

Predisposing Factors for Leishmaniasis in Rural Areas in Baghdad⁺

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Abstract

A community-based study was carried out on several families from rural areas of Baghdad to determine predisposing factors for Leishmaniasis. The results revealed that 70% of mothers were younger than 35 years, 48% were uneducated women and the rest of them had elementary level of education. The study shows that 60% of mothers did not know what is kala azar and 75% of them did not know that sand flies transmit the disease and 72% of the families slept outdoors. The most clinical signs that forced the mother to send her child to the doctor were loss of appetite and most of them wait more than 24 hours before seeing their doctors. Health education activities should concentrate on information about the clinical signs, the vector, the reservoir of the kala azar, investigation on the carriers individuals and also destroying breeding places of the insect and wild dogs where appropriate to reduce morbidity from leishmaniasis.

المستخلص

تم إجراء دراسة أولية على عدد من العوائل الريفية في أطراف مدينة بغداد للتعرف على العوامل المهيأة للإصابة بمرض الكلازار. أظهرت النتائج أن ٧٠% من الأمهات كانت أعمارهن أقل من ٣٥ سنة، ٤٨% كن غير متعلقات والبقية كان مستوى تعليمهن ابتدائي. كما أظهرت الدراسة أن ٦٠% من الأمهات لا تعرف ما هو مرض الكلازار و ٧٥% منهن لا يعلمن بأن ذباب الرمل (الحرمس) هو الناقل للمرض وأن ٧٢% من العوائل تنام خارج البيت. أظهرت الدراسة بأن أهم الأعراض السريرية التي تجبر الأم على أخذ طفلها إلى الطبيب هي فقدان الشهية وأن أغلب الأمهات تنتظر أكثر من ٢٤ ساعة لأرسال الطفل إلى الطبيب. التوعية الصحية المتضمنة معلومات عن مرض الكلازار كالأعراض السريرية للمرض، الحشرة الناقلة، الحيوان الخازن، التحري عن الأشخاص حاملو المرض والذين لا تظهر عليهم أعراض مرضية باعتبارهم مصدراً لانتشار المرض كذلك محاولة القضاء على الحشرة الناقلة وأماكن تكاثرها ومكافحة الحيوان الخازن للطفيلي (الكلاب السائبة) جميعها تعد من الأمور المهمة لتقليل الإصابة بالمرض.

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Introduction

The protozoan parasites of the genus *Leishmania* are the causative agent of various diseases ranging from cutaneous lesions to fatal systemic disease [1]. The genus *Leishmania*, widely distributed in nature, has a number of species that are nearly identical morphologically. Visceral Leishmaniasis results from infection with members of the *Leishmania donovani* complex, which includes many different species or subspecies [2,3].

Sand fly, the vector of Leishmaniasis is blood-sucking members of Psychodidae which belong to the genera *Phlebotomus* (Old World) and *Lutzomyia* (New World) and have widespread distribution in warm and temperate climates. The adults are small, delicate and light in color, with conspicuous black compound eyes and a pair of long filiform antennae. Sand flies progress by short hopping flights and ordinarily are not found more than 5 meters above the ground or far from their breeding sites. Only the females are hematophagous. Sand flies feed at night and hide in dark places in the daytime.

The bite of a female sand fly, which is telmophagous, often produces a local, frequently indurated inflammation, at times with a wheal 1 to 2 cm in diameter. This accompanied by a needle pain, which may be followed by an irritating local pruritus lasting hours or weeks [3].

When a sand fly “bites” an infected person or reservoir host, it sucks up parasitized macrophages or temporarily free parasites (amastigotes) in the blood or tissue juices.

Soon after the amastigotes reach the midgut of the fly, they transform into the flagellated promastigotes forms, which after rapid multiplication transform into infective promastigotes and migrate forward [4]. From the foregut they are regurgitated or otherwise introduced into the skin of the next individual when the sand fly takes another blood meal. In endemic areas such as Baghdad, dogs are the common reservoir hosts [5, 6].

The causative agent spreads from the sites of inoculation to multiply in reticuloendothelial cells especially macrophages in spleen, liver, lymph nodes and bone marrow. This is accompanied by marked hyperplasia of the spleen. Progressive emaciation is accompanied by growing weakness. There is irregular fever, sometimes hectic. Untreated cases with symptoms of kala azar usually are fatal [7].

The objectives of this study are to identify socio-anthropological predisposing factors related to Leishmaniasis in a suburban community.

Material and Methods

A demographic survey was conducted using a structural questionnaire in which data was collected regarding:

- Mother's age.
- Level of mother's education.
- Presence of sandfly around the house.

- Mother's knowledge about kala azar.
 - Clinical signs that force the mother to go to the hospital
- The predisposing factors studied by observation include:

- General household conditions.
- Contact with animals especially dogs.
- Presence of insects around the house.

We enrolled 50 families from Rhaduania and Mahmoudia (Figure 1), the study was carried out from November 2001 to April 2002.

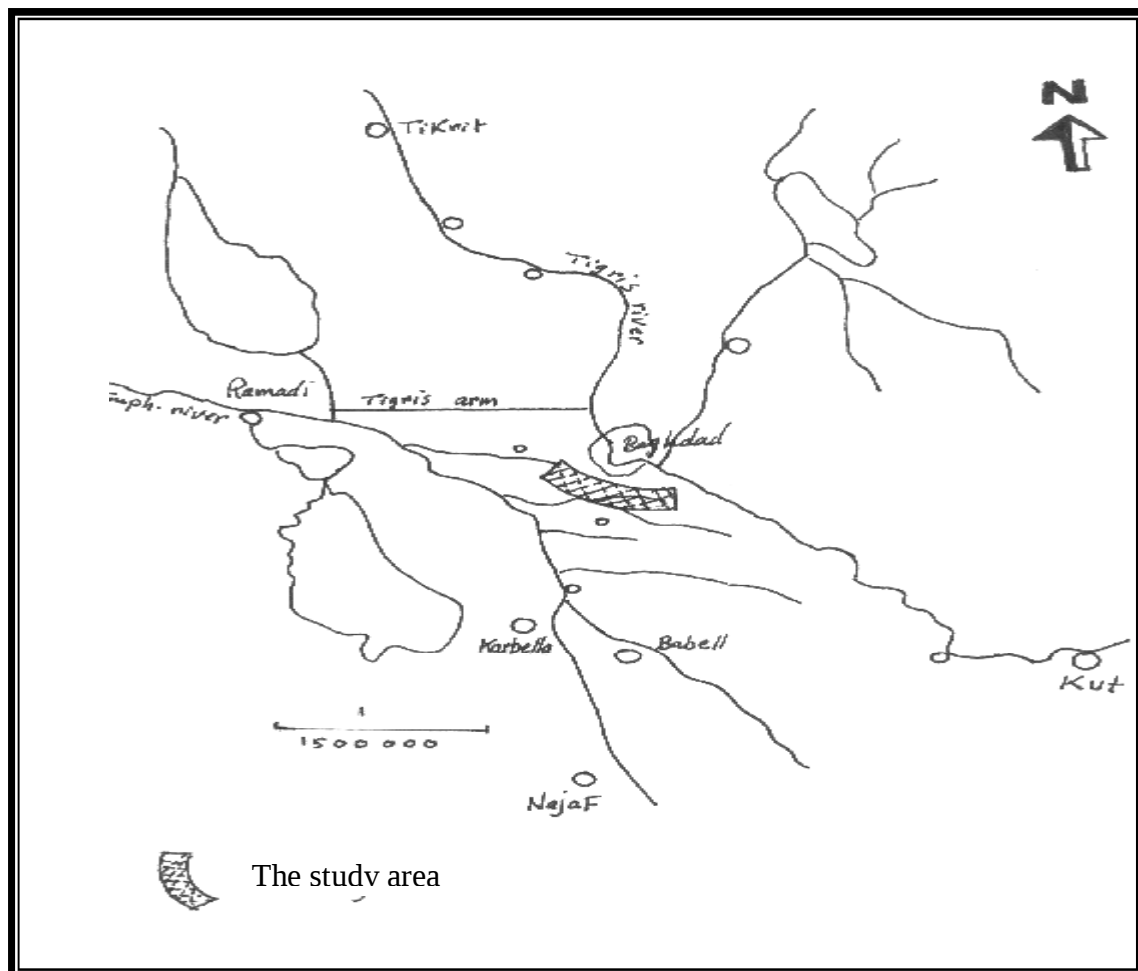


Figure 1: Map of the central reigon of Iraq showing the study area.

Results

Poor personal hygiene such as skin infections, dirty nails on child's fingers, dirty cloths of both child and his mother, presence of insects around and inside the house, the presence of dogs near the house were observed in our observational study.

70% of mothers were younger than 35 years, 48% of them were uneducated women, and the rest of them had elementary level of education. 54% of the mothers had more than 3 children, 84% of the mothers were busy outside the house either in the field or with animals (Table 1). 30% of mothers had no assistant with their children.

Table 1: Socio-anthropological characteristics in mothers.

Risk factors	Percentages
Mother's age < 35 years	70%
Uneducated mothers*	48%
Mothers had > 3 children	54%
Mother are busy outside the house	84%
Mothers received no assistance with their children	30%

75% of the mothers did not know that sandflies were involved in transmission of the disease (Table 2). 72% of the families sleep outdoor.

Table 2: Knowledge related to Leishmaniasis.

Risk factors	Percentages
Did not know that sandflies are involved in transmitting kala azar	75%
Did not know that what is kala azar	60%
Did not know that if sandflies can cause disease	66%
Out doors sleeping	72%

The most clinical signs that force the mother to send her child to the doctor is the loose of appetite and most of the mothers waited more than 24 hours before taking their children to the doctor . Some of them gave their children medicine such as antipyretic drug or antitussive (Table 3).

Table 3: Clinical signs that force the mother to go to the hospital.

Clinical signs	Percentages
Face color	45%

* Mostly elementary education.

Loss of appetit	60%
Headache	3%
Fever	34%
Abdominal enlargement	6%
Baby's crying	16%
Vomiting	6%
Inability to walk	30%
Diarrhea	3%

Discussions

Obvious evidence that poor personal hygiene is associated with getting diseases and good personal hygiene is beneficial to health is correct. Our studying brings out the need for appropriate health educational interventions to alter these behavioural patterns.

A low level of mothers education and the lack of assistance with their children when mothrs are busy will force the mother to take her children with her to the field or leave them in the house with their older brothers, and this will lead to more exposure to insect vectors since this insect (sandfly) lays its eggs in batches in moist dark sites, such as under decaying leaves on the ground, dump mossy places, rank vegetation, or hollow tree trunks [3].

In our study we observed that all the families had a dog in their residence and the wild dogs are around the house, and more than that the lack of knowledge that dogs are the reservoir for this disease well increase the possibility of getting the illness. Our findings are in agreement with [8], who in his study concluded that the dogs are important factors for transmission of the disease in endemic areas, also we observe that most of the families didn't know the disease Leishmaniasis or (Kala azar) but when we told them about its clinical signs they said that they knew a disease that causes splenomegaly but they didn't know its name. Furthermore all the families didn't know the shape of sand fly (the vector of Kala azar). Our findings are in agreement with [9], who recommended in his study, further studies on vector-host relationship in the endemic area be made needed .

One of the families had a child who was bitten by a sand fly that caused cutaneous leishmaniasis (Baghdad boil). Until the time of our visit they didn't know that the sand fly was responsible for the transmission of this disease, they thought that the houseflies instead of sandflies were the causative agents. Our findings are in agreement with [10], who in his study in rural area (Titaria and Harainch / Terai) of Nepal found that most of the villagers perceiving that mosquito, instead of sandflies were responsible for transmission of Leishmaniasis.

In Iraq also our finding is important from the point of view that the knowledge of the transmission of the disease is also important for modifying the current control measures. Our study suggests that an educational levels of women and health education activities should be improved regarding information about the clinical sign of Leishmaniasis especially visceral Leishmaniasis.

The role of sandflies as a vector and the role of dogs as a domestic reservoir of Leishmaniasis have large public health impact on reducing morbidity from Leishmaniasis [7]. Because *Leishmania amastigotes* have been detected in the peripheral blood smears of kala azar patients mostly during night [11], it is therefore; worthwhile to find out whether such amastigote could be shown in healthy subjects who did not have any symptoms by history or signs on clinical examination.

Destroying breeding places of the insects and dogs is an appropriate control measure for protecting people from sandfly bites in order to alter the vector-host relationship.

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