



## Case Report

# Peroperative cardiogenic shock suggesting acute coronary syndrome as initial manifestation of Lyme carditis



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**Abstract** Carditis can complicate Lyme disease in an estimated <5% of cases, and cardiogenic shock and severe cardiac arrhythmias are described with electrocardiographic abnormalities that could be suggestive of coronary manifestations. We report a case of severe persistent biventricular heart failure complicated by cardiac arrhythmias as initial manifestation of a Lyme disease developing peroperatively electrocardiographic abnormalities suggesting acute transmural myocardial infarction.

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## 1. Case report

A 49-year-old man presented to the emergency department with abdominal pain secondary to subacute intestinal occlusion after a nephrectomy for renal tumor a few weeks before. Intestinal limited resection had to be performed and was complicated at the end of the operation by sudden hemodynamic instability, with shock and electrocardiographic (ECG) inferolateral lesions suggesting acute coronary syndrome confirmed by troponin dosage. The findings from the coronarographic examination performed immediately at the end of the operation were normal. Inotropic support has to be initiated to stabilize the patient situation.

On intensive care unit (ICU) admission, the patient developed severe cardiac arrhythmias with ventricular tachycardia (VT) alternating with transient bradycardia. There was no fever or erythema migrans-like rash. At ICU admission,

repolarization abnormalities suggestive of acute coronary problem on ECG (Fig. 1A), followed by complete atrioventricular (AV) block, were present. Once stabilized, echocardiography revealed severe biventricular heart failure with a left ventricular ejection fraction (LVEF) of 12%, suggesting myocarditis (Fig. 2). An underlying sinus rhythm was present, but third-degree AV block persisted with intermittent sinus pauses. In a few instances, these had transformed into VT and ventricular flutter (Fig. 1B and C). Within 4 hours in the ICU, he developed polymorphic VT. The patient was resuscitated with intravenous magnesium, a 300-mg bolus of amiodarone, and defibrillation. Intermittent failure of the temporary pacemaker to sense and capture was evident and became more frequent. These events paralleled the continued rise in inflammatory parameters and serum C-reactive protein for the first 4 days of hospitalization and were attributed to diffuse, worsening myocardial inflammation. Nuclear magnetic resonance confirmed the severe alteration of left ventricle function associated with the presence of increased signal intensity suggesting inflammatory lesions of the myocardium and the diagnosis of myocarditis (Fig. 3). Ceftriaxone 1 g was given initially for suspected Lyme disease.

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**Fig. 1** Electrocardiographic (ECG) examinations. (A) ECG on ICU admission showing suggestive repolarization abnormalities developed perioperatively. (B) Third AV block with external pacing, supraventricular followed by ventricular tachycardia (VT) with resuscitation of the patient (C) several VT episodes during the first 5 ICU days.

Serum enzyme-linked immunosorbent assay and IgM Western blot were positive for Lyme disease (91 UA/mL; nL <22), without evidence of coinfection. Methylprednisolone 1000 mg was administered daily for 3 days. Hemodynamic support could slowly and successfully be withdrawn.

A second echocardiography demonstrated an LVEF between 10% and 25%. Oral vasodilators were initiated. Intrinsic conduction had improved sufficiently, but because of persistent left ventricle failure with recurrent ventricular arrhythmias, an automated implantable cardioverter/defibrillator

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