

## **Mid-ventricular Takotsubo cardiomyopathy triggered by near drowning**

**Neil Grech, Matthew Mercieca Balbi, Andrew Cassar Maempel**

### **Patient presentation**

An 84-year-old female presented to the accident and emergency (A&E) department after a near drowning episode in open sea. The patient's son described his mother to be unresponsive and floating face down for a few seconds. The patient regained consciousness and complained of sudden shortness of breath. The patient was a known controlled hypertensive and diabetic. She was independent and did not smoke or consume alcohol.

The patient arrived fully alert, but amnesic to all preceding events in the sea. She denied chest pain and palpitations. Airway, breathing, and circulation assessment was unremarkable, and all parameters were stable.

### **Initial work up**

Initial blood panel was unremarkable apart from an elevated high sensitivity cardiac troponin T of 640ng/L (normal limit 3-14). Electrocardiogram revealed sinus rhythm at 84bpm, with Q waves in lateral leads.

A bedside echocardiogram demonstrated severely impaired left ventricular (LV) systolic function (ejection fraction [EF] approximately 20%), with severe hypokinesia of the midventricular cavity.

### **Diagnosis and Management**

Differential diagnosis included non-ST elevation acute coronary syndrome (ACS) or mid-ventricular stress cardiomyopathy (atypical Takotsubo). The patient was treated for acute coronary syndrome with therapeutic enoxaparin, 300mg aspirin, and 300mg clopidogrel. Low dose carvedilol was initiated due to the impaired systolic function and the patient was admitted to the cardiac intensive care unit.

A coronary angiogram was performed the following morning revealing grossly normal coronaries and a ventriculogram demonstrated mid-ventricular wall hypokinesia and an EF of 40%, indicating a marked improvement from the bedside echocardiogram; findings were in-keeping with a diagnosis atypical Takotsubo. Repeat troponin showed a negative delta from 640ng/L to 412ng/L.

### **Follow-up**

A departmental echocardiogram was performed on the second day of admission which showed a marked improvement in LV systolic function (EF of 55% using Simpson's biplane method) with only mild hypokinesia of mid-ventricular segments.

The patient remained stable and asymptomatic throughout; she was discharged after 3 days and advised to avoid stress and strenuous activity.

### **Conclusion(s)**

Stress cardiomyopathy is an important differential of ACS. The most common form of stress (Takotsubo) cardiomyopathy involves the apex and apical segments with ballooning during systole. Mid-ventricular type Takotsubo cardiomyopathy is a rarer subtype which spares the apex and bases. The diagnostic criteria for stress cardiomyopathy as described by ESC consensus document includes acute cardiac symptomatology, reversible LV contraction abnormality, troponin elevation, nonspecific new electrocardiographic abnormalities, and a negative work-up for ischemia; all of which were present in this case. (Images and videos available for presentation).