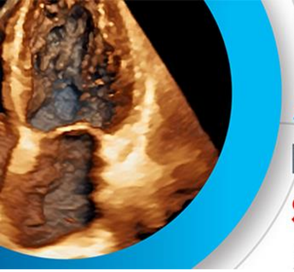

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A Broken Heart: Grief-Associated Left Ventricular Rupture with Non-Occlusive Coronary Arteries

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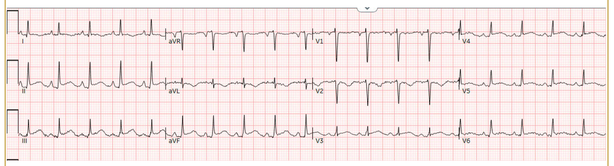
INTRODUCTION

Takotsubo Cardiomyopathy (TC) is a state of acute, transient left ventricular (LV) dysfunction which often presents similarly to occlusive myocardial infarction (MI). While many presentations are mild and self-limiting, TC can be fulminant[1]. Structural damage such as left ventricular rupture is an extremely rare and underrecognized complication that can be fatal[2]. We report an interesting case of apical left ventricular rupture with non-occlusive coronary arteries.

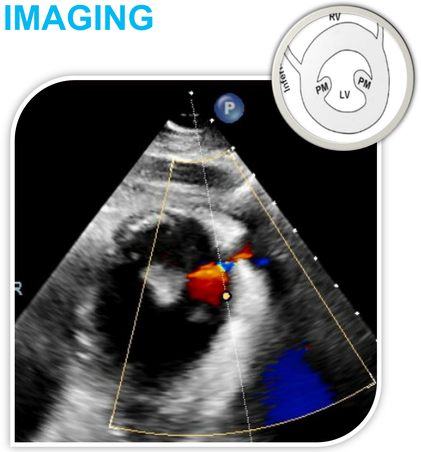
CASE PRESENTATION

- 65-year-old lady presents with diffuse weakness, nausea, vomiting and sharp central chest pain
- Recently lost husband and mother
- PMH: cerebral palsy, paraplegia, and obesity
- Vitals:
  - BP of 173/70 mmHg
  - Pulse 115 beats per minute
  - O2 saturation: 98% on 3L nasal cannula
  - Respirations: 22 breaths per minute
  - Temperature 99.2 °F
- Investigations:

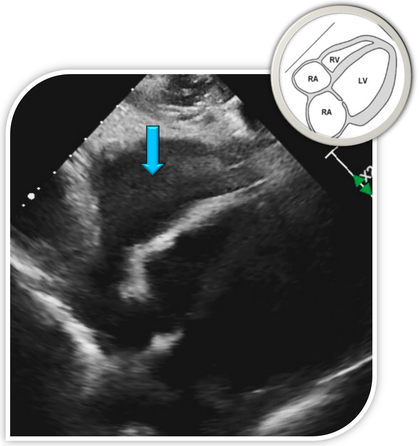
Test	Result
EKG	Sinus tachycardia, 1 mm STE in II, III, and aVF
Hs-Troponin	2727 -> 8221 -> 8324 ng/L
Pro-BNP	29,1289 pg/mL
Lactate	8.1 mmol/L
White blood cell count	33.9 K/uL



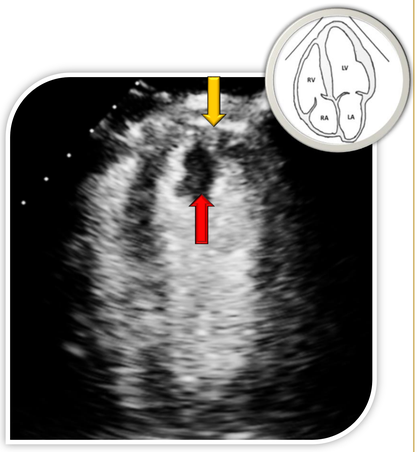
IMAGING



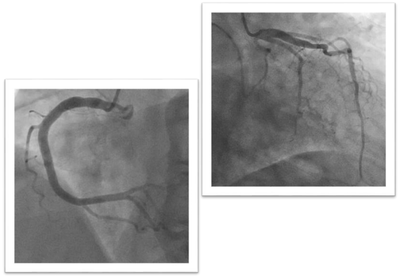
Parasternal short axis view
Lateral LV wall defect showing blood flow through the defect via color Doppler.



Subxiphoid view
Large pericardial effusion (blue arrow) inferior to right ventricle.

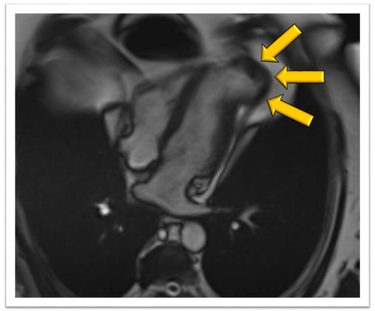


Apical view
Contrast study showing LV thrombus (red arrow) and disruption of apical free wall (yellow arrow).



Coronary Angiography
Right and left coronary systems without occlusive lesion.

Coronal CTA Chest
CTA chest showing apical LV thrombus (red arrow) and contrast extravasation (yellow arrow) into the pericardial space.



Cardiac MRI (3 months)
Follow-up CMR showing aneurysmal ventricular apex (yellow arrows)with contained rupture and probable layered thrombus.

DISCUSSION

Diagnosis: Rupture of LV apex secondary to TC

Management: Urgent surgical evaluation, opted for non-operative observation in the ICU.

Outcome: At 3 months, the patient was stable with cardiac MRI showing an aneurysmal ventricular apex, layered thrombus, and late gadolinium enhancement of the apical myocardium. Plan for further outpatient surgical evaluation.

Takeaways:

- Myocardial necrosis is hypothesized to result from preferential catecholamine toxicity and demand ischemia in the apex[2]
- Female gender and persistent ST elevations = higher risk of cardiac rupture in TC[2]
- Early bedside echo is paramount to rule out tamponade physiology and LV thrombus (high embolic risk)[1]
- Distinguish LV aneurysm from pseudoaneurysm
- Consider repeat echo before discharge to rule out thrombus, assess for recovery[1]

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