

Human Immunodeficiency Virus Infection–Related Heart Disease



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KEYWORDS

- HIV • AIDS • Anti-retroviral therapy (ART)
- Highly active anti-retroviral therapy (HAART) • Atrial fibrillation
- Prolonged QT syndrome • Acute coronary syndrome (ACS)
- Coronary artery disease (CAD) • Cardiomyopathy • Myocarditis
- Pericardial effusion • Valvular disease

KEY POINTS

- Medications of patients with known human immunodeficiency virus (HIV) infection/AIDS who present to the emergency department (ED) with an arrhythmia should be carefully reviewed.
- A lower threshold should be maintained to evaluate for acute coronary syndrome (ACS) and coronary artery disease (CAD) in patients with known HIV/AIDS who present with chest pain.
- Given its nonspecific symptoms, myocarditis should be included in the differential diagnosis for toxic-appearing HIV-infected patients who present with fever, upper respiratory illness (URI), and flulike symptoms.
- HIV-infected patients who present with acute-onset congestive heart failure (CHF) have a higher mortality rate than non-HIV-infected patients.
- Pericardial effusions in HIV-infected patients should be managed as in non-HIV-infected patients.
- HIV-infected patients have a high rate of valvular diseases, but most of these patients are asymptomatic.

INTRODUCTION

Since the introduction of antiretroviral therapy (ART) for HIV infection and AIDS in the mid-1990s, the natural history of HIV and AIDS has shifted from an acute infection to a

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chronic disease. In the pre-ART era or areas of the world where ART is not readily available, opportunistic infections causing pericarditis and myocarditis contributed to the high morbidity of cardiovascular diseases (CVDs) in HIV-infected patients. In the post-ART era, arrhythmias, ACS, and CAD are the major CVDs affecting morbidity and mortality in these patients. CAD and associated ACS are the third most common cause of death in HIV-infected patients in the United States.¹ In addition to traditional risk factors such as smoking and family history, HIV has both direct and indirect effects on the heart; it causes an acute inflammatory response, leads to chronic cellular changes, and is an independent risk factor for CVD.¹⁻⁴ In addition, the antiretroviral medications used in the management and treatment of HIV/AIDS have significant cardiovascular side effects, including metabolic dysregulation that leads to dyslipidemia and atherosclerosis.¹⁻⁴ The pathophysiologic effects of HIV/AIDS on the heart are summarized in **Box 1**. Altogether, these factors have changed the course of CVD in HIV-infected patients.

As the growing population living with HIV ages, they accrue risk factors for other chronic diseases. The current prevalence of HIV/AIDS in the United States is greater than 1.1 million, with approximately 50,000 incident cases annually.⁵ Between 2009 and 2010, patients with HIV/AIDS accounted for more than 1 million ED visits.⁶ Emergency practitioners are on the front line in the management of patients with HIV/AIDS. As such, it is imperative to recognize the changing natural history of CVD in HIV-infected patients and its particular manifestations in this population.

DEFINITIONS

- HIV: 1 of 2 retroviruses (HIV-1, HIV-2) that affect and destroy helper T-cells of the human immune system
- AIDS: final stage of HIV disease leading to severe immunosuppression
- ART: medication that targets the HIV
- Highly active antiretroviral therapy (HAART): an antiretroviral regimen that contained a minimum of 3 antiretroviral drugs in combination. Common combinations: 2 nucleoside reverse transcriptase inhibitors (NRTIs) and a nonnucleoside reverse transcriptase inhibitor (NNRTI); 3 NRTIs; 2 NRTIs and a protease inhibitor (PI); 2 PIs and an NNRTI; 2 PIs and an NRTI; an NRTI, an NNRTI, and a PI.
- Centers for Disease Control and World Health Organization Stages of HIV/AIDS:

Table 1

CORONARY ARTERY DISEASE AND ACUTE CORONARY SYNDROME

HIV-infected patients are at increased risk of CAD and ACS. The mean age for the first episode of ACS is 48 years in the HIV-infected population, approximately 10 years

Box 1

Pathophysiologic effects of HIV/AIDS on the cardiovascular system

Proatherogenic effects of the virus

Procoagulant effects of the virus

Metabolic dysregulation from ART

Data from Mavroudis CA, Majumder B, Loizides, S, et al. Coronary artery disease and HIV; getting to the HAART of the matter. *Int J Cardiol* 2013;167:1147-53. Available at: [http://www.internationaljournalofcardiology.com/article/S0167-5273\(12\)01149-7/abstract](http://www.internationaljournalofcardiology.com/article/S0167-5273(12)01149-7/abstract).

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