Introduction

Hypothyroidism is a common endocrine disorder resulting from deficiency of thyroid hormones. The clinical manifestations of hypothyroidism may vary depending on the age of the patient at the time of diagnosis and the severity of hormone deficiency. The most commonly reported symptoms of hypothyroidism are weight gain, constipation, cold sensitivity, fatigue, and dry skin.1-3 Less common signs include myopathy, carpal tunnel syndrome, and hoarseness of voice. Thyroid hormone deficiency can affect almost any organ system. Profound cardiovascular system effects can occur; one of these is cardiac tamponade. Hypothyroidism may lead to pericardial effusion, with the severity ranging from mild to severe.4

Pericardial effusion is a known complication of hypothyroidism with the incidence ranging from 3-6% in mild cases of hypothyroidism to 30-80% in severe hypothyroidism.5 Cardiac tamponade may occur. Hypothyroidism causes pericardial effusion through increased permeability of the epicardial vessels and decreased lymphatic drainage of albumin, resulting in accumulation of fluid in the pericardial space. The majority of effusions are asymptomatic due to slow fluid accumulation. In this report we presented a patient who presented with massive pericardial effusion caused by primary hypothyroidism.

Clinical scenario

A 40-year-old female presented to the emergency unit at Atabra teaching hospital river Nile state, Sudan. Complaining of exertional dyspnea and lower limb swelling for one week. She has no orthopnea, paroxysmal nocturnal dyspnea, chest pain or cough. The patient also reported symptoms of hypothyroidism for the last month in form of weight gain despite decreased appetite, fatigue, hair loss, muscle and joint pain and irregular cycle. She was not known to have any chronic illnesses before. On examination patient was ill, clinically anemic, PR 88/min, RR 20/min and BP 110/80. There were features of hypothyroidism in the form of per orbital edema, muffled heart sound with normal respiratory sound. No murmur, gallop rhythm or engorgement of the jugular veins. Chest X-ray (Figure 1) showed increased cardiothoracic ratio. Ejection fraction at echocardiography was 66%, due to detection of pericardial fluid levels of 2.2 anteriorly and 3-4 posteriorly, a diagnosis of massive pericardial effusion was made.

Figure 1 Chest X-ray showed increased cardiothoracic ratio.
Abdominal and pelvic ultrasound was normal. Complete blood count show hemoglobin 3.8g/dl microcytic hypochromic, (MCV 71.7 fl, MCH 16.4pg, MCHC 23.1g/dl) accordingly patient received 3units of blood. Erythrocyte sedimentation rate, electrolytes, renal and liver function tests were normal, regarding thyroid function test TSH was more than 110uIU/ml (Normal range 0.4 – 4.3), T3 0.26ng/ml (Normal range 0.79 – 1.58) and T4 0.2ug/dl (Normal range 4.9 – 11), lipid profile revealed high cholesterol, So the patient was diagnosed as a case of primary hypothyroidism complicated by massive pericardial effusion, anemia, and hyperlipidemia. 100 mcg L-thyroxine therapy and 20mg atorvastatin were initiated. The patient showed clinical improvement and discharged in a good condition.

After one month TFT was done again and it was normal, TSH 0.47mIU/L (normal rage 0.38-4.3) T4 was 6.1nmol/L (normal rage 4.9-11) T3 was 0.78nmol/L (normal rage 0.79 – 1.58) and chest X-ray (Figure 2) was normal. The patient continued to be followed up monthly, and showed a good outcome.

Cardiac tamponade is a very rare complication of hypothyroidism because of the slow rate of accumulation of pericardial fluid and the elasticity of the pericardium.15 Pericardial effusion typically resolves as thyroid levels are normalized and therefore rarely requires intervention beyond hormone replacement. Generally pericardial effusion slowly disappears after obtaining an euthyroid status following several months of treatment, preventing unnecessary pericardiocentesis in these patients.16

If cardiac tamponade occurs it is an indication of emergency pericardiocentesis.12,13 In our patient, clinical signs of tamponade—such as pulsusparadoxxus or jugular-venous distension—were absent and she was haemodynamically stable. So decision to treat her with thyroid hormone replacement was made together with close observation and assessment, the patient had a good response to thyroxine.

Conclusion
Hypothyroidism can have different scenarios at presentation and sometimes may be asymptomatic or subclinical or present with a complication like pericardial effusion. The possibility of hypothyroidism should be thought of in every patient who present with unexplained pericardial effusion even with no overt signs or symptoms. The treatment is simple and the resolution of pericardial effusion is satisfied after initiation of thyroxine replacement therapy.

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Conflicts of interest
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