

Early recognition and management of Lyme carditis

Pholaphat Charles Inboriboon

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A 20-year-old man presented to the emergency department with 2 weeks of migratory arthralgias and several macular blanching rashes. A photograph taken by the patient upon initial eruption of the rash was presented during evaluation (Fig. 1). The lesions were suspicious for erythema migrans (Fig. 2). Upon review of systems, the patient earlier reported a brief episode of palpitations. Electrocardiogram



Fig. 1 Mobile phone image of erythema migrans at time of initial eruption

revealed first-degree atrioventricular (AV) block (PR interval 320 ms). He was admitted for telemetry monitoring and intravenous ceftriaxone.

He developed asymptomatic Wenckebach which progressed to a high-grade second-degree AV block (Fig. 3). Echocardiography showed global ventricular dysfunction (ejection fraction of 35%). Cardiac magnetic resonance imaging (MRI) revealed inflammation around the AV node (Fig. 4). Lyme carditis was confirmed after Western blot revealed *Borrelia burgdorferi* antibodies. The patient had resolution of symptoms 4 weeks after intravenous ceftriaxone treatment. Follow-up echocardiography, 5 months later, revealed normal left ventricular function (ejection fraction of 55%).

Patients with PR intervals greater than 300 ms are at risk for developing high-grade heart block [1, 2]. They can progress from first-degree heart block into complete



Fig. 2 Erythema migrans rash at time of presentation to the emergency department

P. C. Inboriboon (✉)
Department of Emergency Medicine, Strong Memorial Hospital,
University of Rochester,
601 Elmwood Ave MC 655,
Rochester, NY 14607, USA
e-mail: pinbor1@gmail.com

Fig. 3 EKG showing high-grade second-degree AV block

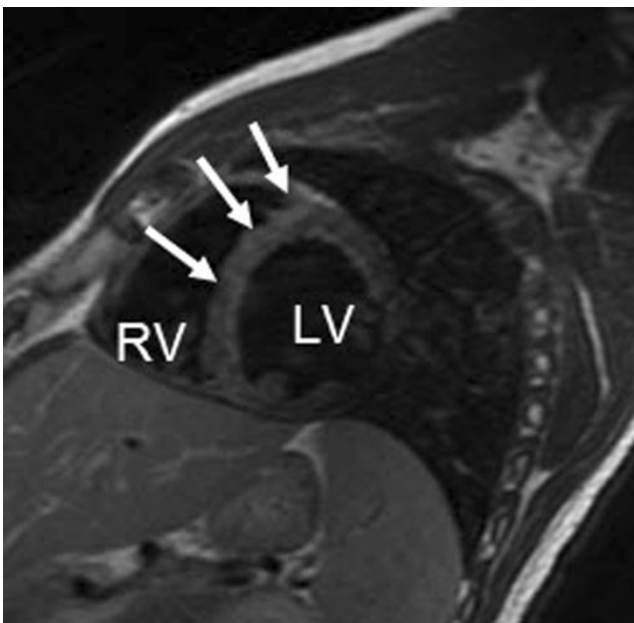
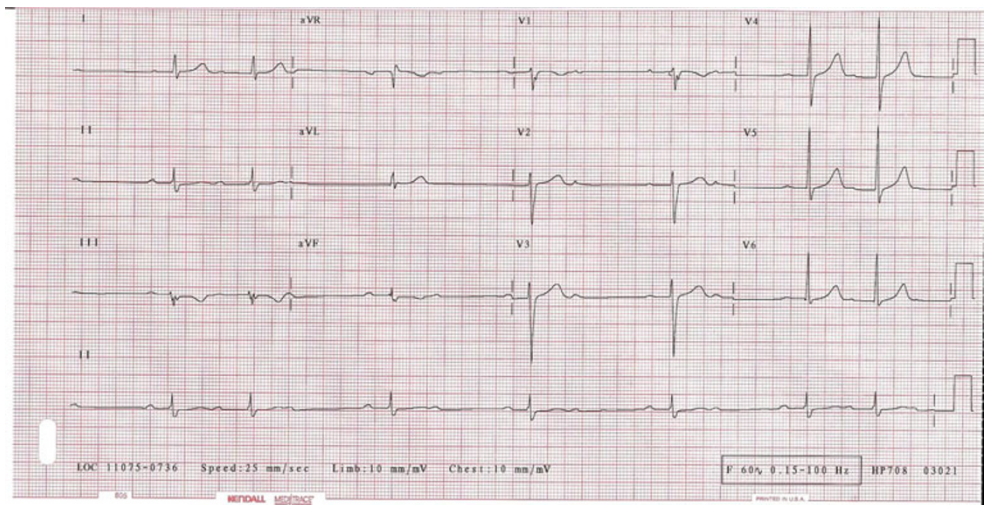


Fig. 4 Cardiac MRI reveals increased T2-weighted signal in the septum and anterior wall and a small focus of delayed enhancement in the apical septum consistent with inflammation and edema involving the AV node (*arrows*)

heart block within minutes [1, 2]. Cardiac monitoring and intravenous ceftriaxone or penicillin G should be strongly considered in these patients [2]. As much as one third of Lyme carditis patients may require temporary pacing, but almost all will have complete recovery following treatment [1, 3].

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