Tako Tsubo Cardiomyopathy: Case report after attempted suicidal partial hanging

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ABSTRACT
Tako Tsubo cardiomyopathy presents with typical clinical features of acute coronary syndrome such as pain in chest, excessive sweating, difficulty in breathing, arrhythmias or generalized fatigue. Most common risk factors for this are extreme physical and emotional syndrome. This case report highlights about a 47 years old male who came to the emergency department with history of
attempted suicidal partial hanging and developed symptoms of acute coronary syndrome which was diagnosed as Tako Tsubo cardiomyopathy on 2D echocardiography.

**Keywords:** Tako Tsubo cardiomyopathy, suicide, hanging, acute coronary syndrome

### 1. INTRODUCTION

Tako Tsubo cardiomyopathy is also known as Apical Ballooning Syndrome and Broken heart syndrome, a rare cardiovascular disease often presents in patients as impending doom just like heart attack. It has characteristic features of transient dysfunction of the left ventricule with hypokinesia of apical segment and distal septum. Coronary vessels are usually normal in angiography (Gianni et al., 2006). This was first described in the Japan, but now it has been reported that this syndrome is associated with extreme stress such as emotional and physical stress (Wittstein et al., 2005). On literature search no case has been reported from India, here we report a 47 years old male who came with symptoms of acute coronary syndrome after attempted suicidal hanging later diagnosed as Tako Tsubo cardiomyopathy.

### 2. CASE

A 47 years old male was brought to our casualty in an altered sensorium with alleged history of attempted suicidal hanging. The study period is between January – February 2020. On asking history from his relatives he was not having any H/O Hypertension, Diabetes Mellitus (DM), Ischemic Heart Disease and Neuropsychiatric illness. Patient was chronic alcoholic and attempted suicidal partial hanging under the influence of alcohol. He was having some financial conflict within his family.

**Figure 1** Showing Ligature marks over neck in a suicidal hanging patient

On examination, patient was in respiratory distress with tachycardia of 116 Beat per minute and blood pressure (BP) 150/100 mm Hg in right arm supine position. A hanging mark was clearly visible around the neck (Figure 1). His pupils were normal and equally reacting to light. Patient was semiconscious and irritable. His Glasgow coma scale (GCS) was 6. All his deep tendon reflexes biceps, triceps, knee, ankle were exaggerated. Bilateral Planters were Flexor. Thus in view of airway protection, he was immediately intubated in the emergency department and was kept on mechanical ventilation. Patient was hemodynamically stable; Arterial Blood Gas was also within normal limit. His electrocardiography (ECG) on initial evaluation was suggestive of sinus tachycardia. His Complete Blood Count was done which was suggestive of Hemoglobin: 13.7%, Total Leucocyte count: 11400, Platelet: 1.32. His 4 hourly Random blood sugar was within normal limit, Normal kidney and liver function test. Next morning, He was fully awake and was maintaining saturation on low pressures, patient was stable throughout the course and thus on the 3rd day he was extubated. His cervical spine computerized tomography did not reveal any fracture and so he was put on hard cervical collar to provide stability of the neck. On 4th days patient started complaining of severe chest pain which was retrosternal in location, crushing in character with excessive
sweating. His 12-lead ECG was done which revealed T wave inversion in Lead I, aVL, chest leads V_2-V_6, and Leads II, III and AVF (Figure 2). His CKMB was 142, and subsequent 95 and TROP-I was 829. His 2D Echo showed hypokinesia of the apical segment and distal septum with “ballooning out” of the apex of left ventricle. There was no evidence of mitral regurgitation dynamic left ventricular outlet obstruction or with Lt (Left) Ventricular EF (Ejection Fraction) of 55% (Figure 3). His coronary vessels angiography was within normal. Patient was given loading dose of anti platelets and was started with dual anti platelets, anti-anginals and metoprolol, later on his heart rate came down to 102/min. Patient was doing well on follow up after two weeks.

Figure 2 A 12-lead ECG was repeated which revealed T wave inversion in Lead I, aVL, V_2-V_6, and Leads II, III and AVF.

Figure 3 Echocardiogram showing segmental hypokinesia of the distal septum as well as the apex with “ballooning out” of the apex of the left ventricle.

3. DISCUSSION
Tako Tsubo cardiomyopathy is an emergency medical condition often presents as typical acute coronary syndromes like severe heart attack. The symptoms usually preceded by severe physical or emotional stress as seen in our patient which may be its etiopathogenesis though poorly understood. Most common precipitating events are unexpected death of a close relative, domestic violence, frightening medical diagnosis, financial debt, chronic severe health debilities, and even “benign” or “pleasant” exciting events (Wittstein et al., 2005). Possible mechanism may be alternating demands of oxygen of the heart with emotional stress and exercise which may affect the resistance of coronary vessels and thus strain to the myocardium (Wittstein et al., 2005; Ako et al., 2006). This pathophysiology can be same for in a patient with suicidal hanging. Presence of high density of sympathetic nerves in
the myocardium of the base as compared to the apex and an apica-basal gradient of adrenergic receptors allow balanced myocardial responses to sympathetic activation under low and medium levels of activation (Prasad et al., 2003). Due to acute stress or emotions, there is overstimulation of the sympathetic system and release of extremely high amount of catecholamines, can result into toxicity of the cardiac myocyte and also may cause spasm or endothelial dysfunction of the microvasculature (Prasad et al., 2003; Akashi et al., 2003).

The modified Mayo Clinic criteria for diagnosis of apical ballooning syndrome can be applied to a patient at the time of presentation and should have the following 2 D ECHO findings (a) Transient akinesis, dyskinesis, hypokinesis, of the mid segment of the left ventricle, with apical involvement or without apical involvement; abnormalities of the regional wall-motion extending beyond the distribution of a single epicardial vessel, and a stressful condition is usually present. (b) Absence of coronary artery obstruction or angiographic finding of acute rupture of a plaque. (c) New ECG findings such as ST-segment elevation and/or T-wave inversion or rise in cardiac troponin level. (d) Absence of recent significant trauma, intracranial bleeding, pheochromocytoma, myocarditis, hypertrophic cardiomyopathy (Kumar et al., 2010).

It is observed that cardiac biomarkers such as troponin I and troponin T, are increased in about 90% of Tako Tsubo Cardiomyopathic patients, the level of cardiomarkers are elevated more in Tako Tsubo Cardiomyopathy patient when compared to ST segment elevation myocardial infarction (STEMI) patients.

4. CONCLUSION
Tako Tsubo cardiomyopathy mimicking as acute myocardial infarction can be a rare sequel post hanging if patients survive as in partial hanging, should be followed up with serial ECGs and 2D echocardiography plus angiography to reduce the mortality.

Informed Consent
Patients inform consent was taken and signed by Patient before writing case report.

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Conflicts of Interest: The authors declare no conflict of interest.

REFERENCE