

CardioCase

of the Month

Octopus-shaped Heart?

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CardioCase Presentation

Paula's Anxiety



Paula, 51, presents to the emergency department (ED) with 5/10 continuous retrosternal chest heaviness. The symptom has been present for about eight hours (since the patient woke up in the morning).

The pain is not pleuritic, does not radiate, and is not associated with shortness of breath, nausea, or diaphoresis.

Paula's past medical history reveals she used to smoke 10 years ago, but has no other risk factors for coronary artery disease (CAD). In fact, at work she walks up to three

hours per day without any difficulty. She currently does not take any medications.

Her social history is significant for having been laid off from her job at the post office the night before her presentation to the ED. In fact, because she was so upset and anxious, she did not get a restful sleep. She has been a postal worker for 20 years and feels she has no other job prospects.

On examination, Paula has a blood pressure of 142/80 mmHg, a pulse of 112 beats per minute, and no other positive findings. The patient's electrocardiogram shows sinus tachycardia with T-wave inversions in V₅ and V₆.

Her Troponin T is elevated at 0.8 mcg/L.

What's Your CardioCase Diagnosis?

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Figure 1. Paula's ventriculogram.

How is Paula managed?

In the ED, Paula is appropriately managed with acetylsalicylic acid, intravenous metoprolol, and subcutaneous enoxaparin. However, her chest pain continues despite

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intravenous nitroglycerin infusion and morphine. She is promptly loaded with clopidogrel bisulfate and transferred to a facility with interventional capabilities. She undergoes immediate selective coronary angiography, which reveals patent coronary arteries without any evidence of atherosclerosis. Her ventriculogram is shown in Figure 1.

What is Paula's diagnosis?

Over the past decade, a series of Japanese authors introduced us to a new clinical entity: takosubo syndrome. Takosubo is Japanese for octopus pot or trap. The syndrome took this name because of its unique, short neck, round, flask-like left ventricular (LV) apical ballooning. This unique appearance is caused by a lack of contraction in the LV apex and a seemingly hypercontractile response at the base of the heart.

Takosubo syndrome exhibits acute onset of chest symptoms accompanied by ECG changes. It also exhibits minimal myocardial enzymatic release, mimicking acute myocardial infarction in patients without angiographically significant lesions, but transient LV apical wall motion abnormalities.

Certain associated risk factors were found in the largest series of patients described to have takosubo syndrome (Table 1). Each patient had no evidence of other cardiomyopathies, had non-significant atherosclerosis in angiograms, and had evidence of apical ballooning.

Takosubo syndrome patients may exhibit subtle ST elevations in the precordial leads during the acute phase and often have evidence of T-wave inversion during recovery in the same leads (which is what our patient displays).

Emotional stress is a well-recognized clinical feature of angina. In fact, when assessing

CardioCase Discussion

Table 1


Risk factors associated with takosubo syndrome

- The presence of sudden emotional stress (e.g., being laid off, loss of a spouse, house burning down)
- Being a post-menopausal woman
- Demanding exercise in unfit individuals
- During non-cardiac surgery
- Presence of acute systemic illness (e.g., acute abdomen, asthma exacerbation)

for clinical indicators of ischemia, one of the main characteristics is the onset of pain with activity or emotional stress. Although stress has been advocated to have a role in unmasking already-existing CAD, its role in causing acute coronary syndrome has been far less clear. The etiology of apical wall ballooning is not clear. Postulated mechanisms include vasospasm of coronary arteries or catecholamine-induced transient cardiomyopathy

from systemic illness, metabolic disorders or neurogenic events. Similar transient wall motion abnormalities have been described in several systemic disorders, including multi-vessel spasm, cerebrovascular events, gastrointestinal bleeding, and pheochromocytoma.

What is the treatment?

The treatment of takosubo syndrome patients remains unclear. It would be prudent to optimally control all risk factors. If true CAD is ruled out in these patients, the prognosis is often good; however, more information is needed, as we do not have long-term data on this cohort of patients. 

Suggested Reading

1. Tsuchihashi K, Ueshima K, Uchida T, et al: Transient left ventricular apical ballooning without coronary artery stenosis: A novel heart syndrome mimicking acute myocardial infarction. *J Am Coll Cardiol* 2001; 38(1):11–8.

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