

A rare case of imported dengue fever in Greece: a case report

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Abstract

Background: Dengue fever is a mosquito-borne viral disease occurring mainly in countries outside of Europe. It manifests with non-specific signs and symptoms. Greece has been largely untouched by dengue fever since the early 20th century.

Case description: We present the case of a 28-year-old woman with imported dengue fever after a trip to North and Latin America. The patient presented with fever, headache, fatigue, and sore throat. Clinical and laboratory examination revealed a maculopapular rash, enlarged lymph nodes, leukocytopenia, thrombopenia, and high levels of liver enzymes. An infectious disease panel showed that the cause of the patient's symptoms was dengue fever.

Conclusion: The reported case was unusual. Dengue fever is a rare disease in Europe, with cases being predominantly imported, which, combined with the non-specific manifestations of the disease, can lead to diagnostic problems. This is especially important due to the risk of dengue fever becoming autochthonous again. HIPPOKRATIA 2024, 28 (2):79-81.

Keywords: Dengue fever, imported disease, Greece

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Introduction

Dengue fever is an infectious disease caused by the dengue virus. It is transmitted to humans mainly by mosquitoes of the genus *Aedes*¹ and is the most common arboviral infection². Southeast Asia is the epicenter of the disease, but it is also found in countries in Africa and Latin America³. In Europe, the last dengue fever epidemic was registered in 1927-1928 in Greece⁴. Since then, there have been no reports of any autochthonous cases. However, there is still the risk of imported cases (travelers, refugees, immigrants) and entry of infected mosquitoes^{5,6}.

Case description

A 28-year-old female patient presented to the Emergency Department due to high fever onset (up to 39.5 °C) in the preceding eight days, which did not subside after using antipyretics. She also reported having a sore throat, headache, nausea, fatigue, and drowsiness. Lastly, she noticed the appearance of a maculopapular rash throughout her body. Past medical history was clear, as well as drug history, except for the recent use of paracetamol for the fever. Her childhood vaccination status was complete, in accordance with Greece's National Immunisation Programme. The patient, a resident of Thessaloniki, returned from a trip to Cuba and the USA (Miami) a week before her presentation. She stayed for two weeks, mainly in Havana, and visited numerous places in Cuba before travel-

ling and staying for a week in Miami. She did not report anything unusual from a medical perspective during her travels and did not mention any previous infections or other ailments.

On examination, the patient was febrile but had otherwise normal vital signs and a regular heart rate despite her high fever. Skin inspection revealed a maculopapular rash covering mainly her trunk and extremities. Cardiovascular, pulmonary, abdominal, musculoskeletal, ear, nose, and throat examinations were unremarkable. The examination of the lymph nodes revealed the presence of numerous painful cervical lymph nodes, a single painful left axillary lymph node, numerous painful inguinal lymph nodes, and a single painful left popliteal lymph node. During the neurological examination, the patient was fully alert and oriented, without meningeal signs.

The chest X-ray was unremarkable, and the electrocardiogram showed normal sinus rhythm. The results of the laboratory evaluation are shown in Table 1. Because of the prolonged febrile illness and the markedly abnormal laboratory findings (leukocytopenia, thrombocytopenia, and increased levels of liver enzymes), the patient was admitted to the hospital for further evaluation. She received intravenous fluids, paracetamol, metoclopramide, and antihistamines for the rash. Serology tests were negative for human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV), Epstein-Barr virus (EBV), and cytomegalovirus (CMV). An

ultrasound scan of the upper abdomen was performed, which showed only a small degree of fatty deposition in the liver. Due to persistent headache, nausea, and drowsiness, and in order to exclude encephalopathy, a magnetic resonance imaging (MRI) scan of the brain and cranial cavity was conducted, with no pathological findings.

As part of the diagnostic process and because of the patient's recent travel to North and Latin America, a full arboviral disease panel was ordered to be conducted at the National Reference Laboratory for Arboviruses (Table 2). This was conducted following the exclusion of other potential causes of the patient's symptoms based on clinical examination and laboratory tests. Both serology and polymerase chain reaction tests returned positive for acute dengue virus infection, based on the IgM/IgG ratio (3.32, well over the 1.2 cutoff for primary infection). Thus, the diagnosis was established. The patient confirmed that she was not vaccinated against dengue and did not report any previous arboviral infections.

After the diagnosis of dengue fever was confirmed, the Hospital Infection Control Committee was notified, and according to the Committee's recommendations, the patient was placed in a single-bed air-conditioned room to minimize the risk of mosquito bites. Simultaneously, intensive mosquito control measures were undertaken. Furthermore, the patient's contacts were contacted and informed about the disease and the need to seek immediate medical attention should symptoms present.

During the patient's hospital stay, her symptoms, including the fever, gradually subsided until full resolution. The fever lasted for a total of 12 days, including the four days of her hospital stay. The rash evolved from maculopapular to petechial, but otherwise, no other bleeding complications were observed. Her white blood cell and platelet count were restored to normal and liver enzymes' levels also decreased (Table 1). The patient was discharged after five days, with recommendations for rest and a repeat laboratory exam after a few days. A few weeks later, she was fully healthy and returned to work, with her illness completely resolved.

Table 1: Laboratory findings during the first and fourth days of hospitalization of the reported 28-year-old woman with imported dengue fever after a trip to North and Latin America.

	Levels		Unit of measurement
	Day 1	Day 4	
RBC	3.99	3.63	10 ³ /μL
Hemoglobin	12.7	11.1	g/dL
HCT	36.7	34.0	%
WBC	3.13	5.38	10 ⁹ /μL
PLT	100	300	10 ³ /μL
SGPT	540	469	U/dL
GGT	173	197	U/dL

RBC: Red Blood Cell count, HCT: Hematocrit count, WBC: White Blood Cell count, PLT: Platelet count, SGPT: Serum Glutamic Pyruvic Transaminase, GGT: gamma-glutamyl transferase.

Discussion

This case is unusual due to the rarity of dengue fever cases in Greece. The disease is not endemic in Greece⁶, while a search of the literature revealed only a case report of a suspected autochthonous case in 2012, in which the dengue virus was eventually ruled out as the causative agent⁷. According to the latest epidemiological data by the European Centre for Disease Prevention and Control (ECDC) in 2021, there was just one confirmed dengue fever case in Greece⁸. Also, the symptoms of the disease are many times non-specific and similar to the symptoms of the West Nile virus (which is endemic in Greece)⁹, complicating the differential diagnosis¹⁰. Consequently, the case highlights the need to consider unusual, imported diseases in high-risk cases.

It should be noted that dengue fever is, in general, a non-severe, self-limiting disease with low fatality rates^{11,12}. Dengue fever manifestations include fever, headache, arthralgia, myalgia, rash, and a feeling of weakness. Hemorrhagic manifestations, such as petechiae, are also common^{11,13}. Less common symptoms include diarrhea, anorexia, symptoms from the respiratory tract, and jaundice¹². However, a small percentage of patients might develop dengue hemorrhagic fever, a severe form of dengue, characterized by vascular leakage and signs of shock¹¹. Dengue hemorrhagic fever is associated with multiple complications, including a range of neurological, ophthalmic, cardiovascular, and lymphatic complications¹³. Treatment is mainly supportive. Paracetamol is used to control the fever, while non-steroid anti-inflammatory drugs should not be used, due to the increased risk of hemorrhage. Fluid management in patients with dengue is important, while platelet transfusion is indicated in certain cases¹¹.

Apart from imported cases, there is always the risk of re-importation of the dengue virus, as well as Zika and chikungunya viruses, in Greece, which is related to the consequences of climate change and the great number of returning travelers from endemic countries^{6,7,14}. Therefore, great importance is placed in the early diagnosis of arboviral infections, in order to minimize the risk of their importation⁶. Apart from that, the limited number of laboratories that can receive samples and provide testing for arboviral infections should be noted. Only two laboratories in Greece can receive samples for identification of the rarest pathogens (dengue, Zika, chikungunya)^{5,6}, and only four laboratories can perform serological and/or molecular tests¹⁵ for the endemic West Nile virus. Therefore, it can be argued that physicians must be aware of the need for specialized, non-routinely performed tests and collaborate effectively with the laboratories that conduct them. Moreover, public health authorities should be notified to enable a prompt and effective response, as in the 2012 suspected dengue case⁷. For all those reasons, the clinician must remain vigilant in cases of heightened risk for the disease, and systematic public health measures should be implemented⁷.

Table 2: Diagnostic tests conducted at the National Reference Laboratory for Arboviruses regarding the reported 28-year-old woman with imported dengue fever.

Test (sample type)	Levels/results	Unit of measurement
Dengue IgM antibodies (serum)	4.71 (>1, positive)	mg/dL
Dengue IgG antibodies (serum)	1.42 (>1, positive)	mg/dL
Dengue NS1 antigen (serum)	3.25 (>1, positive)	mg/dL
Dengue NS1 antigen (plasma)	4.48 (>1, positive)	mg/dL
Zika IgM antibodies (serum)	Not detected	mg/dL
Zika IgG antibodies (serum)	Not detected	mg/dL
West Nile IgM antibodies (serum)	1.2 (very weak positive result, due to cross reaction with dengue antibodies)	mg/dL
PCR for dengue (blood)	Positive	
PCR for Zika (blood)	Negative	
PCR for chikungunya (serum)	Negative	

PCR: polymerase chain reaction.

Acknowledgment

None

Conflict of interests

The authors have no conflicts of interest related to this publication.

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