

# A clinical observation of the effects of hypothyroidism on the cardiovascular system

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## Aims

The aim of this clinical vignette was to highlight the importance of the management of hypothyroid risk factors in patients with cardiac disease.

## Methods

A 47-year-old woman with diabetes, dyslipidemia and a family history of myocardial infarction presented with a 3-month history of stabbing chest pain, associated with diaphoresis, dizziness and palpitations. Thyroid function tests (TFTs) were requested. Echocardiography revealed moderately depressed left ventricular systolic function (35%), global hypokinesis, type 2 diastolic dysfunction, and a pericardial effusion, for which she was treated. Coronary angiography later revealed right coronary artery occlusion with collaterals. She later defaulted from follow up and a year later presented with a 3-week history of cough, central chest tightness, diaphoresis, dyspnea, two-pillow orthopnea, nausea and generalised swelling. Therefore, she was admitted and treated for a week. However, her symptoms persisted post-discharge, resulting in her re-admission. On examination, she was obese with pale mucus membranes, a puffy face, peri-orbital oedema, depigmented patches to her face, thinning of her brows, dry skin, a large tongue and full neck (no discrete mass palpated). There was no jugular vein distention, but bilateral pitting pedal oedema, crepitations, and normal deep tendon reflexes were found. Creatinine kinase was six times the norm and haemoglobin low. However, electrocardiogram showed sinus rhythm, normal rate, normal P waves and PR interval, low voltage waves, and no ST/T wave deviations. Therefore, she was treated for decompensated heart failure due to acute coronary syndrome in order to rule out hypothyroidism. On outpatient review thyroid testing showed thyroid-stimulating hormone (TSH) 61.51 U/mL, low free thyroxine and negative autoantibodies. Thyroid ultrasound also displayed increased vascular flow with tiny nodules.

## Results

This patient was suspected to have Hashimoto's thyroiditis, which is one of the most common causes of hypothyroidism. Although ultrasound findings of increased vascularity are supportive

of this diagnosis, negative autoantibody tests are not. Left untreated, hypothyroidism may have myriad cardiac, as well as other, sequelae. These included decreased cardiac contractility and output, diastolic dysfunction, bradycardia, accelerated atherosclerosis and coronary artery disease. These atherosclerotic changes may be exacerbated by hypercholesterolaemia and diastolic hypertension, commonly seen as complications of hypothyroidism.

## Conclusion

Our patient demonstrated many of these well-described ill-effects. Therefore, hypothyroidism was considered as a probable diagnosis on the patient's initial presentation, due to her cardiac diagnoses, dyslipidemia, and complaint of constipation. Our case highlighted the importance of thorough history-taking, careful clinical examination and following up with appropriate investigations in order to arrive at accurate diagnoses. ■

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