Filariasis in a child from southern Turkey: a case report

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SUMMARY: Cengiz N, Savaş L, Uslu Y, Anarat A. Filariasis in a child from southern Turkey: a case report. Turk J Pediatr 2006; 48: 152-154.

Filariasis is a parasitic condition in which the lymphatic system is invaded by filarial nematodes. The initial signs are those of lymphangitis and lymphadenitis. The manifestations include edema in the extremities and elephantiasis due to lymphatic obstruction. Filariasis is endemic to most parts of the world, but occurs only sporadically in Turkey. This report describes a case of filariasis in a child who presented with fever and extensive lower-extremity edema.

Key words: filariasis, elephantiasis, edema, children.

Filariasis is a parasitic infection caused by larval and adult forms of certain nematodes that invade the lymphatic system. In general, the initial signs are those of lymphangitis and lymphadenitis, whereas the later stage is characterized by edema in the extremities and elephantiasis[1].

Filariasis is still a serious problem in many parts of the world. It is endemic to regions between the latitudes of 40°N and 30°S, where the vector mosquitoes live, but is very uncommon in Turkey. Sporadic cases have been reported in the Turkish cities of Alanya, Elazığ, Çubuk and Samsun[2,3].

There are many species of filarial nematodes, but only three cause lymphoreticular filariasis, namely, Wuchereria bancrofti, Brugia malayi, and Brugia timori. The intermediate host for these parasites is the mosquito Culex fatigans, and the final host is humans[1]. It is estimated that the filarial nematodes live in the human lymphatic system for approximately 15 years[4]. The microfilariae (larval forms) live in the blood at night and move to the organs in daytime. The acute form of filariasis is characterized by episodes of fever, myalgia, headache, lymphangitis in the extremities, and lymphadenitis. Some infected individuals remain asymptomatic, whereas others develop symptoms after an extended latent period. The chronic form of the disease is usually only seen in persons of advanced age. At this stage, elephantiasis occurs due to obstruction of lymphatic vessels by fibrosis[5]. This report describes an unusual case of filariasis in a child from Turkey. The patient had extensive edema in the lower extremities. The case is unusual because filariasis rarely occurs in our country.

Case Report

An 11-year-old girl from Kozan, a town near the city of Adana, in southern Turkey, presented with swelling in both legs. The problem had started in her left ankle nine months earlier, and had extended to the upper parts of the leg. As swelling progressed, the leg became warm and the skin turned red. The girl had then developed episodes of fever, and the severity of the symptoms in the left leg increased when these episodes occurred. The same symptoms arose in the girl's right leg a few months after the swelling was first noted in her left ankle.

The child lived with her family in a house with a garden, and the family raised livestock. There was no family history of filariasis. She had never lived in any other region of Turkey. Physical examination revealed that body weight and height were within normal percentiles, and body temperature was 36.1°C. Vital signs were normal. The skin on both legs was dry and hyperemic. There was extensive non-pitting edema throughout both limbs and her pubic region (Fig. 1). Other systems were normal.

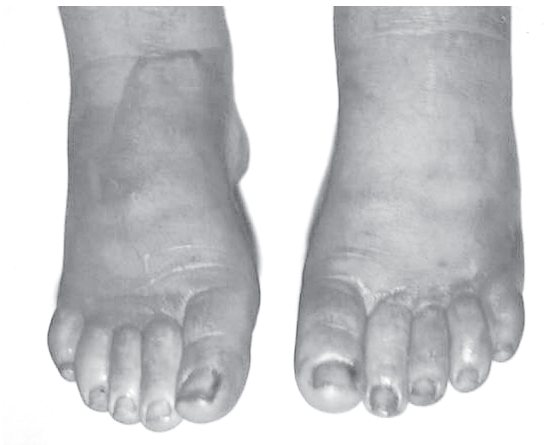

Fig. 1. Edema in the feet of the patient.

Laboratory investigations revealed hemoglobin 10.9 g/dl, white blood cell count 3,500/mm^3, total eosinophil count 900/mm^3, erythrocyte sedimentation rate 66 mm/h, and C-reactive protein level 12 g/L. Examination of a peripheral blood smear showed nothing abnormal. Urinalysis and serum levels of blood urea nitrogen, creatinine, electrolytes, liver enzymes and immunoglobulin E were normal. There was nothing remarkable on echocardiography. Doppler ultrasonography of the veins and arteries in the lower extremities revealed no thrombosis or obstruction. Abdominal ultrasonography and computed tomography demonstrated no mass or lymphadenopathy causing lymphatic obstruction.

The episodes of fever, the progressive edema of the lower extremities, and the lack of an alternative explanation for the clinical picture suggested filariasis. To investigate further, we collected a blood specimen at 1:00 a.m. from the girl's ear lobe into a heparinized tube and examined it under the microscope. Microfilariae were identified, and the diagnosis was confirmed.

The patient was treated with a single dose of albendazole 400 mg and a two-week course of diethylcarbamazine (DEC). The doses of DEC were 3 mg/kg on the first day, 4 mg/kg on the second day, 5 mg/kg on the third day, and 6 mg/kg from days 4 through 14. On the first day of therapy, the patient developed fever and urticaria. This was addressed with antihistamine and intravenous prednisolone (2 mg/kg) and both problems disappeared on the third day. The patient was followed for six months and showed no side effects from the antiparasitic treatment during this time. The edema in her legs did not progress further.

Discussion

Filariasis is endemic to more than 80 countries, and an estimated 120 million people suffer from this condition. Approximately 44 million affected individuals exhibit elephantiasis, lymphedema, or genital pathologies related to filariasis[6].

Diagnosis of this disease is based on presence of microfilariae in blood and lymphatic vessels. In most countries, the diagnosis is established when microfilariae are detected in peripheral blood. Since microfilariae become active and circulate in the blood system at night, blood specimens should be obtained at between midnight and 5:00 a.m. and collected into a heparinized tube. A smear of the sample is then examined under a microscope. We used this method to diagnose filariasis in our case.

In some cases, it is not possible to make the clinical diagnosis and detect microfilariae in the blood. Some new tests are more sensitive than direct microscopy. These tests detect specific antibodies to microfilaria, and are based on polymerase chain reaction (PCR) analysis[6]. Phantana et al.[7] used PCR to detect W. bancrofti in serum samples from infected individuals. The authors found that this method had relatively high sensitivity; they were able to detect the microorganism when only 10 pg of W. bancrofti DNA was present. A study from Japan investigated W. bancrofti antigens and antibodies to microfilaria (immunoglobulin G4) in blood and urine specimens from patients with filariasis[8]. Analysis revealed that 25.2% of the serum specimens were positive for antigen and 50.8% of the urine specimens were positive for antibodies. Unfortunately, PCR technology and monoclonal/polyclonal antibody tests are not available in our hospital, so we diagnosed filariasis by direct microscopy only.

Filariasis may be treated with DEC alone, ivermectin alone, or with either of these agents paired with albendazole. The treatment does not cause the swelling to regress, but prevents potential exacerbation of the edema, as well as episodes of fever and lymphangitis. We treated our pediatric patient with a combination

of albendazole and DEC. When therapy was first initiated the patient developed a fever and urticaria. These problems may have been related to massive microfilaremia induced by the treatment.

Taking measures to prevent mosquitoes from transmitting this infection and using DEC for prophylaxis are mainstays of filariasis control programs. In India, where filariasis is endemic, the National Filariasis Control Program recently estimated that 40 million people were at risk for contracting this disease. In pilot studies that were part of this program, infected people were given DEC alone, albendazole alone, or a combination of these two drugs[9]. The results showed that a single dose of albendazole (400 mg) provided reliable prophylaxis against filariasis and caused fewer side effects in carriers of microfilariae than did the other treatments.

It is often difficult to protect against filariasis in regions where this infection is endemic. As with malaria, every possible measure should be taken to prevent transmission of larval forms via mosquitoes. In cases of confirmed infection, the earlier treatment is started, the greater the possibility of preventing complications. Although filariasis is diagnosed very infrequently in Turkey, this condition should always be included in the differential diagnosis for any patient who presents with lymphatic edema.

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