

# Impending cardiac tamponade as a primary presentation of Hashimoto's thyroiditis

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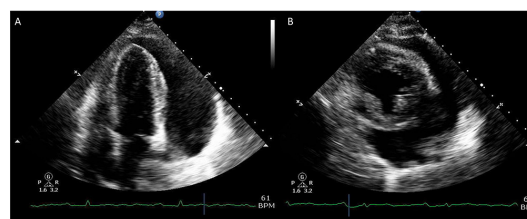
## DESCRIPTION

A 37-year-old woman with a history of psoriatic arthritis presented to the emergency department with back pain radiating to the upper abdomen for 1 week with no other associated symptoms. Physical examination revealed normal vital signs, mild enlargement of the thyroid gland, jugular venous distension and distant heart sounds. Laboratory results revealed elevated thyroid-stimulating hormone at 134.76 U/mL, decreased free T4 at 0.27 ng/dL and T3 at 1.7 ng/dL. Testing for cyclic citrullinated peptide antibody, antinuclear antibody and rheumatoid factor was negative. ECG showed sinus rhythm at 63 beats per minute and low-voltage complexes. Chest X-ray showed cardiomegaly. CT of the abdomen and pelvis revealed an incidental large pericardial effusion and no remarkable abdominal pathology. Echocardiography confirmed large pericardial effusion with an early tamponade physiology (figure 1).

She underwent pericardiocentesis with drainage of 1400 mL of exudative fluid. Bacterial, fungal and mycobacterial cultures were negative, with no malignant cells seen. Thyroperoxidase antibodies were highly elevated (>1000 IU/mL). Ultrasound of the thyroid gland showed a diffusely enlarged, heterogeneous thyroid consistent with Hashimoto's thyroiditis. Treatment was started with intravenous levothyroxine 100 µg daily for 3 days followed by oral levothyroxine. Pericardial effusion was attributed to severe hypothyroidism as all the other common aetiologies had been ruled out. Six weeks after discharge, follow-up echocardiogram showed only trivial pericardial effusion.

Cardiac tamponade can be caused by enlarging pericardial effusion due to infection, malignancy, hypoalbuminaemia, collagen vascular disease, tuberculosis, trauma, drug-induced, acute haemorrhage and postcardiac surgery. Pericardial effusion is common in hypothyroidism, with prevalence ranging from 3% in mild disease to 80% when myxoedema is present, but large pericardial effusion causing tamponade is relatively rare.<sup>1</sup> The most common symptoms of hypothyroidism include weight gain, fatigue, cold intolerance, constipation, dry skin, oedema, muscular weakness and reduced deep tendon reflexes. Cardiac manifestation includes decreased cardiac output, atherosclerosis, bradycardia and pericardial effusion.

Hypothyroidism causes decreased protein synthesis, increased capillary permeability with extravasation of protein-rich fluid, and poor lymphatic drainage causing fluid collection in the serous cavities including the pericardial space.<sup>2</sup>



**Figure 1** (A) Echocardiogram (ECHO) apical four chamber view showing right ventricular wall collapse with surrounding large pericardial effusion. (B) ECHO parasternal short-axis view at the level of papillary muscle showing obliteration of the right ventricular cavity with surrounding large pericardial effusion. BPM, beats per minute.

Slow fluid accumulation and pericardial distensibility favour cardiac adaptation to increased volume and intrapericardial pressure. Thus, pericardial effusions are asymptomatic until late in the disease and usually present when all other symptoms of hypothyroidism including myxoedema manifest.<sup>2</sup>

The classic Beck's triad of cardiac tamponade includes jugular venous distension, hypotension and distant heart sounds with associated tachycardia and pulsus paradoxus.<sup>1</sup> In general, tachycardia is usually present in an attempt to maintain cardiac output. In hypothyroidism, however, bradycardia is common compared with tachycardia due to a decrease in sympathetic activity.<sup>1</sup> Characteristic ECG findings include low-voltage complexes in all leads and electrical alternans. Most sensitive echocardiographic findings of pericardial tamponade are the systolic collapse of the right atrium and diastolic collapse of the right ventricle.<sup>3</sup>

Treatment of hypothyroidism for 2–12 months will suffice even in moderate to large effusion without sequelae. Drainage is only indicated when signs of tamponade are present.

## Learning points

- ▶ Impending cardiac tamponade is a rare initial manifestation of hypothyroidism.
- ▶ Hypothyroidism should be considered in the differential diagnosis in patients with massive pericardial effusion even when other classic signs are absent or poorly evident.
- ▶ In patients with severe hypothyroidism who manifest with pericardial effusion, classic signs of tamponade such as tachycardia and hypotension may be absent; instead, they may have normal blood pressure and heart rate.



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