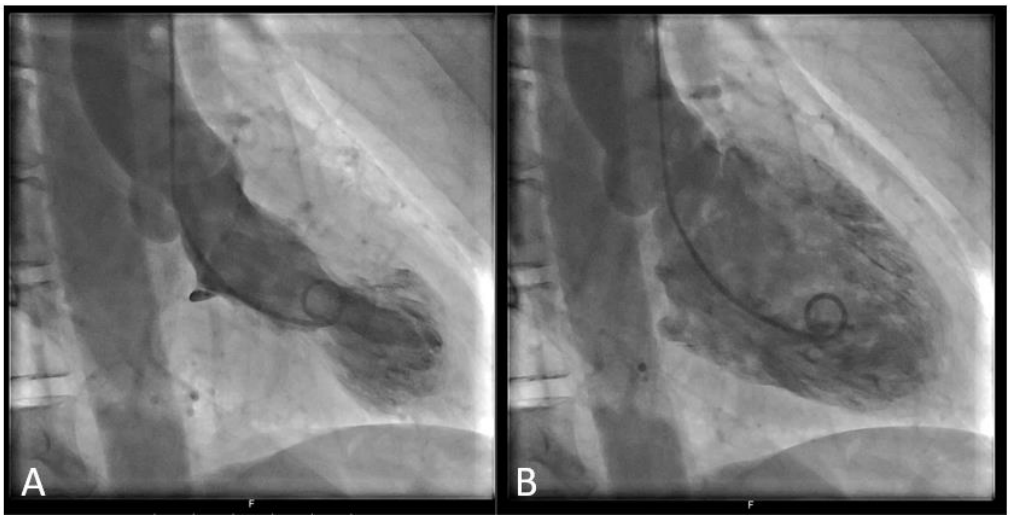

Figure 1: *a) Ventriculography of left ventricule in systole with apical and mid-wall hypokinesis. b) Ventriculography in diastole.*

Discussion

Takotsubo syndrome (TS) is an acute and reversible wall motion abnormality of the left or right ventricular myocardium. The condition was named after the Japanese octopus pots ("takostubo") that resembles the characteristic left ventricular end-systolic apical ballooning shape that can be seen on the transthoracic echocardiogram or on the ventriculography of these patients [1]. Typically occurs in post-menopausal women and is usually elicited by an identifiable emotional or physical stress in about two thirds of cases [1,2]. Although its etiology is still not completely understood, the most widely reported hypothesis is a direct catecholamine-mediated myocardial stunning, caused by high levels of serum catecholamines. Other possible mechanisms include multivessel vasospasm, estrogen induced and cardiovascular stress responses [1]. TS is usually manifested by

symptoms similar to those of an acute coronary syndrome (ACS), such as acute substernal chest pain, nausea, syncope, dyspnea or palpitations. On ECG we will find usually ST-segment elevation, T-wave inversion or QTc prolongation, sometimes with temporal evolution as seen in ACS. The biomarkers are usually elevated, with troponin values equally elevated compared to ACS [2,3]. The diagnose in our patient was particularly challenging since she didn't report any symptoms. Although the presence of troponin elevation, ECG and echocardiogram findings poses a suspicion on TS, the final differential diagnoses was made by coronary angiographic and ventriculography. These shows absence of either obstructive coronary artery disease or acute plaque rupture and the observation of the typical left ventricle contraction pattern, on ventriculography [3]. The recommended treatment is supportive with management of complications. Prognosis in the acute phase is similar to that of ACS, with approximately 30% of patients having serious cardiac complications but unlike them, in TS a full recovery of the left ventricular function occurs in days to several weeks [2,4].

In recent years, there has been as increasing number of literature linking pre-existing or active psychiatric disease and TS. Of note the majority pre-existing are related with mood or anxiety disorders with few cases related with other psychiatric illness, including schizophrenia-spectrum and other psychotic disorders [2,4]. Related to an "acute" presentation or exacerbation of psychiatric disorders, in the International Takotsubo Registry only 10% of patients were diagnosed with "acute psychiatric disorders". Despite this, the proportion of TS clearly triggered by acute psychiatric decompensation remains unknown [4]. The pathology behind these association is largely speculative with the most reported mechanism being an interaction between the brain and heart mediated by autonomic nervous system activation and an increase blood catecholamine levels [1,5]. Although some psychotropic medications have also been associated as triggers on TS, most of them in the setting of relatively rapid uptitration or in overdose [4], in the case that we report, this association is not a possible mechanism since the patient stopped all the medication 1 month before. TS has been described in context of acute alcohol withdrawal to, for the case presented is not a possibility mechanism since she suspended all the consume 1 month before [5].

There are no particular orientations in the literature towards the treatment of acute psychiatric illness in the context of TS. This is particularly true in the case of psychotic disorders, since it is such a rare phenomenon. Accordingly, the treatment of our specific patient was oriented by general guidelines and recommendations, taking into account her clinical picture and comorbidities. Risperidone was initially chosen because of its anti-psychotic efficacy, anxiolytic properties, long-term metabolic effects and low risk of QTc interval prolongation, compared to other anti-psychotics [6].

Conclusion

Our case adds important information to the rare interaction between psychosis and TS. Also, to the best of our knowledge, this is the first reported case of TS as a manifestation of a first episode psychosis in the context of schizoaffective disorder.

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