

Photo Quiz

Fever and Rash After Travel to the Philippines

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A 33-year-old patient presented with a rash that developed two days earlier and was preceded by fever, headache, nausea, and arthralgias. The rash was worse on the limbs. The medical history was unremarkable, but the patient had recently traveled to the Philippines.

Physical examination revealed a diffuse, erythematous, maculopapular rash on the arms and legs (*Figure 1*). Findings on a tourniquet test were positive (*Figure 2*). Laboratory testing was positive for leukopenia and thrombocytopenia. A chest radiograph showed right-sided pleural effusion.

Question

Based on the patient's history and physical examination findings, which one of the following is the most likely diagnosis?

- A. Acute HIV infection
- B. Chikungunya virus infection.
- C. Dengue.
- D. Malaria.
- E. Zika virus infection.

See the following page for discussion.

FIGURE 1



FIGURE 2



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This series is coordinated by John E. Delzell Jr., MD, MSPH, associate medical editor.

A collection of Photo Quiz published in *AFP* is available at <https://www.aafp.org/afp/photoquiz>.

Author disclosure: No relevant financial affiliations.

SUMMARY TABLE

Discussion

The answer is C: dengue, a common mosquito-borne disease encountered in more than 100 tropical and subtropical countries in North and South America, Africa, the Middle East, Asia, and the Pacific Islands. The incidence is increasing, and outbreaks are becoming more common, including in the Caribbean and the Big Island of Hawaii.¹ The disease is caused by one of four dengue viruses transmitted by *Aedes aegypti* and *Aedes albopictus* mosquitos. Most cases in the United States are travel-related, except in Puerto Rico where dengue is endemic.²

Humans are the primary reservoirs for dengue. Patients with the disease may be asymptomatic or have mild to severe or life-threatening symptoms. Common presenting symptoms include high-grade fever, headache, retro-orbital pain, myalgias/arthralgias, nausea, vomiting, and rash. The disease progresses to severe dengue in one out of 20 patients.¹ Severe dengue follows three phases: febrile, critical, recovery. The critical phase occurs after 72 hours of fever and is distinguished by increased vascular permeability, fever, hemorrhagic manifestations, and marked thrombocytopenia.

Diagnosis of dengue is based on clinical signs and symptoms. The tourniquet test is commonly used.³ To perform this test, a blood pressure cuff is inflated on the arm, then removed. After two minutes, petechiae are counted below the antecubital fossa. The test is positive if there are 10 or more petechiae per 1 square inch (Figure 2). The Centers for Disease Control and Prevention recommends testing symptomatic patients with a history of travel to endemic areas.⁴

Acute HIV infection, also known as primary HIV infection or acute retroviral syndrome, is the period just after initial HIV infection, generally before seroconversion.⁵ Symptoms are characterized as mononucleosis-like or flu-like, with the most prevalent symptoms being fever, fatigue, myalgias/arthralgias, rash, pharyngitis, lymphadenopathy, and mucocutaneous ulcerations.⁵

Chikungunya virus infection and dengue have similar symptoms and are transmitted by the same mosquito vectors.⁶ Chikungunya virus infection is characterized by fever and intense joint pain but lacks leukopenia and thrombocytopenia. Headache, myalgias, and rash are also possible.⁷ The laboratory diagnosis of Chikungunya virus infection is based on viral isolation.⁶

Condition	Characteristics	Signs and symptoms
Acute HIV infection	Period just after initial HIV infection, generally before seroconversion; also called primary HIV infection or acute retroviral syndrome	Mononucleosis-like or flu-like; fever, fatigue, myalgias/arthralgias, rash, pharyngitis, lymphadenopathy, and mucocutaneous ulcerations
Chikungunya virus infection	Similar to dengue but lacks leukopenia and thrombocytopenia; transmitted by same mosquito vectors as dengue	Fever and intense joint pain; headache, myalgias, and rash are also possible
Dengue	Can be diagnosed using the tourniquet test; severe illness has three phases: febrile, critical, and recovery; transmitted by <i>Aedes aegypti</i> and <i>Aedes albopictus</i> mosquitos	High-grade fever, headache, retro-orbital pain, myalgias/arthralgias, nausea, vomiting, and rash
Malaria	Parasitic infection	Fever and splenomegaly
Zika virus infection	Transmitted by same mosquito vectors as dengue; can cause birth defects, such as microcephaly, if the mother is infected during pregnancy	Often asymptomatic; if present, symptoms are similar to dengue, but conjunctivitis is more common

Malaria is a parasitic infection. In the United States, malaria mainly occurs in travelers who have returned from endemic regions.⁸ Fever and splenomegaly are the most common physical examination findings.⁸

Zika virus infection also presents similarly to dengue and is transmitted by the same mosquito vectors.⁹ Unlike dengue, Zika virus infection is commonly associated with conjunctivitis.⁹ The disease is diagnosed through serology or reverse transcriptase–polymerase chain reaction testing.¹⁰

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