Intra Coronary Pus Excretion Without Cardiac Abscess Formation as a Manifestation of Acute Culture Negative Endocarditis Associated With Acute Coronary Syndrome: A Rare Presentation

Rostam Esfandiari Bakhtiari[1], Mohaddeseh Behjati[2*], Bashir Najafabadian[3], Mehrzad Barghikar[4]

[1] *Department of Surgery, Shahrekord University of Medical Sciences, Shahrekord, Iran*

[2] *Interventional Cardiology Research Center, Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Iran*

[3] *Department of Biomedical Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran*

[4] *Department of Cardiology, Sedigheh Tahereh Cardiovascular Research Center, Isfahan University of Medical Sciences, Isfahan, Iran*

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Abstract- This case report describes a 27-year-old male intravenous cannabis user who presented with a week-long history of fever and dyspnea on exertion, subsequently developing typical chest pain in the last two days. Upon admission, the patient exhibited febrile tachycardia, pale and cold extremities, and a systolic murmur at the left sternal border. Laboratory findings included significantly elevated CRP, ESR, thyroid-stimulating hormone, and liver enzyme levels, alongside leukocytosis, anemia, hyperglycemia, hyponatremia, abnormal renal function tests, suspected anti-HCV antibody, and elevated cardiac troponins. Echocardiography revealed moderate left ventricular enlargement with severe systolic dysfunction, moderate right ventricular dysfunction, severe left atrial and mild right atrial enlargement, and a thickened, prolapsed bileaflet mitral valve with a large mobile mass on the atrial surface of the anterior mitral leaflet. The condition led to severe acute mitral regurgitation. Additional findings included moderate tricuspid regurgitation, moderate pulmonary arterial hypertension, mild circumferential pericardial effusion, and significant bilateral pleural effusion. Despite these findings, blood cultures were negative, suggesting culture-negative endocarditis. Elevated cardiac troponin levels and Q wave formation on septal leads warranted angiography, which revealed a cut-off first septal artery. The patient underwent mitral valve replacement and coronary artery bypass grafting, during which intracoronary pus excretion under high pressure was observed, indicating septic embolization to the coronary arteries. This case highlights the rare mechanism of acute coronary syndrome development through septic embolization in the setting of culture-negative acute endocarditis.

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Introduction

This case describes a 27-year-old male with a history of intravenous cannabis use who presented with a one-week history of fever and exertional dyspnea, with the development of typical chest pain during the preceding two days. Upon admission, the patient exhibited fever, tachycardia, and pale, cold extremities. Physical examination revealed a systolic murmur at the left sternal border. Laboratory findings demonstrated significantly elevated C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), thyroid-stimulating hormone, and liver enzyme levels, along with leukocytosis, anemia, hyperglycemia, hyponatremia, abnormal renal function

Corresponding Author: M. Behjati
Interventional Cardiology Research Center, Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Iran
Tel: +98 9132307657, E-mail address: dr.mohaddesehbehjati@gmail.com

tests, suspected anti-HCV antibody positivity, and markedly elevated cardiac troponins.

Case Report

Echocardiographic evaluation revealed moderate left ventricular (LV) enlargement (left ventricular end-diastolic volume index [LVEDVI]=98 ml/m²) with severe LV systolic dysfunction (left ventricular ejection fraction [LVEF]=39%), moderate right ventricular dysfunction, severe left atrial (LA) and mild right atrial (RA) enlargement, and a thickened, prolapsed bileaflet mitral valve (MV) with a large mobile mass attached to the atrial surface of the anterior mitral leaflet (AML). Additional findings included moderate tricuspid regurgitation, moderate pulmonary arterial hypertension, mild circumferential pericardial effusion, and significant bilateral pleural effusion (Figure 1).

Despite these findings, blood cultures remained negative, supporting a diagnosis of culture-negative endocarditis. Given the elevated cardiac troponin levels and Q wave formation in the septal leads (Figure 2), coronary angiography was performed, which demonstrated complete occlusion of the first septal artery (Figure 3). Consequently, the patient underwent mitral valve replacement accompanied by coronary artery bypass grafting. During surgery, intracoronary pus excretion under high pressure was observed (Figure 4). This finding of intracoronary pus excretion without cardiac abscess formation indicates septic embolization to the coronary arteries as a rare mechanism for the development of acute coronary syndrome (ACS) in the context of culture-negative acute endocarditis.

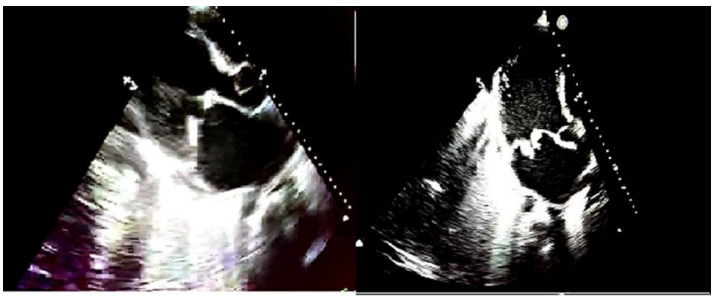

Figure 1. Echocardiographic Findings. This figure demonstrates the echocardiographic assessment of the 27-year-old patient, revealing moderate left ventricular (LV) enlargement with severe LV systolic dysfunction (LVEDVI=98ml/m², LVEF=39%). It also shows moderate right ventricular (RV) dysfunction, severe left atrial (LA) and mild right atrial (RA) enlargement, a thickened and prolapsed bileaflet mitral valve (MV) with a large mobile mass attached to the atrial surface of the anterior mitral leaflet (AML), moderate tricuspid regurgitation, moderate pulmonary arterial hypertension, mild circumferential pericardial effusion, and significant bilateral pleural effusion. These findings support the diagnosis of severe acute mitral regurgitation and culture-negative endocarditis

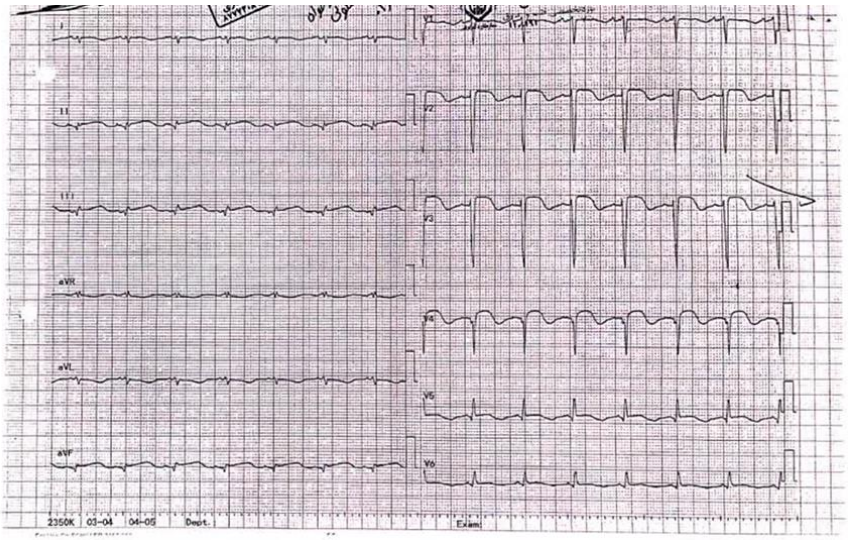

Figure 2. Electrocardiogram (ECG) Findings. This figure shows the electrocardiogram (ECG) findings of the patient, highlighting the Q wave formation in the septal leads. This indicates myocardial injury and aligns with the elevated cardiac troponin levels, suggesting an acute coronary event. The ECG findings, combined with other clinical evidence, supported the decision to perform angiography and further invasive intervention

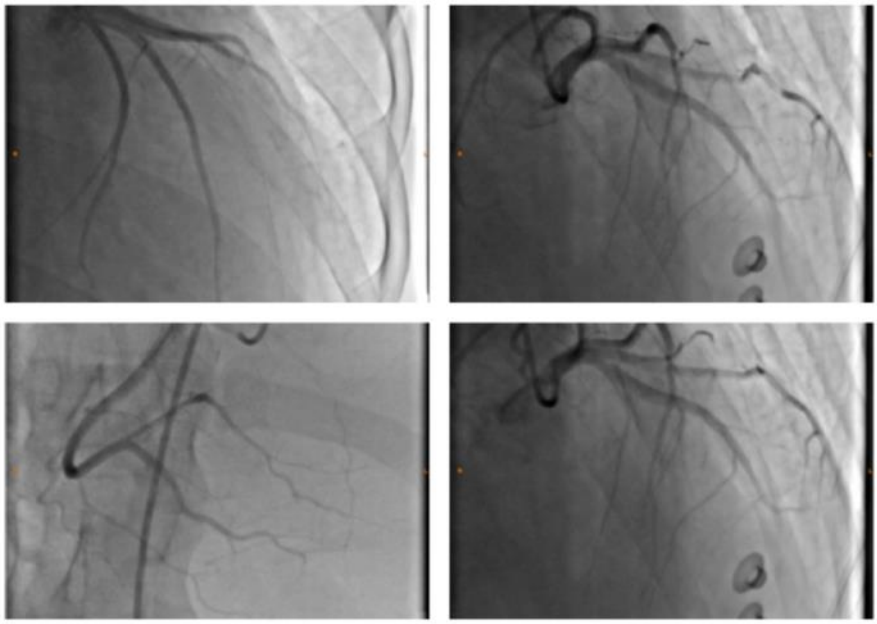

Figure 3. Angiographic Findings. This figure illustrates the angiographic findings of the patient, showing a cut-off of the first septal artery. This angiographic evidence, combined with elevated cardiac troponin levels and Q wave formation on the ECG, indicates significant coronary artery involvement. The cut-off suggests the presence of a thromboembolic event, aligning with the suspected septic embolization contributing to the development of acute coronary syndrome in this patient with culture-negative acute endocarditis

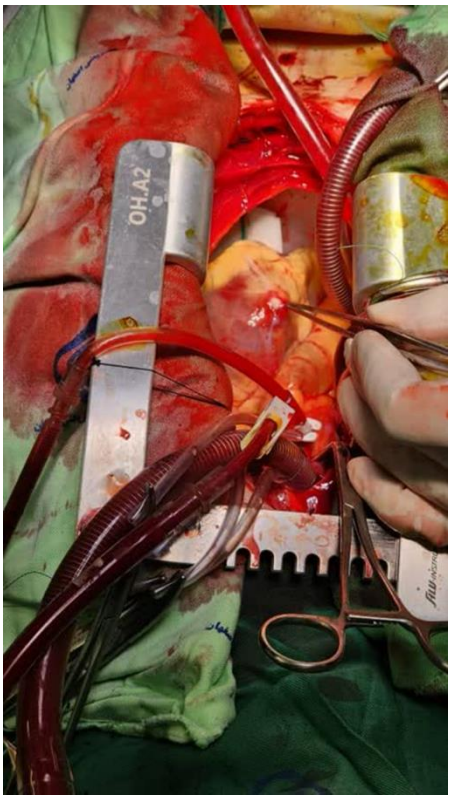

Figure 4. Intraoperative Findings. This figure captures the intraoperative observation of intracoronary pus excretion under high pressure during the patient's mitral valve replacement and coronary artery bypass grafting surgery. This unusual finding suggests septic embolization to the coronary arteries, highlighting a rare mechanism for the development of acute coronary syndrome in the context of culture-negative acute endocarditis. The visual evidence of pus excretion underscores the severity of the infection and the critical need for surgical intervention

Discussion

This case report details a 27-year-old male with intravenous cannabis use who presented with culture-negative endocarditis complicated by acute coronary syndrome. The patient's clinical course illustrates significant diagnostic challenges and unique pathophysiological mechanisms that warrant careful consideration in similar presentations.

Diagnostic challenges

A primary diagnostic challenge in this case was the negative blood culture despite clinical and echocardiographic findings strongly suggestive of infective endocarditis. Culture-negative endocarditis presents particular difficulties in both diagnosis and management, as it limits the ability to identify the causative organism and optimize antimicrobial therapy (2). In this instance, the elevated inflammatory markers (CRP and ESR) and the presence of a large mobile mass on the mitral valve provided critical diagnostic evidence, highlighting the essential role of comprehensive echocardiographic evaluation in such scenarios (3).

Pathophysiological mechanisms

The clinical presentation featured severe mitral regurgitation (MR), left ventricular enlargement, and systolic dysfunction, indicating substantial valvular and myocardial compromise. The echocardiographic detection of a large mobile mass on the atrial surface of the anterior mitral leaflet (AML), consistent with vegetation, provided evidence of active endocarditis. The intraoperative observation of intracoronary pus excretion represents a particularly significant finding, suggesting septic embolization to the coronary arteries. This rare phenomenon demonstrates how septic emboli can cause coronary artery obstruction and subsequent acute coronary syndrome, even in the absence of a conventional cardiac abscess San Román et al.,.

Clinical management

Management of this complex case required a coordinated multidisciplinary approach involving cardiology, cardiothoracic surgery, and infectious disease specialists. The decision to proceed with mitral valve replacement and coronary artery bypass grafting was necessitated by the severe mitral regurgitation and documented coronary artery involvement. The intraoperative confirmation of intracoronary pus further validated the necessity of surgical intervention. This case underscores the critical importance of timely surgical consultation and intervention in patients with severe valvular dysfunction complicated by evidence of embolic events (4).

Implications for practice

This case emphasizes several important considerations for clinical practice:

• High Index of Suspicion: Clinicians should maintain a heightened awareness for endocarditis in patients presenting with fever and new-onset murmurs, particularly when blood cultures remain negative. Comprehensive echocardiographic evaluation is essential in these clinical scenarios (1).

• Role of Echocardiography: Echocardiography serves as a cornerstone in the diagnosis of endocarditis, especially in culture-negative cases. Its capacity to identify vegetations, quantify valvular dysfunction, and detect associated complications provides invaluable diagnostic information (3).

• Multidisciplinary Approach: Effective management of endocarditis and its complications typically requires a collaborative team approach. Early surgical involvement can be life-saving in cases featuring severe valvular dysfunction and embolic complications (4,5).

• Awareness of Uncommon Presentations: Septic embolization to the coronary arteries, though rare, represents an important consideration in patients with endocarditis who present with acute coronary syndrome. Recognition of this possibility can facilitate timely and appropriate therapeutic interventions San Román et al.,.

This case report illustrates the complex diagnostic and management challenges associated with culture-negative endocarditis and its rare complications. It emphasizes the necessity of a systematic diagnostic approach, the critical importance of echocardiography, and the value of multidisciplinary collaboration in managing such challenging clinical scenarios. The unique observation of intracoronary pus excretion without cardiac abscess formation highlights an unusual pathophysiological mechanism contributing to acute coronary syndrome in the context of endocarditis. Continued documentation of such rare presentations through case reports will enhance clinical understanding and improve management strategies for these complex cases.

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