

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Tako-Tsubo Cardiomyopathy And Complete Heart Block: An Under-Recognised Association.

Sumit Agarwal¹, Sudhakar Rao M^{2*}, Padmakumar R³, and Ashwal AJ⁴

¹Registrar, Department of Cardiology , KMC Manipal , Manipal University, Karnataka, India.

^{2*}Registrar, Department of Cardiology , KMC Manipal , Manipal University, Karnataka, India.

³Professor , Department of Cardiology , KMC Manipal , Manipal University, Karnataka, India.

⁴Assistant Professor , Department of Cardiology , KMC Manipal , Manipal University, Karnataka, India.

ABSTRACT

We report case of an 83 year old female presented with multiple episodes of syncope. Electrocardiogram showed complete heart block and echocardiogram was consistent with tako-tsubo cardiomyopathy. Coronary angiogram did not reveal any significant coronary stenosis. She underwent permanent pacemaker implantation and subsequently left ventricular systolic function returned to normal.

Keywords: Complete heart block, Tako-tsubo cardiomyopathy , Permanent pacemaker implantation

**Corresponding author*

INTRODUCTION

Tako-Tsubo or stress cardiomyopathy is a distinct form of cardiomyopathy that may mimic acute coronary syndrome. A number of clinical conditions may result in this form of cardiomyopathy including complete heart block. Though an under recognised entity, the association of these two conditions may cause a management dilemma for the clinicians. Here we report a case of elderly women who had persistence of AV block after permanent pacemaker implantation even after recovery from left ventricular dysfunction.

Case History:

A 83-year-old female with no significant past history presented to emergency department with multiple episodes of syncope lasting for few seconds. There was no history of exertional dyspnoea, chest pain or palpitations. Heart rate on admission was 36 /min and regular. Blood pressure was 100/70 mm Hg in the right arm supine position. ECG showed complete heart block (CHB) with a broad QRS rhythm and symmetrical deep T wave inversions associated with long QT interval (Fig. 1). Troponin T was 0.543 ng/ml. Renal parameters, serum electrolytes and thyroid function tests were within normal limits. 2D Echocardiography (ECHO) showed hyper contractile basal segments and akinetic mid, distal segments and apex which was not confined to a coronary artery territory (Fig. 2). Coronary angiogram (CAG) was done in view of high suspicion of acute coronary syndrome and elevated troponin levels did not reveal any hemodynamically significant lesions (Fig 3). Patient also underwent temporary pacemaker implantation (TPI) in view of low ventricular rate. The clinical scenario was consistent with tako-tsubo cardiomyopathy. Patient was treated symptomatically with ACE inhibitors and diuretics. In view of multiple episodes of syncope and no recovery from CHB on 4th day of hospitalisation, she underwent single chamber permanent pacemaker implantation (VVI). Post procedure echocardiogram after 4 days of implantation showed normal LV function. At discharge patient was hemodynamically stable and was in paced rhythm with good LV systolic function.

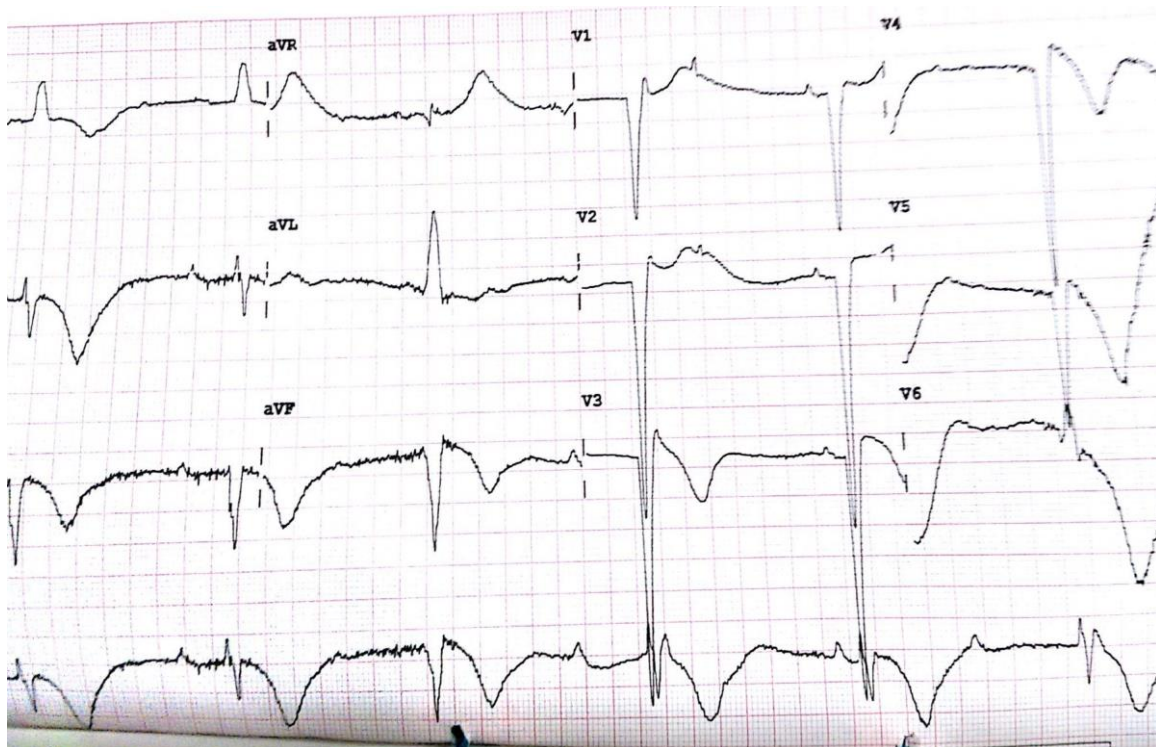


Figure 1: Electrocardiogram showing precordial leads V1-V6 with broad QRS rhythm with AV dissociation suggestive of complete AV block

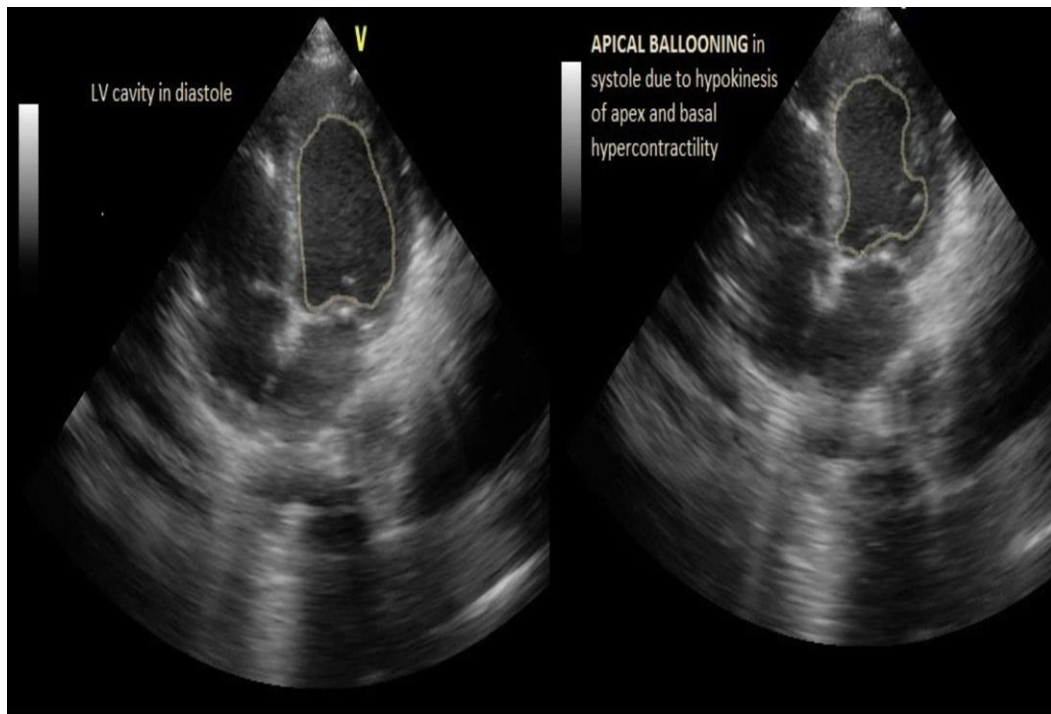


Figure 2: Echocardiogram in apical four chamber view showing LV cavity in systole and diastole with apical ballooning and basal hyperkinesia suggestive of tako-tsubo cardiomyopathy.



Figure 3: Coronary Angiogram of right and left system (left and right side of image respectively) showing normal epicardial coronaries.

DISCUSSION

Tako-Tsubo cardiomyopathy is a reversible stress related cardiomyopathy precipitated by acute and severe emotional stress in females of post menopausal age. It is characterized by the onset of an acute coronary syndrome associated with a specific and reversible apical and mid ventricular wall motion abnormality despite the lack of coronary artery disease(1). The name Tako-Tsubo is a Japanese name for an octopus trap, which mimics the typical apical ballooning aspect of the left ventricle during the systole.

“Mayo Clinic” diagnostic criteria for Tako-Tsubo cardiomyopathy includes:

- 1) Transient LV wall motion abnormalities involving the apical and/or mid - ventricular myocardial segments with wall motion abnormalities extending beyond a single epicardial coronary artery distribution.
- 2) Absence of obstructive epicardial coronary artery disease that could be responsible for the observed wall motion abnormality.
- 3) ECG abnormalities, such as transient ST-segment elevation and/or diffuse T-wave inversion and QT prolongation associated with a slight Troponin elevation.
- 4) The lack of proven pheochromocytoma and myocarditis.

The association of tako-tsubo cardiomyopathy and complete heart block has been newly identified and rarely been described in literature. It is difficult to identify whether complete heart block is the cause or as a result of tako-tsubo cardiomyopathy. In a review of literature by Korantzopoulos et al. 15 cases of tako-tsubo cardiomyopathy and complete heart block were described(2) .However of these 15 cases only 12 required permanent pacing. Other 3 cases had transient AV block and were followed up. In the same report nine cases were described where complete heart block occurred following pacemaker implantation.

The exact mechanism of complete heart block following tako-tsubo cardiomyopathy is not clear however some authors suggest that diffuse spasms in small branches of coronary arteries as occurring in tako-tsubo cardiomyopathy may cause transient myocardial ischaemic and atrio-ventricular conduction disorder(3). Though myocardial ischemia in tako – tsubo CMP is transient, high degree AV block may persist necessitating the need for permanent cardiac pacemaker implantation.

There is no clear consensus for how long to wait for pacemaker implantation in patients with tako-tsubo CMP. Reports have described immediate pacemaker implantation to a maximum delay of 18 days. These patients are usually treated with biventricular cardiac pacemaker to avoid worsening of cardiomyopathy due to RV pacing. Long term follow up is necessary to check the resumption of 1:1 AV conduction to avoid unnecessary pacing(4). In our case as the patient had multiple episodes of syncope we did not delay pacemaker implantation.

REFERENCES

- [1] Pernicova I, Garg S, Bourantas CV, Alamgir F, Hoyer A. Takotsubo cardiomyopathy: a review of the literature. *Angiology*. 2010 Feb;61(2):166-73.
- [2] Panagiotis Korantzopoulos , Dimitrios N. Nikas , Konstantinos Letsas , Ioannis Gkirdis , Marios D. Kolios , Ioannis V. Ntalas et al. High-Grade Atrioventricular Block and Takotsubo Cardiomyopathy: Case Report and Review of the Literature. *Int Cardiovasc Res J*.2015;9(2):119-124
- [3] Shanmugasundaram R, Tamilarasu K, Rajendiran G, Murali A. An uncommon presentation of a rare disease - high-degree AV block with takotsubo cardiomyopathy. *Indian Heart J*. 2012 Sep-Oct;64(5):511-4.
- [4] Ashine A, Berger M, Malmsten C. What came first, the chicken or the egg? High degree av block and takotsubo's cardiomyopathy. *J Am Coll Cardiol*.2014;63(12_S):. doi:10.1016/S0735-1097(14)60660-4.