Sadfly fever: two case reports

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Abstract
Sadfly fever, also known as ‘three-day fever’ or ‘pappataci fever’ or ‘Phlebotomus fever’ is a viral infection that causes self-limited influenza-like symptoms and characterized by a rapid onset. The disease occurs commonly in endemic areas in summer months and especially in August during which sandflies are active. In this article, two siblings who presented with high fever, redness in the eyes, headache, weakness, malaise and inability to walk, who were found to have increased liver function tests and creatine kinase levels and who were diagnosed with sadfly fever with positive sadfly IgM and IgG antibodies are reported because of the rarity of this disease. (Turk Pediatri Ars 2016; 51: 110-3)

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Introduction
Sadfly fever is a self-limiting infectious disease which occurs only in humans as a result of sandfly (phlebotomus spp.) bite. It leads to different symptoms including fever, rash, diffuse muscle pain, headache, loss of appetite, nausea and vomiting. The laboratory findings include leukopenia, lymphopenia, monocytosis, thrombocytopenia, increased liver enzymes and increased creatinine kinase (CK). The agent of sandfly fever ‘Sadfly fever virus (SFV)’ is classified in the phlebovirus species which is an enveloped RNA virus belonging to the bunyavirus group from the arbovirus family. Immunologically it has four serotypes including ‘Sadfly Sicilian’ virus (SFSV; Sicilian serotype), ‘Sadfly Cyprus’ virus (SFCV; Cyprus serotype), ‘Sadfly Naples’ virus (SFNV; Naples serotype) and ‘Toscana’ virus (TOSV; Toscana serotype) (1). The chain of infection in sandfly fever is human-phlebotom-human. The disease is observed commonly in the Mediterranean region surrounded by the Middle East, Europe, Africa and Asia continents. In our country, cases of sandfly fever were reported in 2007 and 2008 in the Kozan district of Adana, in the Ödemiş district of İzmir and in the Marmak district of Ankara. These two cases have been presented to emphasize that sandfly fever should be considered in the differential diagnosis together with the other infectious diseases in children who present with a complaint of fever.

Cases
A twelve-year old girl and her six-year old brother presented to our clinic with complaints of fever, pain in the legs, weakness and inability to walk. In the history it was learned that both patients had resistant fever reaching up to 40°C which started three days ago, leg pain started one day after the onset of fever, they received amoxicillin-clavulanic acid and antipyretic treatment regularly which was recommended in another healthcare institution where they presented with these complaints, were referred to our hospital, because fever did not subside despite treatment and redness in the eyes, headache, fatigue, weakness and inability to walk were added to the picture and cases with similar complaints were present in the area they lived. The physical examination findings of the patients were similar. Their general status were
Sandfly fever is a vector-borne disease caused by a virus transmitted by Phlebotomus and Sergentomyia sandflies. The fever and its accompanying symptoms are similar to those of dengue fever and are characterized by fever, rash, and muscle pain. It is common in Mediterranean and Middle Eastern countries, including Turkey. The virus is transmitted through the bite of infected sandflies, and the disease can be exacerbated by exposure to vectors in areas of heavy infestation.

Historically, sandfly fever epidemics have been associated with military service and deployment in regions where sandflies are prevalent. In the 20th century, military personnel in Mediterranean countries were at risk of contracting the disease during the Second World War, and it has also been reported among soldiers who served in the Middle East during the 20th century. The disease is known to occur sporadically in countries where sandflies are prevalent, including Turkey, where it has been reported in both rural and urban areas.

The disease is characterized by an abrupt onset of fever, headache, muscle pain, and vomiting, often accompanied by rash, conjunctivitis, and photosensitivity. The fever is typically high, with temperatures reaching 39.5°C to 40°C. The duration of the illness varies, with a recovery period of 3 to 6 days. The virus can be identified in blood samples collected during the incubation period, which lasts for 3 to 6 days.

The disease can be diagnosed through laboratory tests, including serology and viral culture. The virus can be isolated from the blood of infected individuals during the incubation period. Serological tests can detect specific antibodies to the virus, which can be used to confirm the diagnosis.

In Turkey, sandfly fever has been reported in various regions, including Adana, İzmir, and Ankara. The disease has been observed in both military personnel and the civilian population. In recent years, sandfly fever has been reported in 12% of patients examined serologically in the region of Kahramanmaraş in 2012.

In conclusion, sandfly fever is a vector-borne disease caused by sandfly fever virus, which is transmitted by sandflies. The disease is characterized by a sudden onset of fever, headache, muscle pain, and vomiting, often accompanied by rash, conjunctivitis, and photosensitivity. The disease can be diagnosed through laboratory tests, including serology and viral culture. The virus can be isolated from the blood of infected individuals during the incubation period. The disease is common in Mediterranean and Middle Eastern countries, including Turkey, where it has been reported in both rural and urban areas. Sandfly fever can be a significant health concern in areas where sandflies are prevalent, and efforts should be made to prevent vector-borne diseases.
the eight patients, vomiting and diarrhea were found in seven, headache was found in five and hyperemia in the eyes was found in one (5). Fever was found in all of the fifty patients reported by Koçak et al. (7) in 2011 from Ankara, weakness was found in 96%, muscle pain and/or joint pain was found in 80%, headache was found in 66% and photosensitivity and hyperemia in the eyes were found in 56%. Our patients presented with the complaints of high fever, hyperemia in the eyes, headache, malaise, weakness, diffuse muscle pain and inability to walk. Hepatomegaly, splenomegaly and conjunctivitis may be observed during the course of the disease. Organomegaly or conjunctivitis was not found in our patients.

The most remarkable laboratory findings related with sandfly fever include leukopenia, lymphopenia, monocytosis, thrombocytopenia, increased liver function tests and increased CK level (5, 6). Studies have reported up to five-fold increases in liver enzymes and up to 10-fold increases in CK level. The white blood cell count generally returns to normal with improvement of infection. The white blood cell counts of our patients were found to be about 5 000/mm³ and the liver enzyme and CK levels were found to be markedly increased. A marked improvement was observed in the clinical and laboratory findings on the third day of hospitalization in our patients who were given only supportive treatment. In the differential diagnosis, infections which lead to fever and leukopenia, especially viral infections, Crimean-Congo hemorrhagic fever, hepatitis, salmonella and brucella should be considered. In our patients, other viral infections, salmonella, brucella and viral hepatitis were excluded with serologic tests. Crimean-Congo hemorrhagic fever was not considered in our patients who had no history of contact with ticks and were not found to have any finding related with ticks on physical examination and whose hemor rhagic diathesis tests were found to be normal.

The diagnosis is made with clinical findings, epidemiological information and serologic tests. Since sandfly fever is characterized with short-term viremia, sandfly fever IgM positivity alone is a reliable variable in identifying acute infection in addition to demonstration of seroconversion (5). In the diagnosis, immunoflorescence antibody test and plaque reduction neutralization tests which is used to confirm this test result are used commonly (8). The serum samples of our patients were sent to Refik Saydam Sanitation Center Headship, Virology Reference and Research laboratory in accordance with cold-chain rules by way of the Local Health Authority for the objective of investigating SFV antibodies. A diagnosis of sandfly fever was made in our patients who had positive sandfly fever IgM and IgG antibodies.

As in other arbovirus infections, sandfly fever may also be associated with aseptic meningitis. Becker et al. (9) reported a 15-year old German patient who was diagnosed with severe meningitis related with SFSV following vacation in Turkey. It is known that especially Toscana viruses have neuropathic effects. Meningitis and meningoencephalitis epidemics related with this disease have been reported from Italy, France, Spain and Portugal. Ergünay et al. (10) found TOSV in 16 of 102 patients with fever of unknown origin who were diagnosed with central nervous system infection. Therefore, TOSV should be kept in mind in cases of aseptic meningitis and meningoencephalitis especially in summer months.

Treatment of sandfly fever is symptomatic and the disease resolves spontaneously. No mortality has been reported in patients who have been followed up. Fluid treatment, bed rest and analgesics were given to our patients who were hospitalized and no sequela or complication was observed.

In conclusion, sandfly fever should be included in the differential diagnosis in patients who present with fever lasting longer than three days, muscle pain and headache, who have accompanying laboratory findings including increased CK, increased liver enzymes and leukopenia in summer months during which mosquitos are found extensively and serologic tests directed to the disease should be performed.

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