

# Transient Global Amnesia and Takosubo Syndrome: A Case Report.

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**Abstract:** Broken heart syndrome, also called apical ballooning syndrome or Takotsubo cardiomyopathy, is characterized by an acute, transient systolic dysfunction of the apical and mid segments of the left ventricle. There have been reports showing an association with neurologic disorders. In this article, we present the case of a female patient, who suffered from an episode of transient global amnesia followed by takotsubo cardiomyopathy.

**Keywords:** Takotsubo cardiomyopathy, Transient global amnesia, Acute coronary syndrome.

## INTRODUCTION

Takotsubo cardiomyopathy is a cardiac disease originating from stress. Its main characteristics are transient dysfunction of the left ventricle accompanied with ECG findings and elevated cardiac enzymes, which simulates an acute myocardial infarction, but in absence of coronary artery disease. The transient global amnesia has an acute onset and is totally reversible. Both clinical disease entities occur after a psychogenic stimulus, mainly in postmenopausal women. Simultaneous occurrence of both syndromes has rarely been documented.

## CASE REPORT

A 67-years old female patient with a history of hypertension and hyperlipidemia visited the Neurology department with symptoms of transient global amnesia after anxiety and emotional stress for the last 48 hours due to financial crisis. Clinical examination showed no pathological findings. The patient experienced, before the onset of anxiety and stressful condition, an acute chest pain radiating to the back which was accompanied by nausea and vomiting. The patient underwent a CT scan of the brain which showed no pathology of the brain parenchyma or of corresponding vascular structures.

Laboratory tests showed a high blood troponin level, the ECG demonstrated deep inverted T waves in all chest leads, which represented dysfunction of the

anterior wall. This finding was absent in the ECG taken in the emergency room. A two-dimensional trans-thoracic echocardiogram documented a severe hypokinesia of the apex and the left ventricular ejection fraction was 30%.

The patient was admitted in the cardiologic unit. Coronary angiography showed no abnormalities but left ventriculography demonstrated the presence of a typical apical ballooning image, which is indicative for the diagnosis of takotsubo cardiac disease. Magnetic resonance imaging (MRI) and electroencephalography (EEG) showed no abnormalities such as ischemic cerebral events or epilepsy. A two-dimensional trans-thoracic echocardiogram after one week showed an excellent contractile function of the left ventricle with an ejection fraction of 60 %. The patient was released from the hospital without symptoms.

## DISCUSSION

Takotsubo cardiomyopathy is an important cardiac disorder in the differential diagnosis of acute coronary syndrome. This diagnosis has important implications for clinical management especially during the early stage of the syndrome.

The pathophysiology of takotsubo cardiomyopathy is not well understood though several possible mechanisms have been proposed. Early reports have suggested that takotsubo cardiomyopathy might be the result of prolonged ischemia due to multivessel epicardial coronary artery spasm [1-2]. Others have suggested coronary microvascular dysfunction [3]. The characteristics of microvasculature dysfunction after acute psychological stress in patients with takotsubo

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cardiomyopathy include abnormality of endothelium-dependent vasodilation, excessive vasoconstriction, and impairment of myocardial perfusion [4].

Catecholamines may play a role in triggering takotsubo cardiomyopathy because patients often have preceding emotional or physical stress. Many authors have reported high levels of catecholamines and their metabolites at the time of presentation, which remained elevated for 6–10 days [5]. Patients with takotsubo cardiomyopathy usually have an excellent prognosis, and an almost perfect recovery is observed in 97% of the cases [6].

In conclusion, both diseases exhibit similarities in the triggering factors, underlying pathogenic mechanism and their tendency to resolve to previous healthy status.

In our current case psychogenic stress facilitated the simultaneous appearance of takotsubo cardiomyopathy and transient global amnesia. Hence, physicians should be aware of chest pain following a recent stressful event since the diagnosis of takotsubo cardiomyopathy, can lead to a medical pitfall. Close relationship between neurologist and cardiologist is

required to formulate a more preventive and therapeutic management strategy.

## REFERENCES

- [1] Sato H, Tateishi H, Dote K, Uchida T, Ishihara M. Tako-tsubo-like left ventricular dysfunction due to multivessel coronary spasm. In: Kodama K, Haze K, Hori M, editors. *Clinical aspect of myocardial injury: from ischemia to heart failure*. Tokyo: Kagakuhyoronsha Publishing Co 1990; p. 56-64.
- [2] Dote K, Sato H, Tateishi H, Uchida T, Ishihara M. Myocardial stunning due to multivessel coronary spasm: a review of 5 cases. *J Cardiol* 1991; 21: 203-14.
- [3] Ito K, Sugihara H, Kawasaki T, Yuba T, Doue T, Tanabe T, Adachi Y, Katoh S, Azumi A, Nakagawa M. Assessment of ampulla (takotsubo) cardiomyopathy with coronary angiography, two-dimensional echocardiography and 99mTc-tetrofosmin myocardial single photon emission computed tomography. *Ann Nucl Med* 2001; 15: 351-5.
- [4] Martin EA, Prasad A, Rihal CS, Lerman LO, Lerman A. Endothelial function and vascular response to mental stress are impaired in patients with apical ballooning syndrome. *J Am Coll Cardiol*. 2010; 56: 1840-1846.
- [5] Wittstein IS, Thiemann DR, Lima JA, BaughmanKL, Schulman SP, Gerstenblith G, Wu KC, Rade JJ, Bivalacqua TJ, Champion HC. Neurohumoral features of myocardialstunning due to sudden emotional stress. *N Engl J Med* 2005; 352: 539-48.
- [6] Lampropoulos KM, Kotsas D, Iliopoulos TA. Apical ballooning syndrome: a case report. *BMC Res Notes* 2012; 5: 698.

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