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Case Report

Imported Lymphatic Filariasis in an Indian Immigrant to Iran

*** Eshrat Beigom KIA, Meysam SHARIFDINI, Homa HAJJARAN, Ali Ehsan SHAHBAZI, Zahra SAYYAD TALAIE**

Department of Medical Parasitology and Mycology, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

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***Correspondence Email:**
keiaeshr@tums.ac.ir

Abstract
Lymphatic filariasis (LF), a nematode disease transmitted by arthropod vectors, is repeatedly reported in immigrant population. This disease is not endemic in Iran; however, different species of mosquitoes, capable of transmission of parasite microfilaria, are distributed in the country. Hereby, incidental detection of an imported case of LF due to *Wuchereria bancrofti* in an Indian worker in Iran is reported. Identification of the case was performed based on morphological and morphometrical characteristics of microfilaria and PCR sequencing.

Introduction

Immigration of people from endemic areas of infectious diseases to non-endemic areas has contribution in the emergence of such infections. One of these diseases repeatedly reported in immigrant population is lymphatic filariasis (LF), a nematode disease transmitted to humans through bite of arthropod vectors. It is estimated that 120 million people are infected with this parasite and 1.3 billion are living at risk of infection (1). No indigenous case of LF has been reported from Iran. However, *Culex quinquefasciatus*, as one of the main vector of LF, and some other species of mosquitoes (Diptera: Culicidae), known as vectors of this filaria in endemic areas of the world, are distributed in different parts of the country (2). Therefore, the immigration of people with LF from endemic areas to this country is a public health concern. Here an imported case of LF due to

Wuchereria bancrofti in an Indian immigrant worker to Iran is reported.

Case Report

The case was an Indian 35 year old male worker. He was originally from Punjab, India who traveled to Iran in the middle of 2010, and started working in a metallurgical factory in Saveh, Markazy Province, Iran. He declared that his socio-economic condition in India was improper, living in slum, and involving with metallurgy occupation. A few months after his arrival to Iran, the patient referred to a diagnostic laboratory in Saveh due to dysentery and abdominal pain. In direct examination of the fresh bloody diarrheic stool sample, the microscopist observed the presence of a few worm-like motile organisms. For identification of this organism the stool and peripheral blood samples of the patient was submitted to the Helminthological Laboratory of the School of Public Health, Tehran University of Medical Sciences (TUMS). In this lab, it was noticed that the motile organism is actually a helminth larva moving in blood streaks of the diarrheal stool. Actually, dysentery was not due to the parasitic agent, but led to detect blood dwelling parasite of the patient, incidentally. Therefore, thin and thick blood smears, as well as Knott test sediment were prepared, stained with Giemsa, and examined microscopically. Microfilaria was found in blood smears, as well as knott sediment. Morphological and morphometrical characteristics of the microfilaria were compatible with that of *W. bancrofti* (Fig. 1). Leukocyte count was 7.4 x 10^3/µL, with 24% eosinophilia. Apparently, the patient did not show specific symptoms or pathologies of filariasis, but he was suffering from prolonged general disorders including lethargy, in appetence, fatigue, and low fever. The patient's diarrhea was recovered after a few days by management of electrolyte imbalance. Then, his physician put him on albendazole that was available medicine for filariasis chemotherapy. During the follow up no microfilaria was found in his blood sample taken around 10 pm, examining by Knott test.

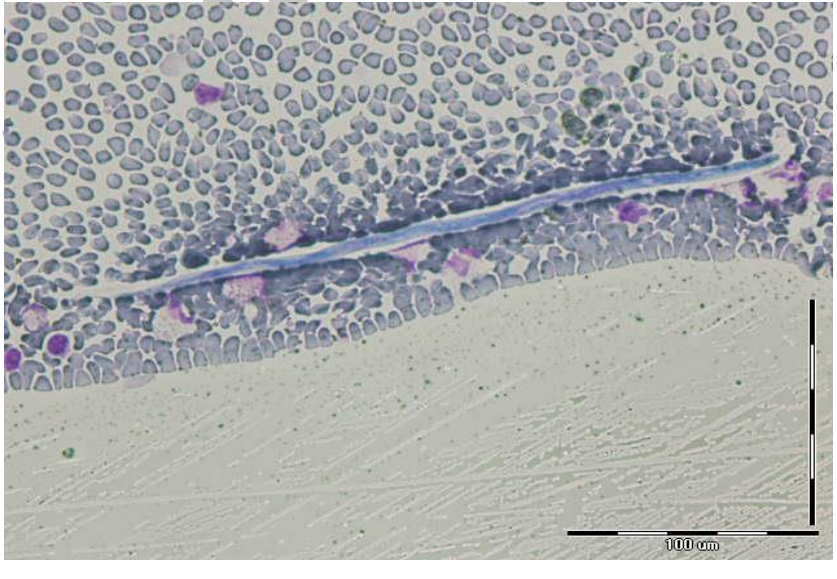

Fig.1: *Wuchereria bancrofti* microfilariae in peripheral blood smear of Indian immigrant patient; (Giemsa stain)

For molecular analysis of this imported filaria, DNA extraction was carried out on blood sample using extraction kit (Roche, Germany), and PCR was performed for ampli-

fication of 5.8S rDNA and ITS2-PCR using two primers (3) as follows:

Forward: (didr-f1: agtgcgaattgcagacgcattgag); Reverse: (didr-r1: agcgggtaatcacgactgagttga).The amplification was carried out by Thermocycler (PEQLAB, Biotechnologie GmbH).The temperature profile included one cycle of 94 ◦C for 4 min, followed by 35 cycles of denaturing at 94 ◦C for 30 s, annealing at 60 ◦C for 30 s, extension at 72 ◦C for 45 s and a final extension cycle of 72 ◦C for 7 min. The PCR product was run on 1.5 % agarose gel, and after staining, was applied for electrophoresis. The band visualized in UV Transilluminator and digitally photographed (Fig.2). PCR product was also sent for sequencing (Bioneer, Korea). Sequence analysis of the PCR product showed 99% homology with an isolate of *W. bancrofti* from India (Accession no.:EU368164). The sequence of the current isolate was registered in the GenBank with Accession no. JX162119.

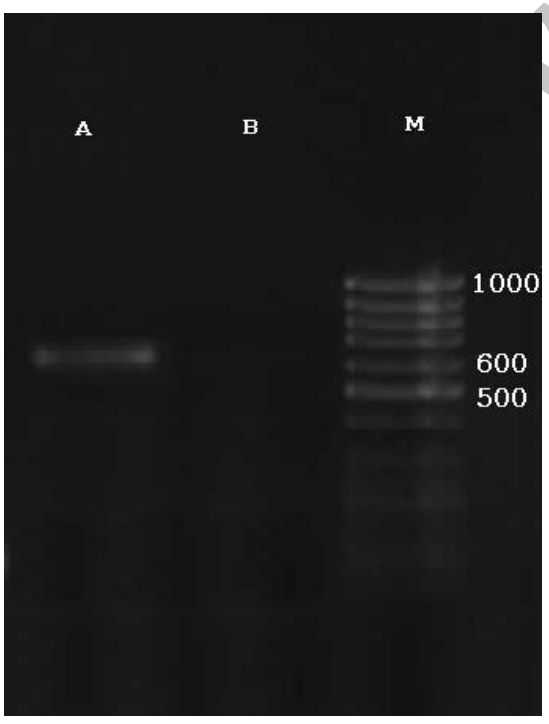

Fig. 2: Agarose gel electrophoresis of 5.8S rDNA and ITS2-PCR product of *Wuchereria bancrofti* microfilaria from Indian immigrant to Iran. A: *W. bancrofti*, B: negative control, M: 100 bp DNA marker

Discussion

Increasing of international travels from endemic areas of infectious diseases to non-endemic areas, as visitors, job seeking and so on has led to rising of imported tropical diseases. In Middle East, LF is endemic in Yemen and small foci may remain in Saudi Arabia (4). However, imported cases have been reported among migrant workers in Kuwait with the overall prevalence of filarial antigenamia of 18.3% and present of microfilaraemia in 3%; more than 90% of the infected cases in that study were from India (5).

Prior to this report, no cases of LF have been reported from Iran. The case reported here, in spite of presence of *W. bancrofti* microfilaraemia in his peripheral blood, did not show apparent symptoms, and his infection was detected incidentally following occurrence of bloody diarrhea. Infected individuals coming from endemic lymphatic filariasis most commonly have asymptomatic (or subclinical) infections (6). Most probably, more cases of this infection are present among immigrant population in the country, especially in those from India and Africa. In the world, one-third of the people infected with LF live in India, one third live in Africa and the remainders live in the Americas, the Pacific Islands, Papua New Guinea and South-East Asia (7). In India, 95% of total cases of LF are caused by *W. bancrofti*, and *Cx. quinquefasciatus* is the main vector (8).

Respect to the distribution of *Cx. quinquefasciatus* and many other species of arthropod vectors in Iran (2), special attention is necessary on the risk of immigration. Recently, a case of authentic imported *plasmodium oval* in a twenty years old Nigerian soccer player was reported from Bandar Abbas, Iran (9). Migration of people from geographical areas with infectious diseases which are not endemic in the country is a public health concern and requires awareness of physicians about clinical manifestations of such diseases and health au-

thorities about the risk of transmission. Screening test for immigrants from endemic areas, early diagnosis and treatment of their infections, and alerting physicians about imported diseases is recommended. Additionally, increasing of travels, especially prolonged migration will leads to exposure of people to infectious agents not endemic in their original geographical area. Therefore, awareness of travelers, practitioners and health authorities with relevant diseases is also necessary.

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