

## Takotsubo cardiomyopathy (Broken heart syndrome)

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### Abstract

Takotsubo cardiomyopathy is an acute reversible cardiomyopathy characterised by transient regional left ventricular (LV) motion abnormalities. It is diagnosed on a coronary angiography and left ventriculography. We report the case of a 50-year-old lady who presented with sudden onset of chest pain, with no history of cardiac disease and no risk factors. Remarkably though, she had lost her husband the previous night. Coronary and LV angiography was done which revealed findings typical of takotsubo cardiomyopathy. We report this case for its rarity. Informed consent was taken from the patient before undertaking and reporting this study.

**Keywords:** Takotsubo cardiomyopathy, Broken Heart Syndrome.

### Introduction

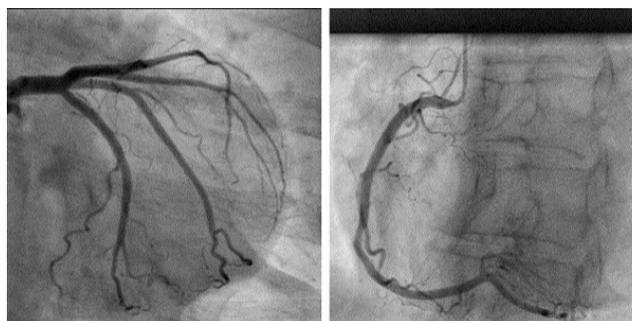
Takotsubo cardiomyopathy or stress-induced cardiomyopathy is an acute reversible cardiac syndrome, characterised by transient regional left ventricular (LV) motion abnormalities (apical ballooning) and mimics acute coronary syndrome (ACS). It is a rare syndrome and studies have reported that 1.7-2.2% of patients who had suspected ACS were subsequently diagnosed with takotsubo cardiomyopathy.<sup>1,2</sup> According to another study, it was diagnosed in about 0.02% of all hospitalisations in the United States.<sup>3</sup> The syndrome was first defined in Japan in 1990 and although the exact aetiology is unknown, the syndrome shows significant relationship with emotional and physical stressors.<sup>4</sup>

### Case Presentation

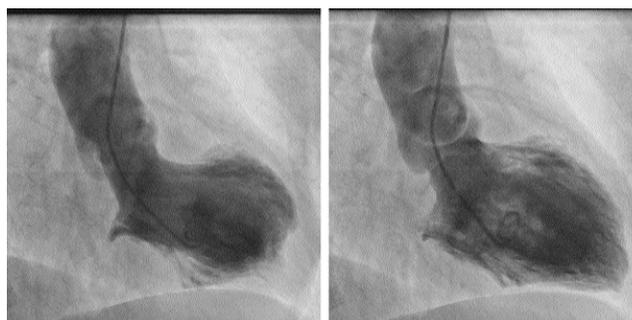
A 50-year-old lady was admitted to Royal Derby hospital in July of 2014 with complaint of sudden onset of chest pain. She was previously fit and well, with no history of cardiac disease and no cardiac risk factors. Notably, she had lost her husband the night before the episode of

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**Figure-1:** Coronary angiography: Selective left coronary artery angiography (A) and right coronary artery angiography (B) shows no angiographically detectable coronary artery disease.



**Figure-2:** Left ventriculogram: Morphology of left ventricle with typical appearance of apical ballooning.

acute chest pain.

An electrocardiogram (ECG) done by the paramedics showed acute anterior ST elevation myocardial infarction (MI).

A coronary angiography was performed, which showed left main stem (LMS), left anterior descending (LAD), left circumflex (LCX) and right coronary artery (RCA) patent with no evidence of spasm or atherosclerosis (Figure-1). LV angiography demonstrated characteristic apical ballooning and hypokinesia with good basal contractility (Figure-2). Cardiac enzymes showed modest troponin rise.

These findings were consistent with Takotsubo cardiomyopathy and the patient was managed

conservatively. She was put on dual anti-platelet therapy, beta blocker and angiotensin-converting-enzyme inhibitors (ACE inhibitors) for a period of one year.

### Discussion

Takotsubo cardiomyopathy is a rare non-ischaemic and reversible cardiomyopathy.<sup>5,6</sup> The exact cause is not known but some experts propose a sudden surge of catecholamines which stun the heart and trigger changes in myocardium or coronary blood vessels, or both, thus preventing the left ventricle from contracting effectively.<sup>7</sup> Acute stress remains a significant trigger factor for Takotsubo cardiomyopathy.<sup>7,8,10</sup> In general most patient presenting with Takotsubo cardiomyopathy are post-menopausal females with a mean age of 62 to 76 years.<sup>8-10</sup>

The symptoms of Takotsubo cardiomyopathy are indistinguishable from those of a heart attack with ECG changes and changes in cardiac enzymes also being consistent with those of a heart attack.<sup>8,11</sup> Takotsubo can only be distinguished by performing a coronary angiography and left ventriculography.<sup>8,10</sup>

There are no definite guidelines for treatment of Takotsubo cardiomyopathy and cardiologists usually recommend standard heart failure medication.<sup>10</sup> Most abnormality in ventricular function clears up within one to four weeks, and most patients recover completely within two months. The mortality related to the disease is low but heart failure has been observed in about 20% of the patients.

### Conclusion

Takotsubo cardiomyopathy is a rare disease and increasing its medical literature will help the clinicians

better understand, diagnose and manage this disease. Its importance is recognised by the fact that it was included in the American Heart Association's classification of cardiomyopathies in 2006.

### References

1. Bybee KA, Prasad A, Barsness GW, Lerman A, Jaffe AS, Murphy JG, et al. Clinical characteristics and thrombolysis in myocardial infarction frame counts in women with transient left ventricular apical ballooning syndrome. *Am J Cardiol* 2004; 94: 343-6.
2. Ito K, Sugihara H, Katoh S, Azuma A, Nakagawa M. Assessment of Takotsubo (ampulla) cardiomyopathy using 99mTc-tetrofosmin myocardial SPECT - comparison with acute coronary syndrome. *Ann Nucl Med* 2003; 17: 115-22.
3. Deshmukh A, Kumar G, Pant S, Rihal C, Murugiah K, Mehta JL. Prevalence of Takotsubo cardiomyopathy in the United States. *Am Heart J* 2012; 164: 66-71. doi: 10.1016/j.ahj.2012.03.020.
4. Purgason K. Broken hearts: differentiating stress-induced cardiomyopathy from acute myocardial infarction in the patient presenting with acute coronary syndrome. *Dimens Crit Care Nurs* 2006; 25: 247-53.
5. Zuhdi AS, Yaakob ZH, Sadiq MA, Ismail MD, Undok AW, Ahmad WA. Takotsubo cardiomyopathy in association with hyperthyroidism. *Medicina (Kaunas)* 2011; 47: 219-21.
6. Nagarakanti R, Whellan D, Rubin S, Mather PJ. Reversible cardiomyopathies. *Cardiol Rev* 2007; 15: 178-83.
7. Akashi YJ, Goldstein DS, Barbaro G, Ueyama T. Takotsubo cardiomyopathy: a new form of acute, reversible heart failure. *Circulation* 2008; 118: 2754-62.
8. Scantlebury DC, Prasad A. Diagnosis of Takotsubo cardiomyopathy. *Circ J* 2014; 78: 2129-39.
9. Pilgrim TM, Wyss TR. Takotsubo cardiomyopathy or transient left ventricular apical ballooning syndrome: a systematic review. *Int J Cardiol* 2008; 124: 283-92.
10. Eitel I, von Knobelsdorff-Brenkenhoff F, Bernhardt P, Carbone I, Muellerleile K, Aldrovandi A, et al. Clinical characteristics and cardiovascular magnetic resonance findings in stress (takotsubo) cardiomyopathy. *JAMA* 2011; 306: 277-86.
11. Kawai S, Kitabatake A, Tomoike H, Takotsubo Cardiomyopathy Group. Guidelines for diagnosis of takotsubo (ampulla) cardiomyopathy. *Circ J* 2007; 71: 990-2.