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Refining an approach to Lyme Carditis

We read with great interest the recently published case report by Cheung et al. entitled "Possible Lyme Carditis with Sick Sinus Syndrome" [1]. They discuss a 47-year-old male with Lyme disease presenting with multisystem manifestations, including cardiac (bradycardia) and neurological (right cranial nerve VI palsy). Although atrioventricular block (AVB) is the most common presentation of Lyme carditis (LC), sick sinus syndrome (SSS) is a rare sequelae of Lyme infection that has also been reported in the literature [2–6]. We commend Cheung et al. for promoting discussion on this topic and wish to contribute to additional aspects of the case.

Firstly, the case report by Cheung et al. emphasizes that patients may present with a subset of the known possible symptoms of Lyme, and moreover, that patients may not develop symptoms in the classic step-wise fashion. The application of the Suspicious Index in Lyme Carditis (SILC) score to this patient suggests an intermediate risk for LC. Our research group also recently reported on a case of SSS due to LC in a 22-year-old male with prolonged sinuses pauses >6 s and a SILC score corresponding to a high likelihood of LC [2]. As the authors have astutely highlighted, although the SILC score was derived and validated to help determine the likelihood of LC in a patient presenting with AVB [7], it may be possible to extend this risk stratification score to other conduction abnormalities in the appropriate clinical context.

Notably, Cheung et al. illustrate the transient nature of the conduction abnormalities in LC with appropriate antibiotic treatment. The bradycardia resolved over 7 days with intravenous ceftriaxone, and then the patient was discharged to complete a full course of oral doxycycline. In this case, a stress test could have been considered particularly valuable in assessing the chronotropic competence of the sinus node. Similarly, in our proposed systematic algorithm for the diagnosis and management of high-degree AVB in LC (Fig. 1), a pre-discharge stress test is recommended to assess the stability of AV conduction [8]. If 1:1 AV conduction is maintained >120 beats per minute (bpm), then an outpatient oral antibiotic regimen is recommended. However, if conduction fails at <90 bpm, a permanent pacemaker may be recommended. If the point of Wenckebach is 90–120 bpm, a repeat stress tests is advisable in four to six weeks before deciding on permanent pacing.

Furthermore, Cheung et al. describe the diagnosis of SSS based on asymptomatic sinus bradycardia with ventricular rates of 45 and high 30 bpm, "several two second pauses", and no AVB—in the context of normal sinus rhythm at 77 bpm several days prior [1]. The persistence of the sinus bradycardia is not clearly delineated in the case report, nor is the nature of the cardiac monitoring. Given the rapid fluctuation of other conduction abnormalities in LC to complete AVB or asystole [9–12], strict cardiac monitoring may be useful in such cases to help elucidate the progression of the sinus node dysfunction and the possible intermittent presence of other conduction defects.

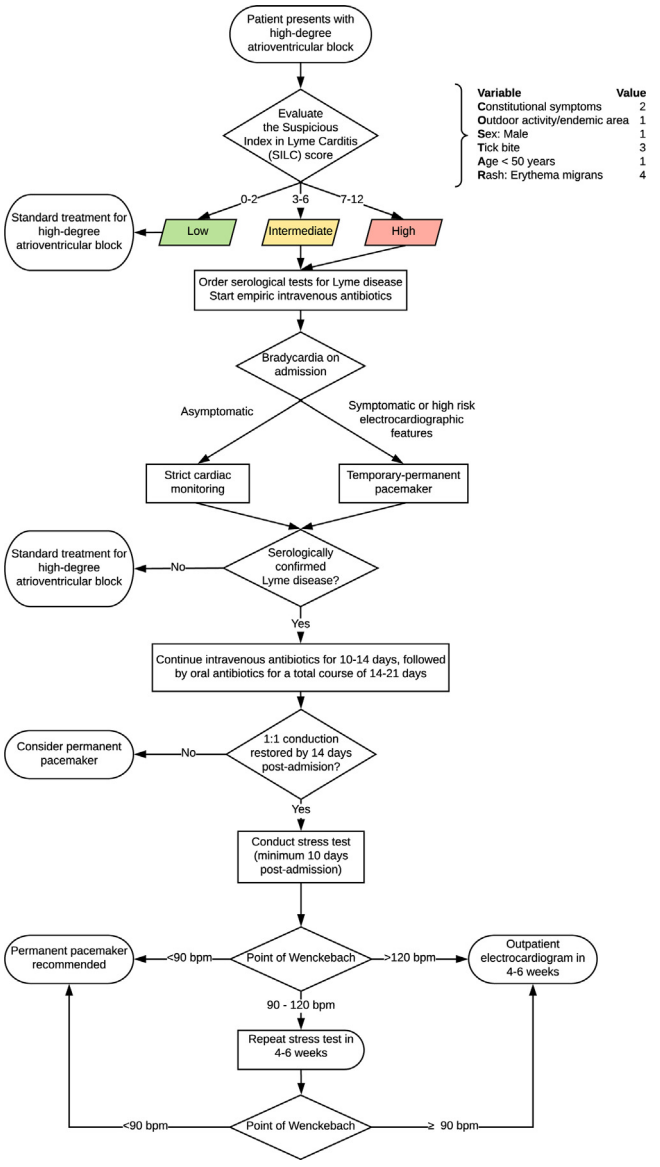

Fig. 1. Systematic approach to the diagnosis and management of Lyme carditis and high-degree atrioventricular block. Reproduced with permission from [8].

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Declaration of Competing Interest

None.

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References

[1] Cheung B, Lutwick L, Cheung M. Possible Lyme Carditis with sick sinus syndrome. IDCases 2020.
[2] Gazendam N, Yeung C, Baranchuk A. Lyme carditis presenting as sick sinus syndrome. J Electrocardiol 2020;59:65–7.
[3] Bartunek P, Nemec J, Mrazek V, Gorican K, Zapletalova J. [Borrelia burgdorferi as a cause of sick sinus syndrome?]. Cas Lek Cesk 1996;135(22):729–31.
[4] Franck H, Wollschlager H. [Lyme carditis and symptomatic sinus node dysfunction]. Z Kardiol 2003;92(12):1029–32.
[5] Oktay AA, Dibs SR, Friedman H. Sinus pause in association with Lyme carditis. Tex Heart Inst J 2015;42(3):248–50.
[6] Grella BA, Patel M, Tadepalli S, Bader CW, Kronhaus K. Lyme carditis: a rare presentation of sinus bradycardia without any conduction defects. Cureus 2019;11(9):e5554.
[7] Besant G, Wan D, Yeung C, Blakely C, Branscombe P, Suarez-Fuster L, et al. Suspicious index in Lyme carditis: systematic review and proposed new risk score. Clin Cardiol 2018;41(12):1611–6.
[8] Yeung C, Baranchuk A. Diagnosis and treatment of lyme carditis: JACC review topic of the week. J Am Coll Cardiol 2019;73(6):717–26.
[9] Krause Pj, Bockenstedt Lk. Cardiology patient pages. Lyme disease and the heart. Circulation 2013;127(7):e451–454.
[10] Wormser GP, Dattwyler RJ, Shapiro ED, Halperin JJ, Steere AC, Klempner MS, et al. The clinical assessment, treatment, and prevention of lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. Clin Infect Dis 2006;43(9):1089–134.
[11] Steere AC. Lyme disease. N Engl J Med 2001;345(2):115–25.
[12] Pinto DS. Cardiac manifestations of Lyme disease. Med Clin North Am 2002;86(2):285–96.

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