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Complete Heart Block Secondary to Newly - Diagnosed Hypothyroidism in 62-Year-Old Female

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Abstract

Hypothyroidism has been reported as an uncommon- and possibly reversible - cause of atrioventricular (AV) node heart block. Common causes of AV block include ischemia; iatrogenic causes (typically medications, but also surgical complications), infiltrative conditions such as sarcoidosis, amyloidosis, or malignancy; and infectious conditions such as Lyme disease. This report describes a patient with complete heart block apparently caused by newly-diagnosed hypothyroidism.

Keywords: AV node heart block; Complete heart block, Hypothyroid; Pacemaker; Levothyroxine

Case Report

A 62- year-old Caucasian female with past medical history of hypertension (controlled with losartan) presented to her Primary Care Physician (PCP) with fatigue and lightheadedness. She reported leg heaviness, fatigue and some lightheadedness, especially with exertion. These symptoms had begun 2 weeks prior to presentation and progressively worsened. She denied episodes of syncope. However, stated she was on her feet a lot at work and needed to take frequent breaks to sit down. Patient denied any chest pain, dyspnea, nausea, vomiting, diarrhea, or palpitations. She denied recent camping trips, walking in wooded areas, or body rashes. She lived in a state where Lyme disease is not endemic, and she had not recently traveled. She denied history of tick bite. Her only medication was losartan. An electrocardiogram obtained in her PCP's office showed complete heart block, and she was referred to the emergency department for further evaluation.

Upon arrival, she was afebrile, with a blood pressure of 201/58 mmHg, a heart rate of 37/min, a respiratory rate of 18/min, and an oxygen saturation of 95% while breathing ambient air. She appeared, alert, well-nourished, in no acute distress and comfortable. Cardiovascular examination revealed bradycardia, regular rhythm, no murmur, rubs or gallops and intact distal pulses. Pulmonary/Chest exam revealed, normal effort and breath sounds, good aeration, in no respiratory distress, no wheezes, rhonchi or rales, no chest tenderness. Abdominal exam was soft with normal bowel sounds and no distension or tenderness. Examination of extremities showed trace bilateral pitting edema of lower extremities, bilateral distal extremities cold to touch, and pedal pulses palpable and strong.

The electrocardiogram (ECG) (Figure 1) showed complete AV block, HR 41 and LVH.

Laboratory findings revealed normal BMP and CBC, but elevated TSH of 44.7 u/ml and low total thyroxine (T4) of 4.6 ug/dl. Troponin I was undetectable. A chest X-ray was unremarkable.

She was admitted to a telemetry floor for close monitoring. External pacing was not required; however, a permanent pacemaker was placed the next day. An echocardiogram revealed hyperdynamic systolic function with an ejection fraction of 75%, no regional wall motion abnormalities, and no other structural abnormalities. Lyme titers were negative. Levothyroxine therapy was started. Blood pressure was controlled after the addition of amlodipine, carvedilol and hydrochlorothiazide to home losartan regimen. Repeat TSH after 4 months was 14.0 u/ml, and free T4 was 0.99 ug/dl. Most recent labs, after 5 months show TSH of 6.0 u/ml and T4 of 0.97 ug/dl. No adjustments to her levothyroxine dose have been made yet. Her most recent ECG, one month after showed sinus rhythm, left atrial abnormality, atrially sensed and ventricularly paced (Figure 2). At three month follow up with cardiology, patient was asymptomatic and doing well.

Discussion

The patient presented with complete heart block and new evidence of hypothyroidism.

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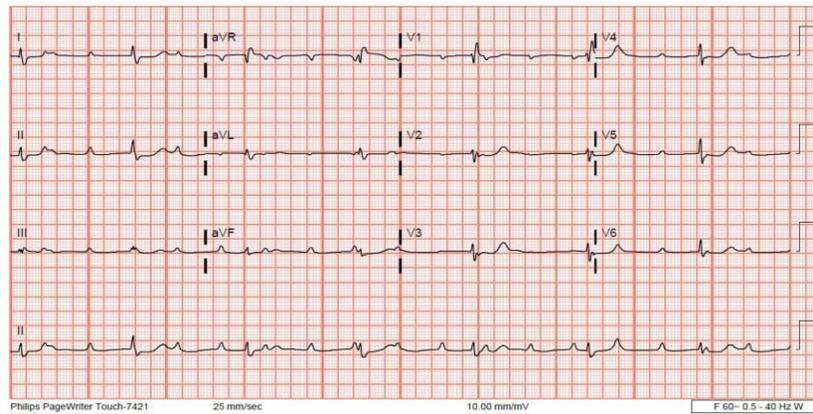


Figure 1: Complete AV block and bradycardia.



Figure 2: Normal sinus rhythm post pacemaker placement.

Although she did not undergo a full ischemic work-up, her troponin level was undetectable, no wall motion abnormalities were identified on echocardiography, and she has had no chest pain during three months of follow-up. An evaluation for Lyme disease was negative. While sarcoidosis may cause heart block, she had no evidence of sarcoidosis on physical examination or chest X-ray. Cardiac MRI is a tool to assess for infiltrative cardiac pathology; however, her pacemaker precluded MRI evaluation.

Although hypothyroidism is an uncommon cause of heart block, there are several case reports of resolution of atrioventricular block after correction of associated hypothyroidism [1], and hypothyroidism seems the most likely explanation for our patient's complete heart block.

Hypothyroidism is five to eight times more common in women than men. Prevalence of overt hypothyroidism varies from 0.1 to 2 percent [2-6]. However, subclinical hypothyroidism is higher, ranging from 4 to 10 percent of adults, with a higher frequency in older women [2,4,8].

Shortness of breath; with and without exertion, bradycardia with AV block, hypertension, poor cardiac contractility, dilatation, or pericardial effusion have also been described in association with hypothyroidism [8,9]. In this case report, the female patient is younger than usual for patients experiencing heart block and previously healthy. Her initial vague symptoms prompted the TSH check. With placement of permanent pacemaker, patient's symptoms resolved.

Conclusion

This case report demonstrates that a fairly common disease like hypothyroidism can lead to life-threatening consequences. Thus, thyroid function abnormalities should always be tested when patients present with fatigue and lightheadedness, especially when

due to complete heart block, since the block may be caused by hypothyroidism. Similarly, this cardiac consequence should be kept in mind when managing patients with hypothyroidism.

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