

First Iranian Imported Case of Dengue

Masoud Mardani, Farhad Abbasi¹, Morteza Aghahasani, Babak Ghavam

Infectious Diseases and Tropical Medical Research Center, Shaheed Beheshti University of Medical Sciences, Tehran, ¹Bushehr University of Medical Sciences, Fateme-Alzahra Hospital, Department of infectious Diseases, Bushehr, Iran

Correspondence to:

Dr. Farhad Abbasi,
Fateme-Alzahra Hospital,
Siraf st, Bushehr, Iran.
E-mail: f_abbasi55@yahoo.com

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ABSTRACT

Dengue fever, a mosquito-borne flavivirus infection, is endemic in Southeast Asia. Currently, incidences have been increasing among adults. There have been no published reports of dengue fever from Iran. Widespread connection between different countries may predispose them for acquisition of infection. The patient was a 58-year-old Iranian woman with acute unexplained high-grade fever for 4 days, associated with skin rash, after returning from Southeast Asia. CBC showed WBC = 1600/mm³ and platelet count 99,000/mm³. The patient also had hematuria. ELISA immunoglobulin M (IgM) antibodies to dengue and serum RT-PCR for dengue virus was positive. The patient managed with conservative treatment and due to good general condition and improvement specific antiviral treatment was not started. She became afebrile at the 3rd day of hospitalization and discharged with good general condition on fourth day. She was afebrile after two weeks follow-up. Dengue fever has been increasing among adults. It should be suspected, when a patient presents with acute febrile illness and skin rashes returning from endemic region. Conservative treatment may be conducted in uncomplicated cases.

Keywords: Dengue fever, first case, Iran

INTRODUCTION

Today, dengue fever is the most important mosquito-borne viral disease in the world. In the last 50 years, incidence has increased 30-fold. Nearly, 2.5 billion people live in over 100 endemic countries, where dengue viruses can be transmitted. Before 1970, only 9 countries had experienced cases of dengue hemorrhagic fever (DHF); since then, the number has been increased more than 4-fold and continued to rise.^[1] According to World Health Organization (WHO) and Center for Diseases Control and Prevention (CDC) reports, there is no report of dengue fever from Iran.^[2] In this report, we described the first Iranian imported case of dengue fever in 58-year-old women from Iran after returning from Southeast Asia.

CASE REPORT

A 58-year-old woman was referred to Mehr hospital in Tehran with fever and body pain associated with skin rashes from 4 days

prior to admission, which no response to outpatient therapy. She had traveled to Malaysia 10 days before illness. Her past medical and family histories were unremarkable. On physical examination she was febrile; oral $T = 40^{\circ}\text{C}$, pulse rate was 95/min, respiratory rate was 20/min and blood pressure was 100/80 mmHg. Physical examination of heart, lungs, abdomen, extremities and neurologic examination were normal. She had mild dehydration and few maculopopular skin rashes over the trunks were appeared since 1 day before admission. Laboratory analysis on admission was as follow:

Hemoglobin = 12.4 g/dl, hematocrit = 38%, white blood cell count (WBC) = 1600/mm³ with 42% neutrophil and 58% lymphocytes, platelet count (Plt) = 99,000/mm³, ESR = 15 mm/h, urine analysis (U/A) showed microscopic hematuria, liver function test was normal, Wright and 2ME tests were negative. Chest X-ray, electrocardiography and adominopelvic sonography were normal. She was admitted and has been treated with intravenous fluid replacement. She was under close observation for vital signs, fluid and electrolyte balance and bleeding precaution. Dengue immunologic and confirmatory test was requested.

Twenty-four hours later, patient became afebrile and vital signs were normal. Complete blood count showed: WBC = 2200, Plt = 91000, Hct = 39% and U/A was normal. On the third day, her general condition gradually improved and platelet count increased to 123,000/mm³ and WBC count to 3500/mm³. Laboratory evaluation for dengue fever was performed by Pasteur institute in Tehran, Iran. The result was as follow:

The patient was positive for immunoglobulin M (IgM) and negative for immunoglobulin G (IgG) antibodies to dengue by ELISA. Serum RT-PCR for dengue virus was positive. Due to good general condition and improvement specific antiviral treatment was not started. The patient was discharged on the fourth day with good general condition and platelet count of 127,000/mm³ and WBC count of 4400. One week after discharge she was healthy on follow-up.

DISCUSSION

Dengue is endemic throughout the tropics and subtropics. Dengue is the most common mosquito-borne viral disease of humans^[2,3]

and the most common arboviral infection in travelers.^[2,4] Dengue is more prevalent than malaria among travelers returning to the United States from the Caribbean, South America, South-central Asia and Southeast Asia.^[5] Furthermore, the range of areas of dengue transmission has expanded significantly in recent years.^[6] Hyperendemicity has been established in many urban centers of the tropics where rapid development has favored vector proliferation. Increasing international travel, ineffective vector control measures, and the lack of a vaccine have likely contributed to the geographic expansion of dengue. A recent commentary in JAMA asserted that “widespread appearance of dengue in the continental United States is a real possibility”.^[7] Dengue infections have been reported in over 100 countries and are widespread in most tropical countries of the South Pacific, Asia, the Caribbean, the Americas, and Africa (Map 1). The geographic spread of dengue infections is similar to that of malaria, but unlike malaria, dengue infections are often found in the urban areas of tropical nations, including Thailand, Singapore, Taiwan, Indonesia, Philippines, India, and Brazil.^[1] Note that in map Iran is free.

Dengue infections may be asymptomatic, or manifest as a non-specific febrile illness, dengue fever (DF), dengue hemorrhagic fever (DHF), or dengue shock syndrome (DSS). According to the WHO guidelines, dengue fever is an acute febrile illness of 2-7 days duration with two or more of this manifestations: Headache, retro-orbital pain, myalgia, arthralgia, rash, hemorrhagic manifestation and leukopenia.

DHF should meet the following 4 criteria: Acute onset of high fever, hemorrhagic manifestation, thrombocytopenia <100,000/mm³, and evidence of increased capillary permeability or plasma leakage.

DSS, defined as DHF plus signs of circulatory failure, is associated with very high mortality.^[2] The variability in clinical illness associated with dengue infection and its non-specific symptomatology emphasize the need for laboratory confirmation of all suspected cases. A high index of suspicions required for the diagnosis, especially in areas of nonendemic in travelers. Detailed history taking is helpful in diagnosis. The others hematologic signs, such as thrombocytopenia and atypical

lymphocytosis, similarly detected in this case are also helpful for the diagnosis. Serologic test is used to confirm diagnosis and detect the specific serotype. Serologic diagnosis depends on the presence of IgM antibody or a rise in IgG antibody titer in paired acute and convalescent phase serum. Currently, the most widely used IgM assay is ELISA. If sample positive for IgM capture ELISA, it should be reported as a probable dengue, not a confirmed dengue, since IgM antibody may persist at detectable levels for two or more months after infection. A suspected case of dengue infection can be laboratory confirmed by one of the following means:

- Identification of serum or autopsy tissue samples by RT-PCR
- Seroconversion from negative to positive or a four-fold or greater change in anti-dengue
- Antibody titer in paired serum samples
- Dengue viral antigen identification in autopsy tissue samples by immunofluorescence or immunohistochemical analysis.^[1,8]

This case was suspected dengue infection by IgM seroconversion and confirmed by positive RT-PCR in serum sample. To our knowledge this patient is the first Iranian case of dengue fever.

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