
Document heading: Case report

A case report on a rare manifestation of hypothyroid patient; cardiac tamponade

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Abstract

Here presented is a patient admitted to our hospital with cardiac tamponade, a rare manifestation of hypothyroidism. Her presentation was non-specific symptoms like easy fatigability, poor appetite and left anterior chest discomfort of 01 year duration. She was evaluated in our hospital before 05 months and was started on anti-tuberculous management. But despite the anti-tuberculous treatment her condition worsened and upon her current admission she has 01 episode of syncope. She was hypotensive and depressed. Pericardial fluid analysis showed a cell count of 200 cells per microliter but mycobacterium tuberculosis was not detected on AFB stain. Cytology of the pericardial fluid revealed just reactive effusion. Tamponade results from increased intrapericardial pressure caused by the accumulation of pericardial fluid. The rapidity of fluid accumulation is a greater factor in the development of tamponade than absolute volume of the effusion. Hypothyroidism is a well-known cause of pericardial effusion. However, tamponade rarely develops owing to a slow rate of accumulation of pericardial fluid. The treatment of hypothyroidic cardiac tamponade is different from other conditions. Thyroxine supplementation is all that is necessary. Rarely, pericardiocentesis is needed in a severely symptomatic patient. Our patient improved with levothyroxine treatment.

Keywords: Cardiac, thyroid, patient.

Introduction

Presenting this case is important for the following reasons:

- Pericardial effusion is a common clinical problem; though, cardiac tamponade is rarely a presenting manifestation of hypothyroidism.
- This patient presented with non specific symptoms to the extent that she was treated for tuberculous pericarditis, while the final diagnosis was severe hypothyroidism.
- Very few cases of hypothyroidic cardiac tamponade have been reported and this report will help clinicians to consider hypothyroidism as a possible cause of pericardial effusion, especially if other causes are less likely.
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CASE (symptoms and signs)

A 40 year old female presented to our hospital, University of Gondar hospital with a complaint of syncope, poor appetite, left anterior chest discomfort. She also has irregular menses which comes every 03-04 months and is just minimal. She additionally has constipation. She is taking anti tuberculous medications on the 6th month (at last month of scheduled course), after she was started on it empirically. Trial of empiric anti tuberculosis therapy is recommended in exudative pericardial effusion in tuberculosis endemic population[1]. According to the 2014 WHO Global TB report, 22 high burden countries account for 80 percent of the global TB cases and Ethiopia has the tenth highest TB burden in the world. She has no improvement despite it, but she failed to visit our hospital though. At admission, her blood pressure was 80/50 mmHg; pulse rate was 70 beats per minute. Respiratory rate was 20 per minute and Axillary temperature was 36.1 0C.

On other systems, she had slightly pale conjunctivae, distant heart sounds, has positive sign of fluid collection in the abdomen (i.e. positive shifting

dullness). But she has no organomegaly. Integumentary examination revealed dry thick cold and scaly skin more on the extremities, coarse scalp hair, no axillary or pupic hair loss, and no rash. She was apathetic otherwise conscious and oriented but deep tendon reflexes were delayed.

Investigation profiles and treatments

She was investigated 05 months before with CXR which revealed a left pleural thickening and CXR done after 10 days revealed bilateral pleural effusion. Echocardiography showed massive pericardial effusion (30 mm thick). Pericardial fluid analysis showed a cell

count of 200 cells with 45% neutrophils and the remaining were lymphocytes. Protein level was 2.09 g/dl and glucose level was 133 mg/dl. Gram stain and AFB stain were reported to be negative. Abdominal ultrasound has shown small ascitic fluid collection and left hydrosalpinx. Because of these and the epidemicity of tuberculosis in our set up she was empirically started on anti-TB. However she has no improvement rather she has worsening of her overall health status.

On her current admission echocardiography revealed massive pericardial effusion (23-31mm) with no echodebris. There was right atrial and ventricular diastolic collapse. ECG showed low voltage QRS amplitudes.

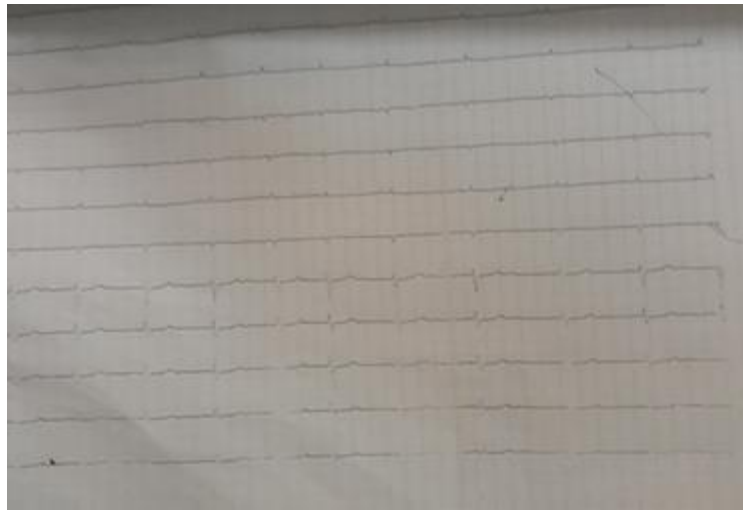


Figure 1. Low amplitude QRS complexes

Complete blood count has showed mild anemia with hemoglobin of 11 g/dl and MCV was 92 femtoliter, other CBC parameters were within normal range. Urinalysis is normal. Renal function test was normal. Total serum protein and serum albumin level were in the normal range. Serum antinuclear antibody test was negative. Blood sugar level was in the normal range. Her serum electrolytes were also in the normal range.

Her thyroid function test which unfortunately was not checked at her initial visit revealed that TSH was > 60 mIU/ml (normal range, 0.25-5 mIU/ml) and serum T4 was < 6 nmol/L (normal range, 60-120nmol/ml) while serum T3 was <0.4 nmol/L(normal range,1.2-2.6 nmol/L).

She was started on 75 micrograms of levothyroxine, and she had significant improvement.

Discussion

Pericardial effusion due to hypothyroidism was reported as early as 1918 and subsequently in 1925; however, cardiac tamponade due to hypothyroidism is very uncommon. Pericardial effusion is reported to occur in 30% to 80% of subjects with hypothyroidism. However, these earlier studies were conducted when the diagnosis of hypothyroidism was only suspected and was confirmed only in the presence of classic clinical features[2-4].

The diagnosis of pericardial effusion in hypothyroidism has recently been established in the early mild stage or more often in an asymptomatic stage because of more frequent or routine determinations of thyroid function tests, especially in the elderly. Thus the subjects in the older studies were severely hypothyroid at the time of diagnosis and may not be representative of the present hypothyroid

population. For this reason, 30 subjects with hypothyroidism were evaluated with echocardiography to reassess the evidence of pericardial effusion in this disorder. Only two subjects demonstrated pericardial effusion, and in only one of them with severe disease could the pericardial effusion be attributed to hypothyroidism, since it resolved on the patient's attaining the euthyroid state. Thus the incidence of pericardial effusion was only 3% to 6%, depending on the inclusion of one or both subjects, an extremely infrequent occurrence when compared with that of previous studies. Moreover, the occurrence of pericardial effusion in hypothyroidism appears to be dependent on the severity of the disease. Thus pericardial effusion may be a frequent manifestation in myxedema, an advanced severe stage, as previously found, but a rare association of hypothyroidism, an early mild stage, because of the timeliness with which the latter condition is nowadays detected[4].

In severe primary hypothyroidism the cardiac silhouette is enlarged, and the heart sounds are diminished in intensity[5]. These findings are the result largely of effusion into the pericardial sac of fluid rich in protein and glycosaminoglycans, but the myocardium may also be dilated. Pericardial effusion is rarely of sufficient magnitude to cause tamponade. Echocardiographic studies have revealed resting left ventricular diastolic dysfunction in overt and, in some studies, subclinical hypothyroidism[6]. These findings normalize when the hypothyroidism is treated.

In hypothyroidism, the accumulation of fluid in the pericardial space usually occurs very slowly, allowing enough time for the pericardium to stretch and, therefore, cardiac tamponade is extremely rare[7]. Smolar et al, in 1976, did literature review and found only 13 reported cases of cardiac tamponade from hypothyroidism[8]

Most patients had improved with thyroxin replacement with or without therapeutic pericardiocentesis as reported in various case reports [7,9-13]

Conclusion

Though cardiac tamponade (massive pericardial effusion) is a rare manifestation of hypothyroidism, it is wise to consider hypothyroidism as a potential cause of pericardial effusion, especially if other causes are

ruled out. Thus measuring TSH (thyroid stimulating hormone) is prudent in patients with pericardial effusion particularly if the cause is not evident on history and physical examination and other investigations.

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