

# Lyme Myocarditis Presenting as Fascicular Tachycardia with Underlying Complete Heart Block

YISACHAR J. GREENBERG, M.D., JOSEPH J. BRENNAN, M.D.,  
and LYNDA E. ROSENFELD, M.D.

From the Section of Cardiovascular Medicine, Yale University School of Medicine, New Haven, Connecticut

**Lyme Myocarditis with Fascicular Tachycardia.** A case of Lyme myocarditis manifest as a fascicular tachycardia is presented. Subtle findings of heart block in the presence of preserved ventricular function led to the correct diagnosis in this otherwise healthy patient. Treatment with ceftriaxone resolved both abnormalities. (*J Cardiovasc Electrophysiol*, Vol. 8, pp. 323-324, March 1997)

*fascicular tachycardia, heart block, Lyme disease*

## Introduction

The most common manifestation of Lyme myocarditis is first-degree AV block.<sup>1</sup> Two percent to 20% of patients<sup>2</sup> develop complete heart block, which may require temporary<sup>3</sup> and, rarely, permanent pacing. Multiple electrophysiologic abnormalities have been associated with Lyme myocarditis, including intra-Hisian block,<sup>4</sup> and nonsustained<sup>1</sup> and, rarely, sustained ventricular tachycardia.<sup>5</sup> Yet, tachyarrhythmias as a manifestation of Lyme myocarditis are uncommon, and sustained fascicular tachycardia has not been described. We present a patient with Lyme myocarditis who had syncope, sustained fascicular tachycardia, and subtle ECG findings of heart block, which led to the correct diagnosis and early antibiotic treatment.

## Case Report

A previously healthy 42-year-old white male marathon runner presented with 2 weeks of malaise, headache, and loose stools. A rash was denied. Episodes of syncope began 2 days prior to admission.

In the emergency department, his blood pressure was 110/60 and pulse 102 beats/min without orthostatic changes. His temperature was 100.8°F. Cannon A waves were apparent, and there was a varying first heart sound without a murmur, rub, or third or fourth heart sound. The remainder of the examination was unremarkable. The chest X-ray and echocardiogram were normal.

The ECG (Fig. 1) demonstrated a fascicular tachycardia with a right bundle, left posterior hemiblock pattern at a rate of 102 beats/min with AV dissociation. The atrial rate was 90 beats/min. Despite the relatively slow tachycardia rate and appropriately timed P waves, no interference or fusion beats were seen suggesting the presence of underlying heart block. Laboratory studies were normal except for a sedimentation rate of 42 mm/hour.

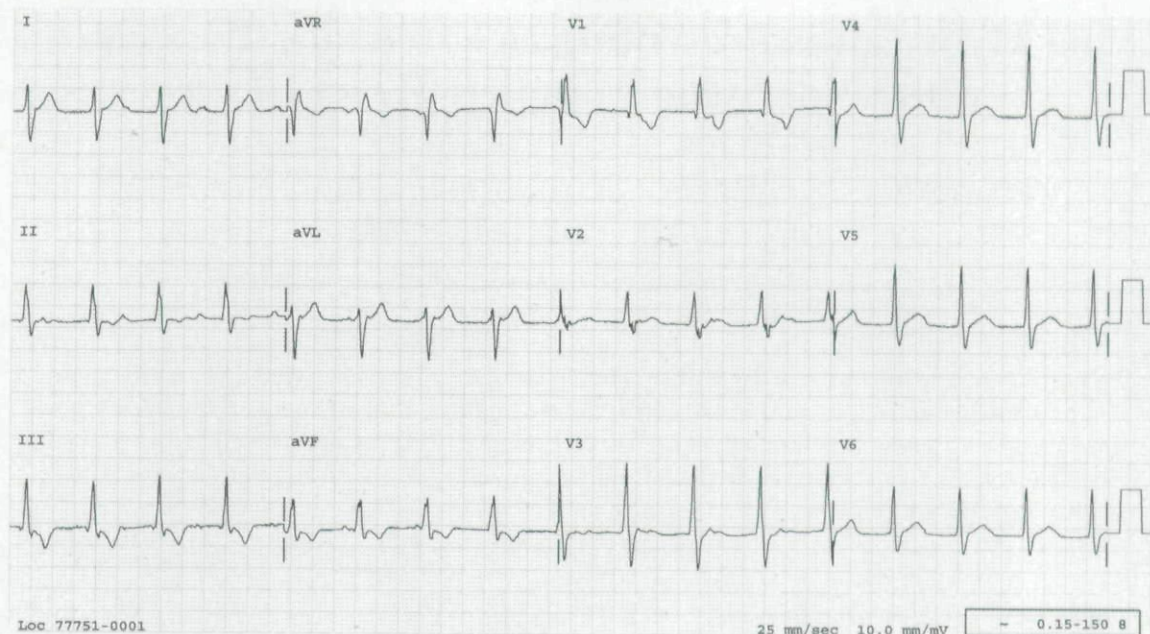
Because of concern about underlying heart block, a temporary pacing catheter was inserted. Intravenous adenosine and lidocaine had no effect on the tachycardia. Programmed stimulation using single and double extrastimuli during the tachycardia did not affect the fascicular rhythm. Triple extrastimuli induced ventricular fibrillation, which reverted to fascicular tachycardia following a 360-J shock. An infusion of procainamide was begun. The tachycardia slowed and then stopped revealing sinus rhythm with complete heart block. Temporary pacing was required until the fascicular tachycardia returned. Initially slow, it gradually increased to the original rate.

On the first hospital day, serologic studies for Lyme and collagen vascular disease were obtained

Address for correspondence: Lynda E. Rosenfeld, M.D., Section of Cardiovascular Medicine 3FMP, Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510. Fax: 203-737-2437.

Manuscript received 18 August 1996; Accepted for publication 10 October 1996.





**Figure 1.** A 12-lead ECG demonstrating fascicular tachycardia with a right bundle branch block, left posterior hemiblock pattern indicating an origin from the anterior fascicle of the left bundle. Note the absence of fusion or interference beats despite the presence of P waves, especially apparent in leads II and III, that are 230 to 290 msec prior to the QRS. This suggests the presence of underlying heart block.

and empiric therapy with ceftriaxone, 1 g every 12 hours was begun. The fascicular rhythm gradually slowed, but complete heart block persisted. However, on day 7 occasional sinus beats with marked first-degree AV block were conducted. Subsequently sinus rhythm resumed with Mobitz type I AV block and disappearance of the fascicular tachycardia. Lyme serologies demonstrated an acute IgM response by ELISA, and Western blot testing confirmed this finding. Further improvement continued, and the patient was discharged on day 9.

### Discussion

This is the first reported case of Lyme myocarditis presenting as a fascicular tachycardia. By ECG criteria the tachycardia originated from the anterior fascicle of the left bundle, and the lack of fusion or interference beats on the ECG suggested complete heart block. This led us to consider the diagnosis of Lyme disease in this otherwise healthy patient with preserved ventricular function and a nonspecific systemic illness. It is possible that a single or contiguous lesions produced both the heart block and what appeared to be an automatic tachycardia. Electrophysiologic findings supporting such a mechanism for this rhythm include warm-up phenomena, vari-

able rate, and unresponsiveness to programmed stimulation.

It has been our experience that patients with cardiac manifestations of Lyme disease often do not have the typical presentation with erythema chronicum migrans. It is likely that when this rash is recognized, the patient receives early antibiotic therapy and does not progress to Lyme myocarditis.<sup>2</sup>

This case broadens the described cardiac manifestations of Lyme disease and demonstrates that, despite early treatment, resolution of heart block may take 1 week or more.

### References

1. Steere AC, Batsford WP, Weinberg M, et al: Lyme carditis: Cardiac abnormalities of Lyme disease. *Ann Intern Med* 1980;93:8-16.
2. Rubin DA, Sorbera C, Nikitin P, et al: Prospective evaluation of heart block complicating early Lyme disease. *PACE* 1992;15:252-255.
3. Lorincz I, Lakos A, Kovacs P, et al: Temporary pacing in complete heart block due to Lyme disease: A case report. *PACE* 1989;12:1433-1436.
4. Rey MJ, Zimmermann M, Adamec R, et al: Intra-hisian 2:1 atrioventricular block secondary to Lyme disease. *Eur Heart J* 1991;12:1048-1051.
5. Vlay SC, Dervan JP, Elias J, et al: Ventricular tachycardia associated with Lyme carditis. *Am Heart J* 1991;121:1558-1560.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.