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A Deadly Etiology of Acute Heart Failure

Case Report

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Author Details

*Terrence Henry and Damian Kurian**

Chief of Cardiology Harlem Hospital Center, USA

*Corresponding author

Kurian Damian, Chief of Cardiology Harlem Hospital Center, New York, USA

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Introduction

Even with contemporary methods of triage, diagnosis, and treatment, type A acute aortic dissection (TAAAD) has significant early mortality. Patients may succumb to aortic rupture, pericardial tamponade, coronary and cerebral ischemia, limb ischemia, and aortic insufficiency from retrograde dissection [1]. We present a subacute case of type A aortic dissection, presenting initially with singultus, then later with heart failure and severe aortic insufficiency [2].

Case

A 58-year-old male with diet-controlled hypertension presented to our Emergency Department (ED) with ten days of dyspnea on exertion, cough, and orthopnea. He had been seen three months prior in the ED for three days of singultus (hiccups) and throat pain, but symptoms resolved spontaneously, and he was discharged. Three weeks prior to the current presentation he was seen again in the ED with singultus and vomiting but left on his accord after reporting complete relief after flatus [3]. At that time, an EKG showed sinus bradycardia with T wave inversions in V5 and V6, which were different from a prior EKG. Troponins at that time and CXR were normal. This time, he was tachycardic to 130bpm with an initial blood pressure of 142/78. Systolic and diastolic murmurs were noted, and EKG showed sinus tachycardia with non-specific T-wave abnormalities. He was admitted and treated for new-onset heart failure with diuresis. A transthoracic echo (image) showed severely depressed left ventricular systolic dysfunction and enlargement, aortic root aneurysm with a clearly visible dissection flap, and severe aortic insufficiency. CT Angiography confirmed the extent of the dissection and aneurysm. He underwent successful surgical repair at a tertiary cardiac hospital [4,5].

Discussion

Aortic dissection, particularly TAAAD is a rare and lethal condition with protean manifestations and high early mortality. While most (90%) of patients present with chest discomfort, a minority are painless and may present with syncope, neurological symptoms, or heart failure. IRAD registry data shows that about 6% of patients present with heart failure type symptoms [6]. Our patient had presented twice before with singultus which is an exceedingly rare presentation for TAAAD, reported only a few times in the literature. Phrenic nerve irritation from the aortic distortion is the presumed etiology. It was remarkable that he had survived the initial aortic dissection without treatment, and interesting to piece together the timing of events. Notably, his echocardiogram (at his 3rd presentation) had left ventricular enlargement and depressed LV systolic dysfunction, strongly suggesting some chronicity to his severe aortic insufficiency. The mechanisms of heart failure associated with TAAAD fall into four specific categories: cardiac tamponade, ischemic, high afterload with hypertension, and aortic insufficiency [7]. Our patient had the latter, and we propose that the initial insult had occurred three months prior to presentation, and he had survived the TAAAD during this time with the ultimate progression of aortic insufficiency and heart failure leading him to re-seek medical attention.

Finally, his echocardiogram images from the transthoracic study were striking, with a clearly visible dissection flap seen in the aortic root in the parasternal view. We debated referring him directly to surgery after the echocardiogram, as the images were essentially diagnostic [8]. However, since he remained hemodynamically stable, the CT angiogram was obtained rapidly on an emergent basis. The CT likely assisted cardiothoracic surgery with planning its operation. He

ultimately underwent successful repair with an aortic stent graft and separate mechanical prosthetic valve and was eventually discharged home in stable condition.

Conclusion

Patients with aortic dissection have protean manifestations and high early mortality. This was an exceedingly rare presentation of TAAAD with singultus, survival to subacute presentation, and ultimately heart failure with echo images Figure 1 defining his aortic dissection. As mortality is high untreated, uncommon presentations of this rare disease should be entertained, particularly in patients without other obvious causes of their symptoms [9].

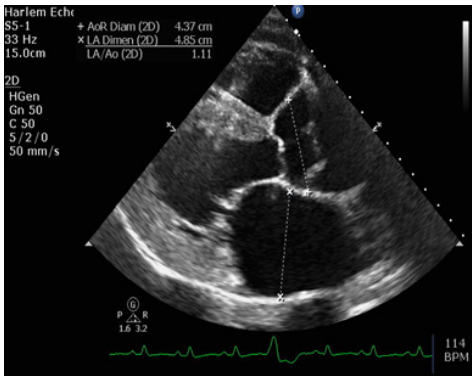

Figure 1: Echo Image.

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