

## Epidemiological study of Cutaneous Leishmaniasis in IRAQ –WASSIT

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### دراسة وبائية للاصابة بطفيلي الشمانيا الجلدية في محافظة واسط –العراق

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#### الخلاصة

اجريت هذه الدراسة بالمشاركة مع الدوائر الصحية في محافظة واسط وسجلت جميع الحالات خلال العام 2006 ولجميع اقضية ونواحي المحافظة واعتمد تشخيص الحالات على الاعراض السريرية والفحص المختبري بسحب رشقات من القرع الجلدية وصبغها بصبغة الكمزا، وظهرت الدراسة وجود وبخاصة *phlebotomus* تبين في وبائية المرض من مكان لآخر حيث تلعب انثى ذبابة الرمل جنس المنتشر في العراق دورا اساسيا في نشر المرض وكذلك *phlebotomus serganti* النوع حيث ظهر تبين كبير في معدلات الاصابة بين المدن المدروسة reservoir host المضيف الخازن وبحسب موقعها الجغرافي فكانت اعلى معدلات للاصابة في مدينة الصويرة (90 حالة) وادنى معدلاتها في مدينة بدر (حالة واحدة فقط) وتراوحت معدلات الاصابة في باقي المدن ما بين (51، 18، 12، 6 حالة في مدن العزيزية، النعمانية، الحي والكوت) وعلى التوالي. كما اظهرت النتائج وجود علاقة وثيقة بين معدل الاصابة واعداد المصابين اذ كانت اعلى معدلات للاصابة بالاعمار اكثر من (15 سنة) حيث بلغت (63 حالة) واقل معدلات في الاعمار الصغيرة (اقل من سنة) حيث كانت (12 حالة) وتراوحت معدلات الاصابة في بقية الاعمار بينهما، كما اظهرت الدراسة وجود علاقة لجنس الشخص المصاب و معدلات الاصابة حيث كان الذكور اكثر حساسية للاصابة من الاناث فكانت هناك (94 حالة في الذكور و (84 حالة في الاناث.

#### Abstract

This investigation has been carried out at Wassit region and by association with Wassit health directorate during 2006, the recorded cases has been taken from all parts of Wassit province. However the diagnosis depended on clinical symptoms and laboratory test by aspirate a little mount of infected liquid from skin lesion to prepare stained slide by giemza stain . The result of this investigation shows variants in disease epidemically from region to another where reservoir host and female of sandfly genus *phlobotomus* and in

particularly the species *phlebotomus sergenti* distributed which serve as vector. The peak of infected cases appeared in Al-Sewearha city (90 case) and minimum in Badra city (one case) ,and the number of infected in the other cities ranged (51, 18, 12, 6, in Al-Azezya Al-Nuemanaaya, Al-Hay Al-Kut ) respectively. Cutaneous leishmaniasis restricted by host age and maximum range of infection (63 case) in age more than (15 years) and minimum in age less than one years of age (12 case) and other cases ranged between them. Host sex influence in susceptibility to infection , the number of infected cases in male (94 cases) and (84 cases ) in female , that indicates the male more susceptible to infection than female.

## Introduction

**Parasites** of the genus *Leishmania* infect about 12 million people worldwide, with an estimated 1.5 -2 million new cases occurring annually. Approximately 1-1.5 million cases of cutaneous and mucocutaneous leishmaniasis which causes by *Leishmania tropica* and *Leishmania brazilhiensis*, and 500,000 cases of visceral leishmaniasis which causes by *Leishmania donovani* occur each year annually and with an estimated death about 50,000 persons / year (1).

Geographical distribution of leishmaniasis is restricted to tropical and temperate regions (natural habitat of the sandfly). Leishmaniasis are considered to be endemic in 88 countries on 5 continents of Africa, Asia, Europe, North America, and South America. A total of 350 million people are at risk. Geographical distribution of leishmaniasis is limited by the distribution of the sandfly *phlebotomus spp* , its susceptibility to cold climates, its tendency to take blood from humans or animals only, and its capacity to support the internal development of specific species of *Leishmania* (2).In addition, *Leishmania* infection was found in dogs in the northeastern part of the US (3). In the European countries around the Mediterranean basin and throughout the Middle East, as well as Latin America, there are large populations that must still consider the risk of leishmaniasis. In some of these countries, dogs represent an important reservoir for the parasite. In the US, even though leishmaniasis is not endemic, infections can be found in pockets of the country especially in the southwest (4). Another risk factor is the movement of susceptible populations into endemic areas, including large-scale migration of populations for economic reasons (5). In the city of Kabul, Afghanistan, which has a population of less than 2 million, an estimated 270,000 cases of cutaneous leishmaniasis occurred in 1996. The resurgence of leishmaniasis has occurred because of deficiencies in the control of the vector (sandfly), absence of a vaccine, and lack of access to medical treatment because of the cost and

increasing drug resistance to first-line treatment (6). In many locations leishmaniasis is a zoonosis, with rodent and canines serving as reservoirs. Humans become infected when they enter an endemic region. In some settings humans are the reservoir. Cutaneous leishmaniasis most often occurs among rodents, laborers and military personnel living or working in rural, endemic areas of Latin America, the Middle East, Asia and the Indian subcontinent. It is periodically diagnosed tourists who have been exposed in endemic regions. Mucosal leishmaniasis also known as espundia follows cutaneous leishmaniasis in a small percentage of those infected *Leishmania braziliensis* and related *leishmania spp.* (7). However, in addition to the infecting species, the clinical outcome of leishmaniasis also depends on the immune response of the host (8). Coexistence of leishmaniasis with HIV adds a serious dimension to the problem. Leishmaniasis is spreading in several areas of the world as a result of the rapidly spreading epidemic of AIDS (9). The immune deficiency has led to increased susceptibility to infections, including leishmaniasis. So far, co-infections have been reported in 33 countries worldwide. Co-infection with HIV has led to the spread of leishmaniasis, typically a rural disease, into urban areas. In patients infected with HIV, leishmaniasis accelerates the onset of AIDS by cumulative immunosuppression and by stimulating the replication of the virus. It also may change asymptomatic *Leishmania* infections into symptomatic ones. Sharing of needles by intravenous drug users can spread not only HIV but also leishmaniasis (10). Although cutaneous leishmaniasis exists in many countries where visceral leishmaniasis is prevalent, the 2 parasites are not present in the same regions. In India, visceral leishmaniasis is confined to the eastern parts, and cutaneous leishmaniasis is limited to the dry western parts.

Southgate in his visiting Middle-east describes characterized mark distortion Baghdad children faces (11). Visceral leishmaniasis endemic in Baghdad and surrounding cities that reported by (12).

Leishmaniasis important and wide diffuse in Iraq and Arabic countries but there are a few searches or investigations, so this simple study of disease epidemiology explain some affected factors which influence disease occurrence.

## **Material and method**

The data was depended on records of Wassit Healthy directorate. The information of disease were those collected from Secondary Healthy Center records and arranged according to date, sex, age, diagnosis of disease.

diagnosis depended on presence of skin lesions ,the ulcer appear as semi rounded shape and arise over normal skin with local fluid infiltration occurs, the center of the ulcer encrusts while satellite papules develop at the periphery. Laboratory test by aspirate chancre fluid from skin lesions by disposable syringe with needle g21 and make smear on clean glass slide stained by giemza stain for five minute after fixed with absolute methanol for 3-5 seconds and tested under microscope by oil emersion to demonstrate amastigote in macrophage .

**Table (1) sample of record**

city	diagnosis	Date of infection	Sex	age	name	number

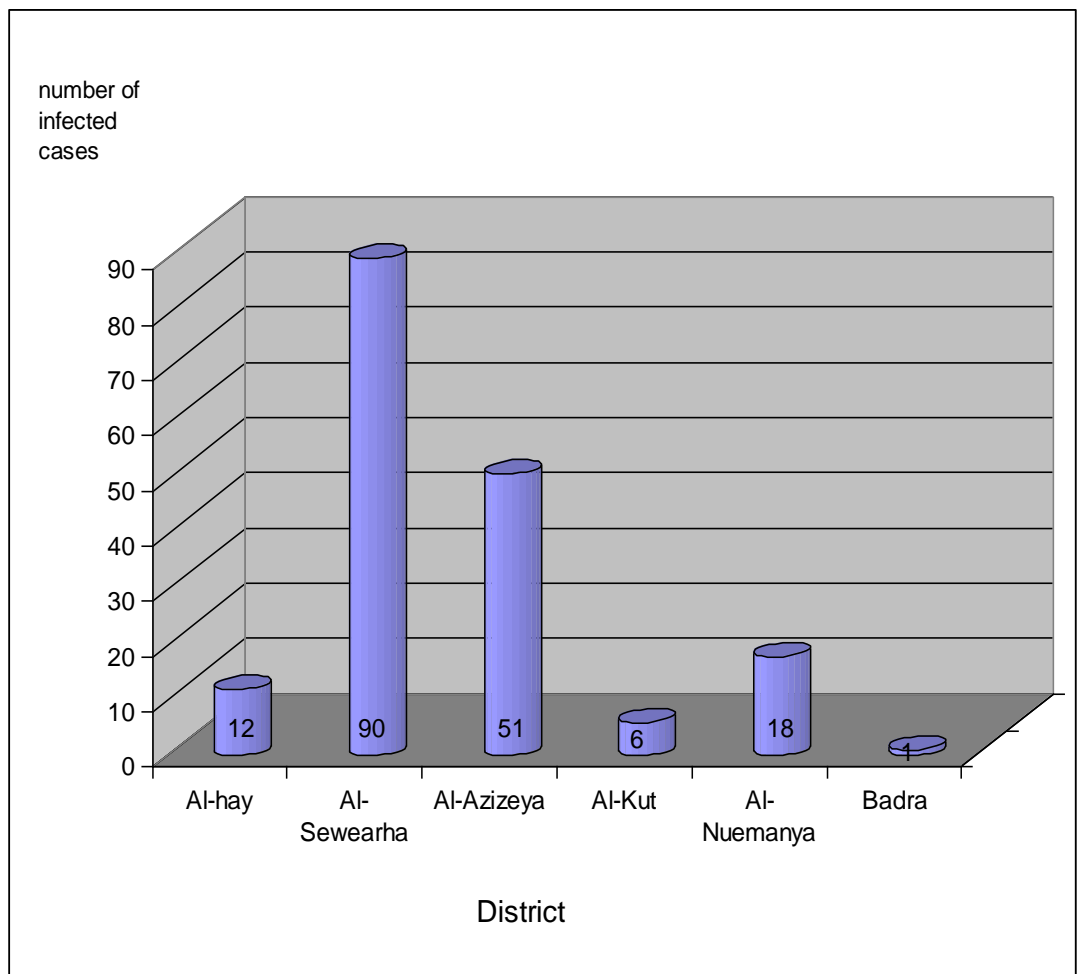
## **Results**

Figure (1) shows geographical distribution of disease during 2006, the maximum cases record in Al-Sewearha city (90 cases) and Al-Azezya city (51 case) and the minimum cases appear in Badra city (one cases) and the number of infected in the other cities ranged (18, 12, 6, in Al-Nuemanaaya, Al-Hay Al-Kut) respectively.

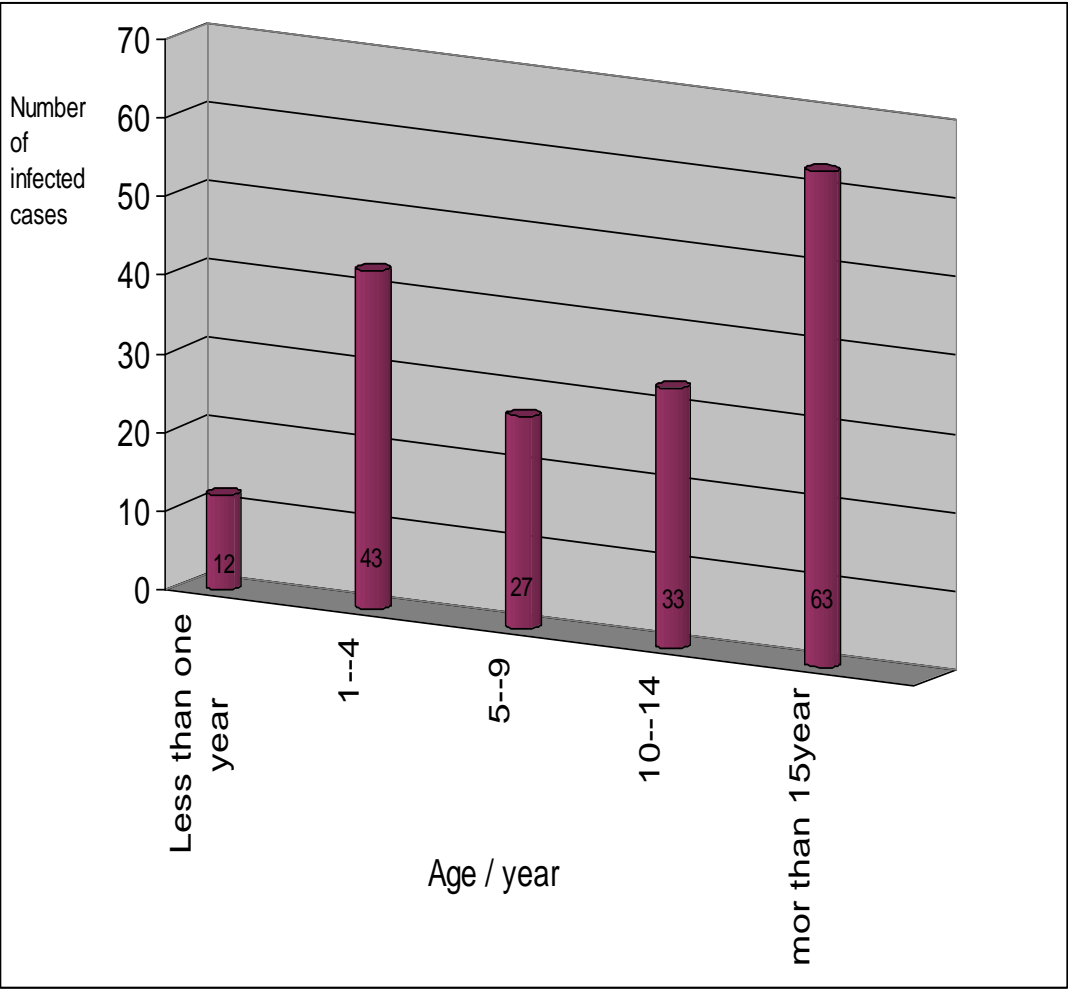
Figure(2) shows the number of cases with cutaneous leishmaniasis according to age of infected person. The level of infection reach the peak(63 case) at the ages more than fifteen year and the lower level (12 case) at the ages less than one year and other cases ranged between them.

Figure (3) shows distribution of disease according to sex, it also illustrate male more sensitive to infection than female. There is a (94 cases) of cutaneous leishmaniasis records in male and (84 infected case) in female during 2006.

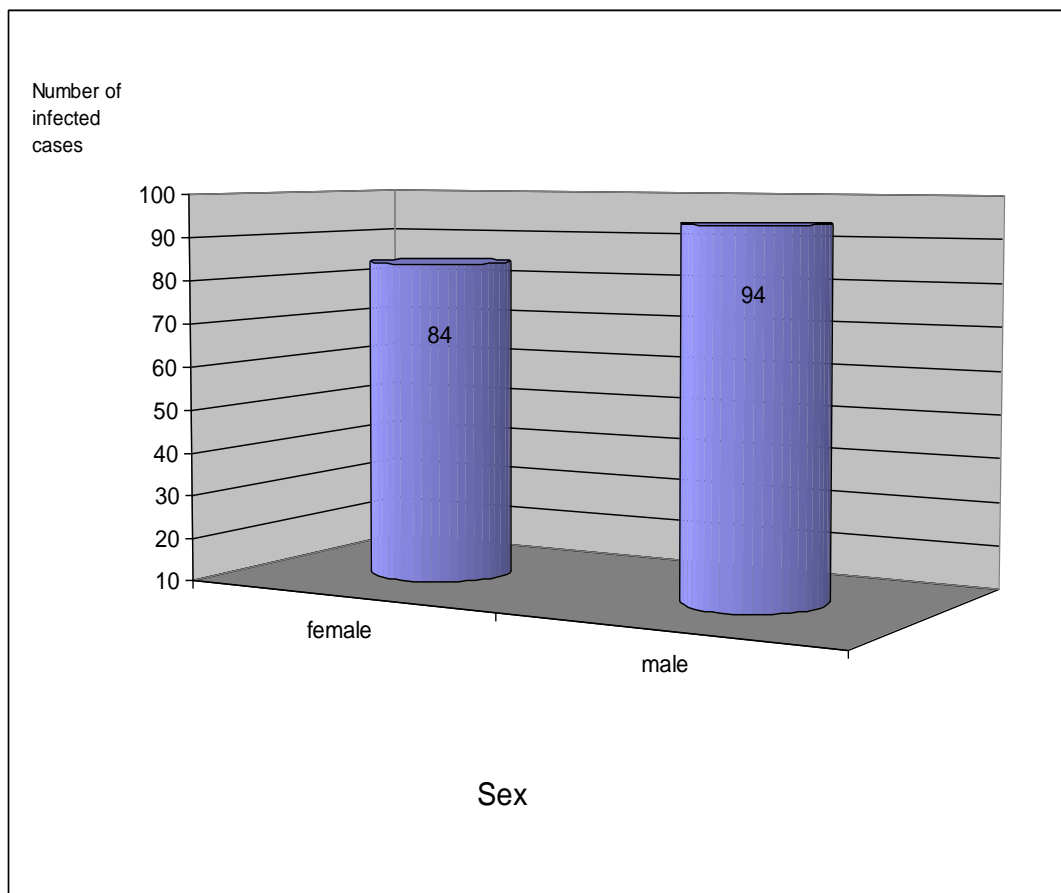
**Figure (1) Geographical distribution of Cutaneous Leishmaniasis**



**Figure (2) Cutaneous Leishmaniasis according to age**



**Figure (3) Cutaneous Leishmaniasis according to sex**



## Discussion

Several factors influencing host susceptibility to *leishmaniasis* some of these related to host such as age, sex, Immunocomponent, nutrition, site of lesion as well as habit of population and other with parasite such as virulence number of invaded parasites.

Disease spread increase mainly by increase exposure to infected sandfly , number of this insect affected by environmental condition such as building dams ,widening areas under cultivation creating new irrigation schemes and migration from rural to urban areas (13).

Figure (1) showed geographical distribution of cutaneous leishmaniasis in Wassit state during 2006, the peak of infection record in Al-Sewearha and Al-Azizeya cities where wide agricultural areas and irrigation schemes which is ideal environment to reproduce and distributes sandfly and reservoir host of leishmania parasites, so the number of cases elevate in this areas as a result of increases exposure to vector bits, this reported by (14) and (13). Transmission occurs in an anthroponotic fly man cycle without nonhuman reservoir, but some species are zoonotic (15). The clinical outcome of cutaneous and visceral leishmaniasis restricted by age of the host.

Figure (2) showed maximum range of infection in age more than fifteen years and the minimum range appear at age less than one year, that mean the infection rate increase with old age this according to (16) when do experimental cutaneous leishmaniasis in hamster and note the old hamster more susceptible to infection than young, and (17) mention the age have affect to host susceptibility.

Some investigations view relationship between sex of host and susceptibility to infection, some of these investigations view a different between male and female.

Figure 3 showed male more susceptible to infection than female, this according to (18) the female mice DBA/2 more resistance to cutaneous leishmaniasis, but (19) mention no different between male and female in leishmaniasis.

## **Conclusion**

Cutaneous Leishmaniasis is world wide disease, diffusion of disease affected by geographical distribution of sandfly vector. To control the distribution of this disease must be first control these insect and reservoir host which have essential role in surviving and distribution of parasite.

Efforts to prevent exposure to the sandfly likely help to reduce the number of patients who ultimately became infected with the disease. Infection can be prevented by avoidance of sandfly bites through use of repellents or insecticides.

Vector and reservoir host control measures are expensive, requiring good infrastructure and maintenance – often giving results which are short-lived. Vector control, based on spraying with residual insecticides, can be effective where it's transmission.



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