



FIGURE. Electrocardiographical alterations in case 1 (A) and case 2 (B).

occur. We agree with Schwartzmann et al¹ regarding the relevance of ZIKV infection as a global public health emergency still with limited available information about ZIKV infection with neurologic and cardiovascular involvement in immunocompromised patients, including those who are pregnant. Prospective studies are necessary to establish the relative frequency of cardiovascular and ECG alterations in patients with ZIKV infection.

Wilmer E. Villamil-Gómez, MD
Hospital Universitario de Sincelejo
Sincelejo, Sucre, Colombia

**Eduardo Ramirez-Vallejo, MD, FACP,
FACC**

**Alfonso J. Rodríguez-Morales, MD,
MSc, DTM&HFFTM, FACE**
Universidad Tecnológica de Pereira
Pereira, Risaralda, Colombia

1. Schwartzmann PV, Ramalho LN, Neder L, et al. Zika virus meningoencephalitis in an immunocompromised patient. *Mayo Clin Proc.* 2017; 92(3):460-466.
2. Villamil-Gómez WE, Ramirez-Vallejo E, Cardona-Ospina JA, Silvera LA, Rodríguez-Morales AJ. Electrocardiographic alterations in patients with chikungunya fever from Sucre, Colombia: a 42-case series. *Travel Med Infect Dis.* 2016;14(5):510-512.
3. Hidalgo-Zambrano DM, Jimenez-Canizales CE, Alzate-Piedrahita JA, Medina-Gaitán DA, Rodríguez-

Morales AJ. Electrocardiographic changes in patients with Chikungunya fever. *Rev Panam Infectol.* 2016; 18(1):13-15.

4. Alvarez MF, Bolívar-Mejía A, Rodríguez-Morales AJ, Ramirez-Vallejo E. Cardiovascular involvement and manifestations of systemic Chikungunya virus infection: a systematic review. *F1000Research.* 2017;6:390.
5. Cavalcanti DD, Alves LV, Furtado GJ, et al. Echocardiographic findings in infants with presumed congenital Zika syndrome: retrospective case series study. *PLoS One.* 2017;12(4):e0175065.

<http://dx.doi.org/10.1016/j.mayocp.2017.12.006>

In Reply—Cardiac Compromise in Zika Virus Infection



To the Editor: We read with interest the letter from Villamil-Gómez et al,¹ which reinforces the possibility of frequent subclinical cardiovascular involvement in Zika virus (ZIKV) infection, especially in immunocompromised patients.

The 2 cases reported by Villamil-Gómez et al are suggestive that ZIKV can frequently affect the heart, as shown by electrocardiographic changes and pericardial effusion by echocardiogram, but without clinical manifestations of the cardiac involvement. It is relevant to consider that

with the lack of documentation of ZIKV presence in heart tissues, the described changes could also be part of a systemic inflammation response and not be due to a direct virus aggression. Nevertheless, this kind of report raises the possibility that ZIKV infection could be more frequently associated with subclinical cardiac involvement than previously suspected, demanding prospective studies to investigate this hypothesis.

In our previously reported clinical case,² the patient had undergone cardiac transplantation and was on immunosuppressive therapy previously to the ZIKV infection. During the course of the infection, because of the suspicion of ZIKV meningoencephalitis, we were forced to withdraw the immunosuppressive therapy and the patient unfortunately died as a consequence of acute cardiac rejection and circulatory shock. Therefore, in our previous case, there was no clear evidence of ZIKV infection directly affecting the heart.

In conclusion, there is preliminary evidence suggesting that ZIKV infection may affect other organs besides neurologic involvement and its impact could be even more

significant in immunocompromised patients.

Pedro V. Schwartzmann, MD, PhD
Marcus Vinicius Simões, MD, PhD
Luiz Tadeu Moraes Figueiredo, MD, PhD

Cardiology Centre, Internal Medicine
 Department, Medical School of Ribeirão Preto
 University of Sao Paulo, Sao Paulo, Brazil

1. Villamil-Goméz WE, Ramirez-Vallejo E, Rodriguez-Morales AJ. Cardiac compromise in Zika virus infection. *Mayo Clin Proc.* 2018.
2. Schwartzmann PV, Ramalho LN, Neder L, et al. Zika virus meningoencephalitis in an immunocompromised patient. *Mayo Clin Proc.* 2017;92(3):460-466.

<http://dx.doi.org/10.1016/j.mayocp.2017.12.007>

Preexposure Prophylaxis Is for Women, Too



To the Editor: Evidence-based HIV prevention strategies now include preexposure prophylaxis (PrEP), a biomedical intervention that involves taking a daily antiviral pill and regular visits to a health care provider for monitoring and counseling. Studies show that if taken daily, PrEP leads to about a 90% reduction in the incidence of new HIV infections among persons at high risk.¹ Although the exact time from PrEP initiation to maximum protection from HIV is unknown, exploratory pharmacological studies suggest that the “time to protection” may vary for receptive vaginal sex (20 days) as compared with receptive anal sex (7 days).² In addition, PrEP medication and associated clinical care are covered by nearly all private, employer, and public insurance plans.³ To maximize protection against HIV infection, PrEP should be used in combination with other evidence-based HIV prevention strategies, such as condoms and HIV testing.

In 2015, about 7400 women in the United States were newly diagnosed with HIV, with heterosexual contact

TABLE. PrEP Indications and Clinical Eligibility for Women

Indications for PrEP in Women ²
<p>In general, PrEP is recommended for sexually active, HIV-negative women who report the following in the past 6 mo:</p> <ul style="list-style-type: none"> • Having 2 or more male sex partners • Inconsistent or no condom use • Having 1 or more HIV-positive male sex partners, particularly if trying to conceive • Diagnosis of a bacterial STI, such as chlamydia, gonorrhea, or syphilis • Engaging in commercial sex work • Having a male sex partner who also has sex with men or is an injection drug user • Having a community or sexual network with a high HIV prevalence
Women who are clinically eligible for PrEP ²
<p>Documented negative HIV test result before prescribing PrEP:</p> <ul style="list-style-type: none"> • No signs or symptoms of acute HIV infection • Normal renal function, no contraindicated medications • Documented hepatitis B virus infection and vaccination status <p>Follow-up visits:</p> <ul style="list-style-type: none"> • At least every 3 mo to: <ul style="list-style-type: none"> – Provide HIV test, pregnancy test, medication adherence counseling, behavioral risk reduction support, side effect assessment, STI symptom assessment – Assess renal function (at 3 mo and every 6 mo after that) • Every 6 mo to test for bacterial STIs <p>Assess pregnancy intent:</p> <ul style="list-style-type: none"> • Pregnancy test every 3 mo
<p>PrEP = preexposure prophylaxis; STI = sexually transmitted infection.</p>

as the primary mode of HIV acquisition. Black or African American women accounted for 61% of new HIV diagnoses among women.⁴ The Centers for Disease Control and Prevention (CDC) provides guidance to identify women with indications for PrEP on the basis of risk behaviors and risk context, such as community HIV prevalence.² Primary care physicians (PCPs) can play an important role in increasing PrEP uptake among women, given their focus on health promotion and disease prevention. Primary care physicians routinely obtain sexual and substance use histories from their patients and can easily apply CDC's PrEP guidance to determine whether PrEP is indicated. Using open-ended, nonjudgmental statements and questions—such as “Tell me about your sexual activities.” or “How do you feel about using condoms during sexual activity?”—allows patients to

have a sense of control and empowerment. If a patient is not using condoms, for example, ask: “Are there any barriers to using condoms that you experience?” Active listening allows the PCP to correct misconceptions, answer questions, and reinforce safer sex practices.

Before initiating PrEP, PCPs should discuss reproductive health plans with their patients because this will help patients make informed decisions. They must also emphasize the importance of PrEP adherence relative to efficacy. The CDC recommends PrEP for women who are at substantial risk for HIV and seeking to conceive, are pregnant, or are breast-feeding.² Although data are limited, overall exposure to emtricitabine-tenofovir during the periconception period, pregnancy, and breast-feeding appears to be safe with respect to pregnancy and maternal and infant outcomes.²