

Runaway Heartbeat: A Rare Case of Sinus Exit Block Associated with Lyme Disease

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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



Figure 1: Ixodes tick



Figure 2: Electrocardiographic example of a sinus exit block

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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 syncopal 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

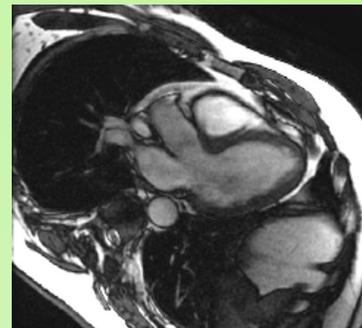


Figure 3: Cardiac MRI with no evidence of myocarditis or sarcoidosis.



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