Epstein-Barr Virus Myocarditis as the First Symptom of Infectious Mononucleosis

Sergio Zabala López, Juana M. Vicario, Francisco J. Lerín, Amalia Fernández, Gloria Pérez and Cherpentier Fonseca

Abstract

This case report describes a 20-year-old immunocompetent man with an episode of chest pain radiating into both arms, an increase in the level of myocardial enzymes, electrocardiogram abnormalities (widespread ST-segment elevation and q waves in leads V4-V6) and serological evidence for acute Epstein-Barr Virus infection preceding typical signs and symptoms of infectious mononucleosis.

Key words: Epstein-Barr virus infection, acute myocarditis, infectious mononucleosis

(Int Med 49: 569-571, 2010)
(DOI: 10.2169/internalmedicine.49.2719)

Introduction

Epstein-Barr Virus (EBV) infections among adolescents and adults frequently result in infectious mononucleosis (IM). In most cases, the clinical manifestation of IM is that of the clinical triad of sore throat, fever and lymphadenopathy and clinically significant cardiac disease is uncommon (1). Myocarditis is unusual to appear as the first symptom of IM (2-4). Here, we describe acute myocarditis in an immunocompetent patient as the first symptom of IM.

Case Report

A previously healthy 20-year-old man was admitted because of acute chest pain from 12 hours previously. His medical history was unremarkable. He was taking no medication. Five days earlier he had watery diarrhea for two days and mild febrile sensation. Physical examination findings did not reveal any problems. ECG showed a normal sinus rhythm, RsR' pattern in V1-V2, widespread ST-segment elevation, and q waves in leads V4-V6 (Fig. 1). Chest X-ray was normal. Echocardiography showed normal systolic function and no pericardial effusion. Red cell count and hemoglobin levels were normal. White cell count showed 8,300 cells/mm³ (64% neutrophils, 18% lymphocytes). Abnormal values were obtained for C-reactive protein 29 mg/L (normal 0-8 mg/L), troponin-I 6.65 ng/mL (normal <0.05 ng/mL), creatinine-phosphokinase 392 IU/L (normal 55-170 IU/L), and significant muscle-brain fraction 30.8 mg/mL (normal < 6 mg/mL). On the third day after admission he complained about sore throat and developed fever (38.5°C). Pharyngitis and swelling of cervical lymph nodes were detected. Troponin-I peaked at 11.5 ng/mL, creatinine-phosphokinase peaked at 562 U/L and muscle-brain fraction at 56.5 mg/ mL. Serum chemistry showed: AST 98 IU/L (normal 12-36 IU/L), ALT 130 IU/L (normal 7-40 IU/L), GGT 72 IU/L (normal 12-54 IU/L), LDH 751 IU/L (normal 230-460 IU/L). Total leukocyte count was 7,800 cells/mm³ (32% neutrophils, 56% lymphocytes, 12% monocytes). Atypical lymphocytes were observed on blood smears. TSH was normal. Antinuclear antibodies and results of serologic studies for hepatitis A, B and C virus, HIV, toxoplasma and cytomegalovirus were negative. IgM Epstein-Barr virus viral capsid antigen was positive, and IgG viral capsid antigen and EBV nuclear antigen antibodies were negative. Abdominal ultrasonography was normal. The patient was treated with AAS and bisoprolol. ST-segment elevation returned to the baseline in a few days (Fig. 2). He recovered uneventfully and seven days after admission myocardial enzymes and C-reactive protein levels were normal, but liver enzymes showed an increase (AST 277 IU/L ALT 441 IU/L, GGT 115 IU/L). Two months later the serum chemistry was normal.
Figure 1.  ECG on the admission. Normal sinus rhythm, RsR’ pattern in V1-2, widespread ST-segment elevation, and q waves in leads V4-V6.

Figure 2.  ECG fourteen days after admission. Normal sinus rhythm, RsR’ pattern in V1, q waves in leads V4-V6 and return of the ST segment to the baseline.

Discussion

Acute myocarditis is a myocardial inflammatory disease often caused by cardiotropic viruses. Myocardial inflammation can lead to complications such as ventricular arrhythmias or cardiac dilatation and subsequently heart failure. Systematic intramyocardial viral genome quantification in acute myocarditis (624 patients) has identified adenovirus as the most common virus in the myocardium of children and adults (5). In this report, EBV prevalence was about 1% (3 of 239 positive PCR samples). The sensitivity of endomyocardial biopsy for myocarditis using standard histologic criteria is low due to variability in interpretation, sampling error and the focal and transient nature of the inflammatory infiltrates. Histologic examination reveals cellular infiltrates, which are usually mononuclear of varying severity and often associated with myocyte necrosis and disorganization of the myocardial cytoskeleton. EBV infection is common in the general population and has diverse clinical manifestations and occasional complications. However, cases of clinically significant cardiac disease as acute myocarditis (2-4) or pericarditis with sizable effusion (6), are rarely described. This case shows that the typical signs and symptoms of IM can be preceded by cardiac symptoms as chest pain and electrocardiographic abnormalities, sometimes mimicking myocardial...
dial infarction (4). In spite of normal echocardiographic findings, the magnitude of the troponin-I increase reflects the extent of myocyte damage in the present patient. The development of the typical clinical picture of IM took 3 days when pharyngitis, fever and lymphadenopathy appeared. Cardiac symptoms and the increase in the level of myocardial enzymes were resolved within the following days of his stay, but the liver enzymes showed an increase that was continued to two months later. Diagnosis for acute EBV-related infection was made serologically by means of IgM antibodies to VCA. There is significant difficulty in establishing a diagnosis of myocarditis because there is no established noninvasive “gold standard”. Cardiac Magnetic Resonance (CMR) can detect myocardial edema and myocyte injury in myocarditis and has been recognized as an effective and practical noninvasive diagnostic tool for acute myocarditis (2, 3). Findings include an increase in focal and global T2 signal intensity, increase in focal and global myocardial contrast enhancement and the presence of late gadolinium enhancement. The confirmatory diagnosis of recent infection relies on serology for EBV IgM antibodies, and exclusion of other etiologies. EBV infection is common in the general population and it is important that clinicians are made aware of this unusual presentation of IM.

References