Lyme Carditis Progressing to Second Degree 2:1 Type 2 AV Block

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Introduction

- Lyme disease is a well-established tick-borne illness most commonly caused by the Borrelia burgdorferi species and transmitted by the Ixodes scapularis tick.
- It is estimated that approximately 476,000 people are diagnosed and treated for Lyme disease in the United States annually. Only 1.5% of patients diagnosed with Lyme disease will develop Lyme cardiomyopathy, most commonly in males 20-40 years of age.
- Diagnosis of Lyme disease is made via two-tined test: initial screening with enzyme immunoassay or immunofluorescence assay, followed by confirmation testing of positive results using IgG/IgM immunoblots. A modified testing is an acceptable alternative.
- Lyme carditis is diagnosed by EKG or signs of acute myocarditis/pericarditis with a positive Lyme serology.
- Lyme disease presentation depends on the stage of disease. Symptoms typically include low grade fever, myalgia, and joint pain. Lyme carditis in a complication of early disseminated Lyme disease.
- Patients with Lyme carditis typically present with generalized symptoms beforehand including malaise, fatigue, headache, stiff neck, fever, myalgia, and lymphadenopathy. Cardiac symptoms occur a median of 21 days after erythema migrans.
- Varying AV blocks are the most common abnormality of Lyme carditis.
- Symptoms of Lyme carditis may include palpitations, syncope, chest pain, and shortness of breath.

Case Description

History of Presenting Illness

- 35-year-old male patient was seen at the ER with 24 hours of palpitations in late August.
- Patient’s heart rate progressively increased in the past 24 hours.
- 3-week history of persistent body aches and joint pain.
- 2-weeks ago, patient was diagnosed with a “viral etiology” due to an abdominal musculosclerous rash and was prescribed prednisolone.
- 6 days later, the patient was seen at urgent care and was prescribed dicyclamycin for empiric treatment of Lyme disease. No Lyme disease testing was done.
- The patient was told not to take the dicyclamycin if symptoms improve.
- The patient opted not to take the antibiotics, as his symptoms worsened.
- Past Medical History

- Medical History: Anaemia 6 years ago treated with dicyclamycin.
- Surgical History: Not pertinent.
- Medications: 15-day prednisolone taper completed one day prior.
- Allergies: Penicillin, rennin-angiotensin.
- Family History: Negative for heart disease or rheumatologic conditions.
- Social History: Patient spends a lot of time outside and has dogs that run outdoors often. “Occupation is not outdoors. Daysen recently traveled.”
- Alcohol use: 10-12 standard drinks/wk.
- Cigarette: Current (15 pack-year)
- Drugs: Denies

Physical Examination

- Vitals: BP: 120/72 mmHg
- Pulse: 57 beats per minute
- Oxygen Saturation: 99%
- Temperature: 97.8° F

- General: No acute distress, non-tender lymph nodes.
- Cardiovascular: Congenital heart murmur- no murmur. Cardiac palpation: soft, symmetric, irregular, and non-binding.
- Pulmonary: No respiratory distress. Venous sounds throughout.
- No jugular distention, chest xray.
- Abdominal: Soft, non-tender and non-distended.
- Musculoskeletal: 55% strength and full ROM in all extremities bilaterally.
- No joint swelling or lower extremity edema.
- Skin: Mild erythematous musculosclerous rash of the lower abdomen. No bullae or ecchymoses. No tick bites.
- Neurologic: No focal deficits.

Diagnoses

- CBC: WBC: 8.4 x10^9/L, Hgb: 14.0 g/dL, Hct: 42.5%, Platelets: 248,000,000.
- BMP: Uremia.
- Lipid panel: Total cholesterol: 242 mg/dL.
- Electrocardiogram: Preserved biventricular function with a left ventricular EF of 69% and no significant valvular regurgitation.
- EKG: Second degree AV node block type 1 with left anterior fascicular block.
- Tack-borne disease serology sent and Lyme disease positive on hospital day 3.

Hospital Course

Hospital Day 1: Patient developed 2:1 type 2 degree AV nodal block with ventricular escape beats and left anterior fascicular block.
Patient was transferred to ICU and placed on transcutaneous pacemaker.

Hospital Day 2: Patient alternated between second degree type I and type 2 AV nodal block on telemetry.
On day 3, Lyme disease labs were positive.

Hospital Day 4: Patient converted to first degree AV block with episodes of varying second degree AV nodal block on telemetry.

Hospital Day 5: Patient remained in first degree AV nodal block.

Differential Diagnosis

- Anaplasmosis
- Rocky Mountain Spotted Fever
- Babesia Microti
- Lyme Disease
- Scarlet Fever
- Lyme Carditis
- ECG

Diagnosis: Lyme Carditis

Case Outcome

- The patient was discharged with a Holter monitor and was scheduled to follow up with cardiologist.
- A PCCD was placed inserted at discharge for 21 days outpatient V catheters.
- 3 weeks post discharge, patient was asymptomatic. He was transitioned to dicyclamycin for PO x 3 weeks.
- Patient was found to be asymptomatic in 3 months.

Conclusion

- The most common presentation of Lyme carditis involves varying forms of AV block.
- Only patients with Lyme disease presenting with cardiac symptoms require an EKG.
- Lyme disease is treated with antibiotics, typically IV ceftriaxone.
- Lyme carditis in hospitalization and treatment periumentricular is usually not necessary.
- Clinicians in areas of high endemic Lyme disease should have Lyme carditis in the differential in patients presenting with sudden onset AV blocks, myocarditis, or pericarditis.

References