Short Review

Tako-tsubo Cardiomyopathy or Broken Heart Syndrome

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Tako-tsubo cardiomyopathy is a rare but reversible entity that mimics acute myocardial infarction or congestive heart failure. Its timely recognition is important not only for appropriate treatment of this condition but also to prevent the disease recurrence and the use of potentially life threatening procedures for comparable conditions.

Keywords: Takotsubo, Cardiomyopathy, Congestive heart failure, Myocardial Infarction

Introduction

First described by Kono and colleagues in 1994. Tako-tsubo cardiomyopathy(TTC) ,Japanese word for the octopus trap is variously known as broken heart syndrome, stress cardiomyopathy, transient apical ballooning and ampulla cardiomyopathy.

Epidemiology

The prevalence of TTC ranges from 0.7-1 % in the population.[1, 2] More than 70% of patients are women of post- menopausal age group. In the largest study ever conducted by Tsuchihashi, women constituted 86% of the patients with the mean age of 67 years.[3] (Table 1)

ETIOPATHOGENESIS

This type of cardiomyopathy is of sudden onset and occurs in structurally normal heart . Certain common characteristics found in all the studies conducted so far include pre-existing severe stress, mostly affecting the elderly females, occurring in structurally normal hearts, the presence of a high level of serum catecholamines, the absence of coronary artery disease or myocarditis and transient left ventricular dysfunction.

The etiology of takotsubo cardiomyopathy is not fully understood, but several mechanisms that are suspected include microvascular dysfunction for which the most accepted theory is dysfunction of the coronary arteries at the microvascular level that contributes to cardiomyopathy. As the level of lesion is at microscopic level, conventional angiographic studies are normal.

1. Anatomically abnormal Left Anterior Descending Coronary Artery (LAD): Representing deficiencies in an abnormally long LAD supplying the apex and the inferior wall of the heart that is thought to contribute to the cardiomyopathy [4]. Other researchers have shown that this anatomical variant is not common enough to explain takotsubo cardiomyopathy.[5] This theory also does not explain documented variants where the midventricular walls or base of the heart fail to contract (akinesis).

2. Transient Vasospasm: Acute emotional stress might result in coronary vasospasm causing temporary loss of blood flow .The stunned myocardium in turn is thought to contribute to the reversible myocardial dysfunction.[6,7]

CLINICAL FEATURES

Takotsubo cardiomyopathy is a disease of post-

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Table1. Age and sex distribution in Takotsubo Cardiomyopathy

	Number of patients	Women (%)	Mean age
Tsuchihashi (JACC 2001)	88	86	67
Seth (Cardiology 2003)	12	92	63
Sharkey (Circulation 2005)	22	100	65
Wittstein (NEJM 2005)	19	95	63

menopausal females. It is a diagnosis of exclusion .Most patients have some preceding acute stress which can range from trivial events like singing or speaking in public to well recognized stressful event like death in family[8] The typical presentation of takotsubo cardiomyopathy is a sudden onset of congestive heart failure or chest pain associated with non-specific ECG changes in the form of ST-T abnormalities, ST elevation,Q waves and/or QT prolongation with large negative T waves. Cardiac enzymes are slightly increased on admission, and may somewhat increase subsequently. While this increase in the cardiac enzymes might be due to injury to the myocytes, the peak value is too low to indicate the development of a myocardial infarction or fulminant myocarditis. Brain natriuretic peptide levels are high but its level is not found to correlate with prognosis. Echocardiography reveals the hallmark feature from which this cardiomyopathy gets its name in the form of bulging out of the left ventricular apex with a hypercontractile base of the left ventricle giving the appearance of an octopus trap (tako tsubo", or octopus trap). Coronary angiogram reveals unobstructed arteries. Biopsy findings are non- specific though focal myocytolysis and monocytic infiltration are found and culture of tissues does not implicate microbiological agents.

Treatment And Clinical Course

The treatment of takotsubo cardiomyopathy is supportive. In individuals with hypotension, support with inotropic agents or an intra-aortic balloon pump have been used. Stress reduction can help if the syndrome is complicated by continued stress or by a syndrome similar to post-traumatic stress syndrome. However, to date the roles of mood elevators and anti-depressants have not been studied. Stress reduction is also important for the fact that the disease has been found to recur if patient suffers repeat experiences of the same stressful event, though recurrences are rare.

As the cardiomyopathy is reversible more than 90% of patients can be expected to recover their cardiac function provided they survive the initial event.[9,10]

References

1 Dote K, Sato H, Tateishi H, Uchida T, Ishihara. M. Myocardial stunning due to simultaneous multivessel coronary spasms: a review of 5 cases. *J Cardiol* 1991;**21**:203-14. [1841907]

2 Kawai S, Suzuki H, Yamaguchi H, et al. Ampulla cardiomyopathy ('Takotsubo' cardiomyopathy): Reversible left ventricular dysfunction with ST segment elevation. *Jpn Circ J* 2000;**64**:156-9. [10716533]

3 Tsuchihashi K, Ueshima K, Uchida T, et al. Transient left ventricular apical ballooning without coronary artery stenosis: a novel heart syndrome mimicking acute myocardial infarction. Angina Pectoris-Myocardial Infarction Investigations in Japan. *J Am Coll Cardiol* 2001;**38**:11-8. [11451258]

4 Ibáñez B, Navarro F, Farré J, et al. [Tako-tsubo syndrome associated with a long course of the left anterior descending coronary artery along the apical diaphragmatic surface of the left ventricle.]. *Revista española de cardiología* 2004;**57** : 209-16. [15056424]

5 Inoue M, Shimizu M, Ino H,et al. Differentiation between patients with takotsubo cardiomyopathy and those with anterior acute myocardial infarction. *Circ J 2005;***69**:89-94**. [**15635210]

6 Kurisu S, Sato H, Kawagoe T, et al. Tako-tsubo-like left ventricular dysfunction with ST-segment elevation: a novel cardiac syndrome mimicking acute myocardial infarction. *American Heart Journal* 2002;**143**:448-55. [11868050]

7 Dote K, Sato H, Tateishi H, Uchida T, Ishihara. M. Myocardial stunning due to simultaneous multivessel coronary spasms: a review of 5 cases. *J Cardiol* 1991;**21**:203-14. [1841907]

8 Kurisu S, Sato H, Kawagoe T, et al. Tako-tsubo-like left ventricular dysfunction with ST-segment elevation: A novel cardiac syndrome mimicking acute myocardial infarction. *Am Heart J* 2002;**143**:448-55. [11868050]

9 Akashi YJ, Nakazawa K, Sakakibara M, Miyake F, Koike H, Sasaka K. The clinical features of takotsubo cardiomyopathy. *QJM* 2003;**96**:563-73. [_12897341]

10 Nyui N, Yamanaka O, Nakayama R, Sawano M, Kawai S. Tako-Tsubo' transient ventricular dysfunction: a case report. *Jpn Circ J* 2000;**64**:715-9. [10981859]