

Dengue Fever in a 16-Year-Old Girl After Travel in Asia

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KEY WORDS

Dengue fever, dengue hemorrhagic fever, dengue viral illness

A 16-year-old female adolescent presented to the pediatric clinic with a history of fever that at times reached 38.3°C (101°F) and general malaise for 2 days after returning from 6 weeks abroad, where she spent time in Bangladesh and Saudi Arabia. Before traveling, the patient and her siblings were seen in the clinic for travel advice, and malaria prophylaxis was prescribed according to Centers for Disease Control and Prevention (CDC) guidelines. The patient disclosed that she did

not take the Malarone as prescribed and thought she may have taken only two doses. Nausea and abdominal discomfort prompted her to stop taking the malaria prophylaxis. While traveling, she received multiple mosquito bites, and when visiting a relative's farm in Bangladesh, she played with cows, goats, and ducks. She presented to the clinic with a report of fever, headache, body ache, and an itchy rash on her hands. Her examination was unremarkable except for her palms, which were red and pruritic. Because she was afebrile at this visit, the patient was advised to drink plenty of fluids and take ibuprofen if her fever returned; she also was instructed to use a low-potency hydrocortisone cream on the rash and to call if her symptoms worsened.

At home the patient became persistently febrile, prompting a return visit the following day. Upon re-examination, she had no new physical findings but did have a low-grade fever. At this time, malaria studies were ordered; she was given similar management advice and sent home. Two days later, she went to the emergency department (ED) with a persistent fever that at times reached 39°C (103°F), body aches, and a palmar rash.

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MEDICAL HISTORY

This adolescent, who is generally healthy, is seen regularly for primary care and is up to date on all vaccinations, including hepatitis A and a meningococcal vaccination. Minor childhood illnesses included eczema, especially affecting the hands, and strep throat. She has no known allergies, and no regular medications are prescribed except for a multivitamin with fluoride. Her menstrual periods are regular and she denies sexual activity, alcohol consumption, drug abuse, or tobacco use. She lives with her parents and her three younger siblings, as well as a few extended family members.

The patient is in the 11th grade and maintains an A average. Shy and soft spoken, she wears a traditional Muslim head covering and is very modest in her dress. She reports having friends and enjoys spending time with

them. Her affect is somewhat flat, but she denies depression or feelings of sadness.

PHYSICAL EXAMINATION IN THE ED

The patient is comfortable and quiet. Upon admission to the ED, her vital signs were as follows: temperature, 37.2°C (99.0°F); pulse, 84 beats per minute; respirations, 20 breaths per minute; oxygen saturation, 99%; and blood pressure, 101/62 mm Hg. The patient was alert and oriented and not in any acute distress. Her head was normocephalic and her eyes had minimal conjunctival injection without discharge; extraocular movements were intact, and her pupils were equal and reactive to light. Her throat showed no hyperemia or exudates; however, petechiae were noted over the soft palate. Her neck was supple without nuchal rigidity. Mildly enlarged, mobile, nontender lymph nodes were palpated over the posterior triangle of the neck. Findings of lung, cardiac, neurologic, genitourinary, and abdominal examinations were unremarkable. Examination of the skin showed an erythematous maculopapular rash over the upper extremities and the dorsum of the feet (mosquito bites). The patient also had an erythematous macular rash on both of her palms. No petechiae or purpura were appreciated on examination.

DIAGNOSTIC TESTS

A complete blood cell count revealed the following information: white blood cell count, 2.4 K/ μ l (reference range [RR] 4.1–10.7); platelet count, 40 K/ μ l (RR 146–379); neutrophils, 48% (RR 48%–77%); lymphocytes, 41% (RR 10%–15%); monocytes, 10% (RR 4%–14%); basophils, 1% (RR 0%–1%); and absolute neutrophils, 1.2 K/ μ l (RR, 2.2–7.5). A comprehensive metabolic profile revealed abnormalities of aspartate

aminotransferase (197 IU/L; RR 15–41) and alanine aminotransferase (139 IU/L; RR, 14–54). Her C-reactive protein value was < 5 mg/L (RR < 10), results of a malaria prep test and a urinalysis were negative, and lactate dehydrogenase was 410 IU/L (RR, 98–192). Additional laboratory work included a blood culture, tests for dengue antibodies IgG and IgM and chikungunya antibodies IgG and IgM, and a monospot test. The patient was admitted because of her fever, leukopenia, and thrombocytopenia.

INPATIENT MANAGEMENT

The patient was admitted to the general pediatric unit for management of her illness and to await laboratory confirmation of the presumptive diagnosis, dengue fever (DF). An infectious disease consultation was obtained, and ceftriaxone was initiated on day 1 with the diagnosis of “likely dengue.” Because the patient had a low platelet count, a note was made to avoid use of aspirin and nonsteroidal antiinflammatory drugs. The patient remained afebrile for the duration of her stay, and her vital signs were stable. The thrombocytopenia and leukopenia began to improve on day 2 of hospitalization. Results of blood cultures, a stool culture, a test of stool for occult blood, a monospot test, and three malaria prep tests were negative. Test results for chikungunya IgG and IgM antibodies were negative; however, the dengue IgM antibody was 4.35 (RR < 0.90) and the dengue IgG antibody was 0.63 (RR < 0.90), which confirmed the suspected diagnosis.

The patient was discharged home on day 2 with instructions to follow up in the pediatric clinic the next day. The family was instructed to observe the patient for bleeding. This article will present the symptoms, differential diagnosis, and management of DF.

CASE STUDY QUESTIONS

1. What is dengue viral infection?
2. What are the signs and symptoms of dengue fever, and how is it diagnosed?
3. What is the recommended plan for management and follow-up care?

CASE STUDY ANSWERS

1. *What is dengue viral infection?*

Dengue viral infection is being recognized as an emerging infectious disease globally, but especially in the tropics and subtropics. Before 1980, cases of infection were seen primarily in Asia and the Pacific Islands, but with the increases in global travel, infections are now seen in Latin America, the Caribbean, Africa, and the United States (CDC, 2009, 2011; Chen & Wilson, 2010; Halstead, 2007; Juckett, 2011; Teixeira & Barreto, 2009; Wilder-Smith & Schwartz, 2005; World Health Organization [WHO], 2009).

The WHO considers DF to be a major health concern, because it causes about 25,000 deaths per year. DF is predominantly a childhood illness in Southeast Asia (Teixeira & Barreto, 2009); with dengue hemorrhagic fever, it is the leading cause of hospitalization and death among children in Asia (Wilder-Smith & Schwartz, 2005). The dengue virus is a single-stranded ribonucleic acid arbovirus that belongs to the family of flava viruses. There are four serotypes: DENV1, DENV2, DENV3, and DENV4. Infection with serotypes DENV2 and DENV3 (primarily found in Asia) is thought to be more virulent (Sheferaw, Reddy, Javors, & Weinberg, 2011).

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