

Introduction

- Lyme disease is a tick-borne illness caused by the spirochete bacterium *Borrelia burgdorferi*.
- Lyme disease is primarily transmitted to humans through the bite of infected black-legged ticks, commonly known as deer ticks.
- Lyme carditis, a rare manifestation, involves cardiac complications and can pose serious health risks if not promptly diagnosed and managed
- Management of Lyme carditis ranges from antibiotics to permanent pacemaker placement
- We present a case of Lyme carditis, highlighting the clinical presentation, diagnostic workup, treatment, and outcomes.

Case Presentation

- A 40-year-old previously healthy male presented with a two-week history of generalized fatigue
- He endorsed flu-like symptoms, including myalgias, and migratory arthralgias which he initially attributed to aging
- Patient denied any noticeable skin rash
- He was alerted by his Apple watch for irregular heart activity (Figure 1).
- The patient lives in an endemic area for Lyme disease and reports frequent exposure to ticks due to outdoor activity.
- On physical examination, he exhibited an irregular pulse, bradycardia and diminished heart sounds.
- An electrocardiogram (ECG) revealed a second-degree atrioventricular (AV) block with a ventricular rate of forty-eight beats per minute
- Laboratory investigation confirmed the presence of Lyme disease, with positive immunoglobulin G (IgG) and immunoglobulin M (IgM) antibodies
- The patient was promptly initiated on long-term oral antibiotic therapy with doxycycline to target the underlying infection.
- It is recommended that patients with Lyme carditis be hospitalized for IV antibiotics, which should be continued until high-grade AV block has resolved. Patient is then switched to oral antibiotics to complete a 14 to 21-day course

Figures



Figure 1. EKG demonstrating second degree AV block type II (performed May 2023)



Figure 2. EKG demonstrating normal sinus rhythm after resolution of Lyme disease (performed July 2023)

- Outpatient management of patient's AV block was a product of shared decision making between the patient, primary physician and consultants
- Patient was under surveillance and had regular access to follow up, so it was deemed safe for patient to be treated un-hospitalized
- Over the next several weeks, the patient's symptoms improved, and repeated ECG demonstrated resolution of heart block.

Conclusion

Lyme carditis is a reversible cause of conduction system anomalies. Lyme carditis is a rare manifestation in Lyme disease. In patients with unexplained heart block, it is important to maintain a high index of suspicion for Lyme disease. Using clinical judgment and shared decision making to administer oral antibiotics instead of IV antibiotics may minimize healthcare costs and length of hospital stay for patients.

Regular follow up is essential. Most cases of AV block resolve within the first 10 days of antibiotic treatment, but some cases may not resolve for 42 days. This is why conduction abnormalities must be monitored via EKG to ensure appropriate resolution.

This case highlights the importance of considering Lyme carditis as a cause of heart block in patients presenting with suggestive symptoms, especially in endemic areas. Additionally, it points to oral antibiotics as a treatment option for Lyme carditis as an alternative to IV antibiotics.

Timely diagnosis, appropriate antibiotic therapy, and close cardiac monitoring are essential for successful management and a positive outcome for patients with Lyme carditis.

References

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