



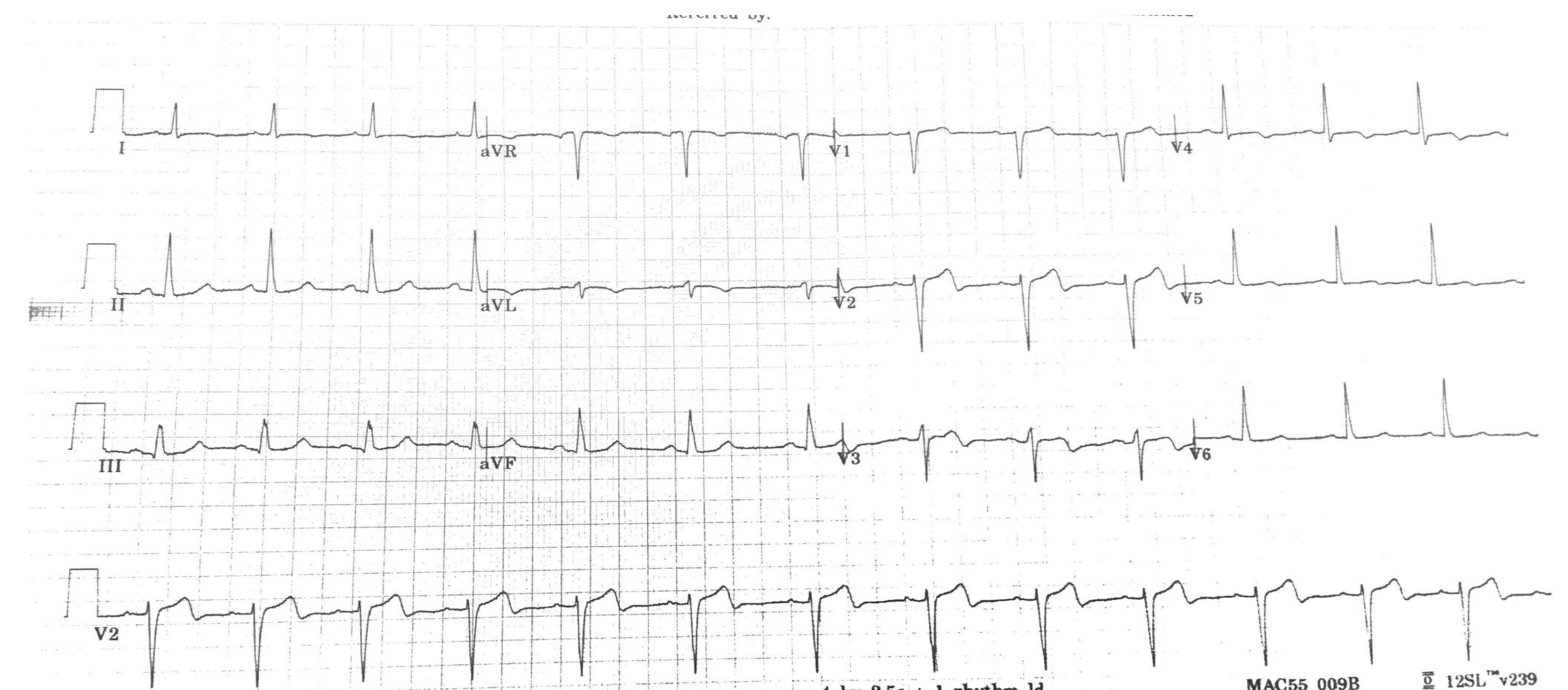
## Introduction

- Cardiac pathology is often influenced by psychiatric illness. This has been well researched for many years, particularly with regard to post myocardial infarction depression. However, stress cardiomyopathy or Takatsubo Cardiomyopathy (TC) is a much newer entity, first described in Japan in 1990<sup>1</sup>, but has been commonly **associated with preexisting and acute exacerbations of psychiatric illness**<sup>2</sup> since its discovery.
- TC consists of **transient left ventricular dysfunction** and electrocardiographic (ECG) changes that can mimic acute myocardial infarction (MI) and accounts for 1-2% of suspected acute MI<sup>2</sup>. Importantly, however, the cardiac abnormalities in TC occur in the absence of obstructive coronary artery disease (CAD).
- Signs and symptoms include chest pain and ECG changes such as ST segment elevation and T wave abnormalities. Cardiac biomarkers are usually normal.
- It **typically affects postmenopausal women**<sup>2</sup> and is often preceded by an emotional trigger, hence it commonly being referred to as 'Broken Heart Syndrome'.
- The word **takotsubo means "octopus pot" in Japanese** and describes the characteristic ballooning of the left ventricular apex seen on echocardiogram<sup>1</sup>.
- While the exact cause remains unknown, the role of the brain-heart axis in the pathogenesis of the disease leading to catecholamine excess has been described<sup>2</sup>.
- Although generally considered a benign and transient disorder which tends to completely resolve within a month<sup>1</sup>, significant complications can arise such as acute heart failure, ventricular tachycardia, ventricular thrombus, ventricular rupture and even death<sup>2</sup>.
- Patients are at risk of recurrence of TC even years after the first event, making identification of the initial event very important<sup>2</sup>.

## Case History

- A 51-year-old, married, mother of two with a history of recurrent depressive disorder was admitted to a psychiatric inpatient hospital with a **severe depressive episode**.
- She had no history of cardiac disease or cardiac risk factors, and had no past medical history of note.
- She was on Priadel 800mg nocte, mirtazapine 45mg nocte, olanzapine 17.5mg nocte.
- Routine ECG as part of the admission process revealed biphasic T waves in leads V2 and V3, **which were not present on older ECGs**.
- Clinically at the time, she was well and did not report any typical or atypical chest symptoms. She was haemodynamically stable and there were no abnormalities on physical examination.
- She had serial troponins taken which were negative.

## Investigations



- In light of the new, acute ECG findings, we liaised with cardiology in a nearby tertiary hospital who advised that she be sent for urgent specialist investigation.
- She had an echocardiogram which showed a normal LVEF but some **ballooning at the left ventricular apex**.
- She had coronary angiography which showed **no evidence of obstructive pathology** and was diagnosed with TC.

## Mayo Clinic Diagnostic Criteria<sup>3</sup>

1. Transient regional wall abnormalities on echocardiogram.
2. No angiographic evidence of obstructive CAD.
3. New ECG changes or modest troponin elevation.
4. Absence of phaeochromocytoma or myocarditis.

## Management

- As her TC remained stable without any complications, she was transferred back to the psychiatric inpatient hospital.
- She continues to have ongoing outpatient cardiology follow up and echocardiograms, but is not on any cardiac medication.
- With regard to her depression, venlafaxine was added in close consultation with her cardiologist. She ultimately needed ECT and the anaesthetist was made aware of her TC and she was closely monitored for any haemodynamic instability during and post ECT.

## Conclusions

- TC is a rare acute cardiomyopathy that presents similarly to acute MI and warrants urgent cardiology review.
- There are no RCTs for optimal treatment.
- Most patients recover completely without in-hospital or late-term complications but regular cardiology follow up is advised.
- It underpins the need for those working in psychiatry to be **competent in ECG interpretation** in order for TC to be identified and appropriately managed.

## Declarations

- In order to carry out and complete this case report, the patient in question kindly gave verbal and written informed consent.
- The authors declare that there is no conflict of interest and no funding was received for the purpose of this case report.

## References

- Sato H et al. Tako-tsubo-like left ventricular dysfunction due to multivessel coronary spasm In: Kodama K, Haze K., Hori M., eds. Clinical Aspect of Myocardial Injury: From Ischemia to Heart Failure. Tokyo: Kagakuhyoronsha Publishing Co; 1990. p56-64.
- Templin C et al. Clinical features and outcomes of takotsubo (stress) cardiomyopathy. N Engl J Med 2015;373:929-938.
- Apical ballooning syndrome (takotsubo or stress cardiomyopathy): a mimic of acute myocardial infarction. Am Heart J 2008;155:408-417