When hypothyroidism goes unchecked

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LOS ROBLES HEALTH SYSTEM

Background

Hypothyroidism is a common disease affecting females, approximately 5% of the general population with possibly another 5% undiagnosed. [1] Hypothyroidism can manifest in a wide variety - common clinical manifestations of hypothyroidism are lethargy, cold intolerance, dry skin, constipation, and hoarseness. Occasionally, patients present with less emphasized presentations rendering common disease challenging to diagnose. We present a 29 year-old female patient who presented to the emergency department (ED) with concern with cough and shortness of breath. She was diagnosed with cardiac tamponade and further workup revealed severe hypothyroidism as a primary cause.

Case presentation

A 29-year-old female with no known past medical history presented to the ED for evaluation of cough and dyspnea that progressively worsened for 1 week. She had associated new- onset shortness of breath with minimal exertion and orthopnea. She also reported blurry vision with occasional pressure-type headaches, occasional nausea, and decreased appetite for few months

Initial blood pressure was 186/134 with heart rate of 110 on ED presentation. The patient exhibited anxiety and increased work of breathing. Bilateral legs had non-pitting edema. EKG showed sinus tachycardia with low voltage QRS and electrical alternans. Point-of-care transthoracic echocardiogram (TTE) revealed large pericardial effusion with tamponade physiology. The patient emergently underwent a pericardial window with trans-esophageal echocardiogram guidance, draining 600cc of clear-yellow fluid. Thyroid-stimulating hormone (TSH) was elevated at 413 and free thyroxine (FT4) was 0.2. Other notable lab values were beta-natriuretic peptide 2347, hemoglobin 8.6, platelets 89, serum sodium 130, serum potassium 3.1.

On day 8, the patient disclosed that she had an iodine ablation of her thyroids for Graves Disease many years prior and had not followed up with her endocrinologist since then.

Severe hypothyroidism was treated with IV levothyroxine sodium 200 mcg initially then with oral Levothyroxine 100 mcg. During the thyroid hormone replacement therapy, the patient's symptoms gradually improved to resolution of blurry vision, headaches, and leg edema.

Repeat TTE showed left ventricular ejection fraction of 60% and trace pericardial fluid.

The patient was discharged home with Levothyroxine 150 mcg daily and follow-up with the Endocrinologist, Neurologist, and Cardiologist.

Transthoracic imaging and lab trends

TSH trending with Levothyroxine replacement

	Day 1	Day 4	Day 7
TSH (mIU/ML)	413	120	73

Pre-Pericardial window Echocardiogram

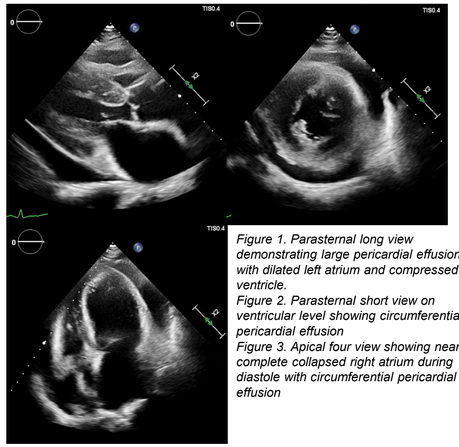

Figure 1. Parasternal long view demonstrating large pericardial effusion with dilated left atrium and compressed left ventricle.
Figure 2. Parasternal short view on ventricular level showing circumferential pericardial effusion
Figure 3. Apical four view showing near-complete collapsed right atrium during diastole with circumferential pericardial effusion

Post-Pericardial window Echocardiogram

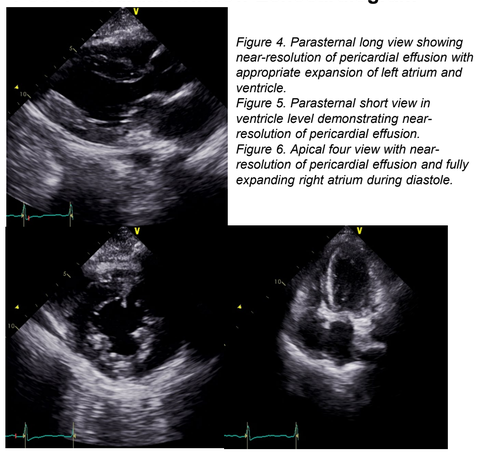

Figure 4. Parasternal long view showing near-resolution of pericardial effusion with appropriate expansion of left atrium and ventricle.
Figure 5. Parasternal short view in ventricle level demonstrating near-resolution of pericardial effusion.
Figure 6. Apical four view with near-resolution of pericardial effusion and fully expanding right atrium during diastole.

Discussion

- Hypothyroidism is a chronic disease that requires periodic surveillance with medication titration based on patients' status. When left untreated, there can be serious complications including myxedema coma, rhabdomyolysis, hypoxic and hypercapnic respiratory failure, cardiac tamponade, myxedema psychosis. [4,5,6]
- Myxedematous pericardial effusions can be seen in about one-third of patients with severe hypothyroidism. [7] However, it is rare for hypothyroid patients to present with pericardial effusion with cardiac tamponade as a sole feature. [2,3]
- Prompt diagnosis can be challenging because of insidious onset and wide variety of patient presentation. Diagnosis can be especially challenging when the patient's past medical history is unclear as in this case. Cardiac tamponade diagnosis is mainly clinical with most common complaint being dyspnea. Beck's triad can be seen in certain severe cases; however, the absence should not delay the diagnosis and should be made promptly by incorporating chest radiograph, echocardiogram, and blood pressure change with inspiration. It is known that right atrial collapse in diastole is proportionate to the degree of tamponade. [8]

Conclusion

We present this case to address an infrequent cause of cardiac tamponade, diagnosis and treatment strategies, and how seemingly benign medical condition can become life-threatening without appropriate medical care.

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