Introduction

- Lyme disease is caused by the spirochete *Borrelia burgdorferi* commonly transmitted through the bite of an Ixodes tick.
- Common Lyme manifestations include fever, chills, headache, fatigue, arthralgias, erythema migrans, and rare cardiac complications.
- Example of Lyme cardiac manifestations = AV block, endocarditis, myocarditis, pericarditis, dilated cardiomyopathy.

SA node failing to generate an impulse

SA node failing to generate an impulse

Figure 1: Ixodes tick

Figure 2: Electrocardiographic example of a sinus exit block

Case

“A 52-year-old male presented for syncope with prodromal lightheadedness and dizziness.”

- **PMHx:** Hypertension, obstructive sleep apnea, vocal cord paralysis, history of Lyme disease years ago
- **ROS:** Fever, chills, malaise, fatigue, myalgias, and arthralgias lasting one day
- **Objective:** Echo revealed LVEF 55-60%, normal wall motion, no pericardial effusion, and no valvular abnormalities. ECG with nonspecific intra-ventricular conduction delay
- **Admission:** A witnessed syncope event in the ED w/ nausea/vomiting and telemetry at time captured an 11 second pause prompting admission to CICU for transvenous pacing.
- **Differentials:** Lyme carditis vs. cardiac sarcoidosis especially in setting of no prior history of conduction disease.

Figure 3: Cardiac MRI with no evidence of myocarditis or sarcoidosis.

Decision-Making

- **Treatment:** Antibiotic treatment, TVP, and ultimate dual chamber pacemaker placement.
- Management of SA nodal disease attributed to Lyme carditis has been under debate given the very few documented cases.
- Some studies have shown the complete resolution of the sinus pauses after antibiotic treatment while others have necessitated initial treatment to be pacemaker placement.
- A combination of antibiotic treatment and pacemaker placement allowed for the best outcome in this patient with symptomatic sinus arrests.

Conclusion

- Lyme carditis classically presents as an atrioventricular block leading to third-degree heart block.
- Lyme is known for causing conduction pathway abnormalities by blocking signals from a functioning sinus atrial node.
- It is imperative to consider that Lyme carditis can have SA nodal involvement with subsequent sinus arrest/pause, thus allowing for proper treatment.

References


Image References:
