

CLINICAL VIGNETTE

A Case of Pericarditis Post Takotsubo's Cardiomyopathy

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Case Presentation

A 77-year-old female with a history of hypertension, diabetes, and hyperlipidemia presented to the emergency room with severe sub-sternal chest pain, shortness of breath, nausea, vomiting, and diaphoresis that started 30 minutes prior. On exam, she was afebrile with heart rate of 63 beats per minute, blood pressure of 148/89 mmHg, respiratory rate of 20 and oxygen saturation of 97% on room air. She was in moderate distress with 8/10 chest pain. Her lungs were clear to auscultation and she had normal heart sounds with no murmurs. EKG showed ST elevations in leads I and aVL with mild T wave inversions in inferior leads suggestive of an acute ST elevation myocardial infarction (STEMI).

She was taken for emergent cardiac catheterization that showed non-obstructive coronary artery disease. Her left ventricular function during cardiac catheterization was severely depressed with severe hypokinesis of the apex and estimated ejection fraction (EF) of 20% suggestive of Takotsubo's cardiomyopathy. She was admitted to ICU and started on standard heart failure medical regimen. Her echocardiogram prior to discharge showed an EF of 40% with apical ballooning and hypokinesis. Her cardiac medications on discharge included Aspirin, carvedilol, losartan, and atorvastatin.

Approximately 4 weeks after her initial presentation, she developed mid-sternal chest pressure and shortness of breath. Her symptoms were worse with lying down. EKG showed post MI changes with inferior T wave inversions. Her physical exam was unremarkable and echocardiogram showed a moderate sized pericardial effusion with EF 40-45% and without any signs of tamponade. Her blood tests showed an elevated ESR of 55 mm/hr and a mildly elevated CRP of 0.9 mg/dL. She was treated with high dose Aspirin three times a day for presumed pericarditis given her symptoms, pericardial effusion and elevated inflammatory markers. Her symptoms resolved within a few days of starting high dose Aspirin. A follow up echocardiogram showed complete resolution of the pericardial effusion and normalization of left ventricular function with EF 55-60%.

Discussion

Takotsubo's or stress-induced cardiomyopathy also known as "broken heart syndrome" or "transient apical ballooning

syndrome" is a form of non-ischemic cardiomyopathy where patients present acutely with chest pain and EKG changes suggestive of an acute myocardial infarction. There is typically decreased LV function with wall motion abnormalities usually at the apex (less commonly at the mid ventricular or basal level) and no significant coronary artery disease on coronary angiogram.¹ Approximately, 1-2% of all acute myocardial infarctions are due to Takotsubo's.²

Takotsubo's cardiomyopathy was first described in Japan in 1990. The word *takotsubo* refers to an "octopus pot," a trap used by fisherman to capture octopuses. The left ventricle typically demonstrates this shape during systole. This disorder affects more women than men and is more prevalent in older post-menopausal women. It is usually precipitated by an emotional or physical stressful trigger but can also happen without any obvious stress as in this case presentation.¹

The underlying pathogenesis of Takotsubo's is not completely understood. Coronary artery vasospasm, micro vascular dysfunction, dynamic mid-ventricular outflow obstruction, an abnormal response to a catecholamine surge and myocarditis are postulated to play an underlying role.² Although, most of the time the cardiomyopathy is reversible in the days to weeks following the original presentation, it can be associated with serious complications including cardiogenic shock, ventricular rupture, arrhythmias, ventricular thrombus, and even death.

Pericarditis as a triggering factor or a consequence of Takotsubo's has been noted in a few cases reported previously.³⁻⁸ The exact mechanism is unclear. It is thought to be an extension of the transmural or myocardial inflammation to the pericardium that can either be acute or chronic depending on the severity of the disease.⁴ Possible localized inflammation on Magnetic Resonance Imaging with delayed enhancement has also been noted in cases of Takotsubo's cardiomyopathy suggestive of an inflammatory hypothesis.⁹ Another hypothesis suggests an extension of viral myocarditis mimicking Takotsubo's cardiomyopathy to the pericardium.¹⁰

In the current case, the patient describes symptoms a month after her initial presentation that seem consistent with pericarditis but did not have the typical ST changes on ECG or a pericardial rub on exam. A moderate sized pericardial effusion was noted with elevation of inflammatory markers

suggestive of ongoing inflammation. The patient was treated with high dose Aspirin that led to resolution of her symptoms and the pericardial effusion.

Pericarditis may be noted in the acute setting or may appear after a few weeks of the initial presentation as in this case. The possible connection between Takotsubo's cardiomyopathy and pericarditis is important for physicians to recognize to make a timely diagnosis and initiate treatment to prevent the potential complications resulting from these conditions.

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Submitted June 27, 2017