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Vector-borne diseases account for more than 17% of all infectious diseases, causing more than 1 million deaths annually.



**Sandfly:**

**1-Sandfly fever**, also known as Pappataci fever or phlebotomus fever

**2-Leishmaniasis**

**Anthroponotic??**



**Zoonotic??**

Caused by protozoan parasites that belong to the genus *Leishmania* and is transmitted by the bite of certain species of sand fly, called *Phlebotomus*.

Leishmaniose, Baghdad Boil, kala azar, black fever.

Man to man transmission by blood transfusion or even sexually transmitted.

1- L. Donovoni- visceral leishmaniasis- called Kala-azar (most worldwide leishmaniasis)

2- L. Tropica cutaneous

Mediterranean area: **IRAQ**, IRAN, PAKISTAN, INDIA.

3- L. Mexicana: cutaneous leish.

4- L. Braziliensis: mucocutaneous type of leishmaniasis

All these species morphologically similar, it can be differentiated through their enzyme and clinically and geographically.

#### **Risk factors:**

**Poverty, malnutrition, deforestation, and urbanization**

Kala-azar:

3 forms:

1- African type: 10-25 years old, male > female

Reservoir: desert rodent specially gerbils

2- Indian type: also 10-25 years old, except here the man is the only reservoir.

3- **Mediterranean type**: below 5 years old, middle east, latin America, north Africa,

Dogs, fox, jackals is the reservoir of that type.

I.P: 3 weeks- 1.5 year, usually 3 months.

*Clinical picture of Kala-azar:*

Gradually increase in fever mainly in night (low grade fever), tachycardia, cough, diarrhea associated with abdominal distention due to hepatosplenomegaly, L.D body invade bone marrow which cause pancytopenia, weight loss, diffuse hair loss.

*Diagnosis:*

- 1- Blood film show L.D body during the fever state.
- 2- Blood culture on N.N.N media from L.N aspiration or from spleen.
- 3- Bone aspiration (Donovani bodies)
- 4- IFAT, ELISA, complement fixation, indirect haemagglutination test.
- 5- hypogammaglobulinemia, thrombocytopenia, pancytopenia
- 6- leishmanin test; measures cell-mediated immunity

*Treatment:*

- safe life of patient: give fluid if dehydrated, give blood if the patient anemic, antibiotics, treat diarrhea
- curative: - pentostam or metronidazole+ rifadin- in IRAQ: oral zinc sulfide 10mg/ kg
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*Cutaneous leishmaniasis*

Caused either by **zoonotic** infection (Leish. major) found in Africa, middle east, Pakistan, Sudan, gerbils and other desert rodents are the main reservoir

Or caused by **anthroponotic** were the human is the reservoir (Leish.tropica), in IRAQ called Baghdad boil. Endemic in IRAQ mainly in central part were high population density.

I.P: longer than visceral: 2months – 5years

Resiorvior: humans, rodents, domestic dogs

male>female, specially on extremities; farmers, animal house keeper, Single or multiple skin lesion affecting the exposed part(tip of nose, cheeks, forehead, upper limb, lastly lower), any boil which delayed in healing for 1 month in endemic area considered it cut. Leish.

The skin lesion wet or dry with variable size and number.

The size of leish. Depend on the host factor; strong host immunity factor will lead to small lesion and will heal spontaneously and rapidly.

Diagnosis:

Tissue specimens—such as from skin sores (for cutaneous leishmaniasis) or from bone marrow (for visceral leishmaniasis)—can be examined for the parasite under a microscope, in special cultures, and in other ways.

- Needle aspiration from edge of cutaneous lesion may demonstrate the parasite.

- ELISA, complement fixation, indirect haemagglutination test.
- Leishmanin test becomes positive 2-3months after the lesions appear.
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#### Treatment of cut. Leish.

Before considering treatment, the first step is to make sure the diagnosis is correct.

The skin sores of cutaneous leishmaniasis usually heal on their own, even without treatment.

mouth, or throat (mucosal leishmaniasis). Mucosal leishmaniasis might not be noticed until years after the original sores healed. The best way to prevent mucosal leishmaniasis is to ensure adequate treatment of the cutaneous infection.

#### Local lesion (small no.)

infrared therapy for many sessions, passage of electrical therapy around the lesion, 7% hypertonic NaCl, Intra leish. Metronidazole, and Intra leish. Zinc sulfad.

#### Prevention and control in general:

- Early treatment of human cases
- Terminate the reservoir(dogs, jackels, foxes, rodents)
- Use of DDT or malthone to eradicate the sand fly
- Fine mesh net

- Use of chemical repellent
- Vaccination for (cut. Leish.)

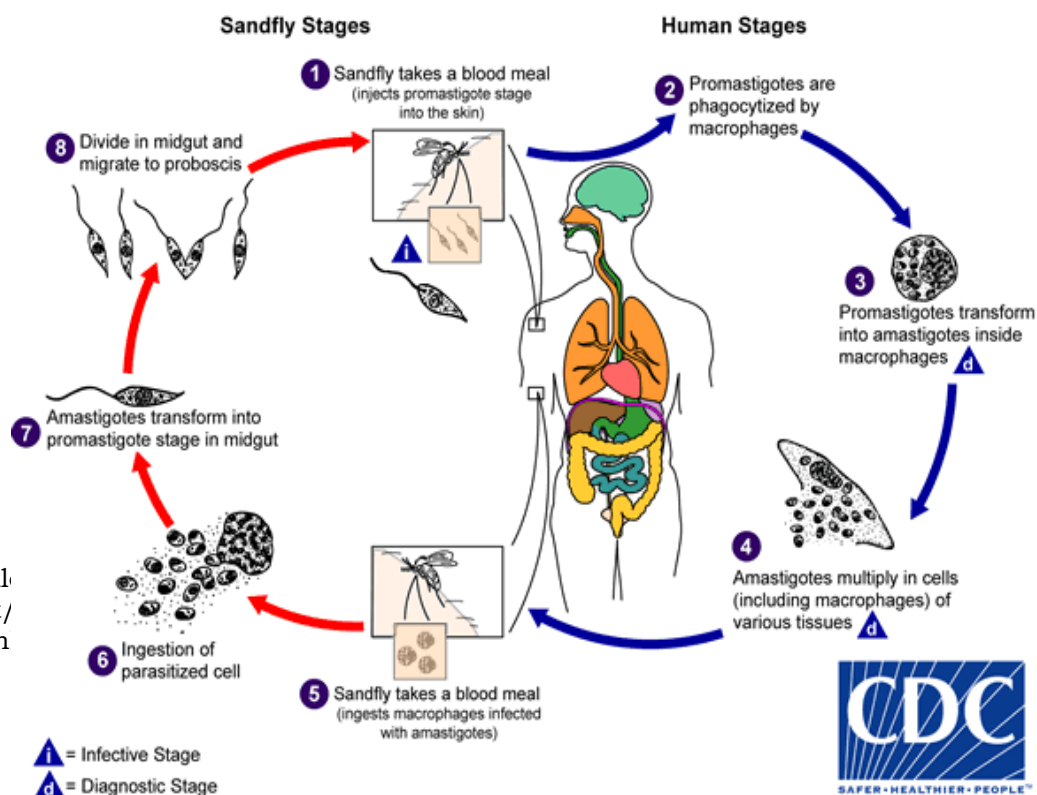
-No vaccines or drugs to prevent infection are available. The best way for travelers to prevent infection is to protect themselves from sand fly bites. To decrease the risk of being bitten, follow these preventive measures:

-Avoid outdoor activities, especially from dusk to dawn, when sand flies generally are the most active.

-outdoors :

- Minimize the amount of exposed (uncovered) skin. To the extent that is tolerable in the climate, wear long-sleeved shirts, long pants, and socks; and tuck your shirt into your pants. (See below about wearing insecticide-treated clothing.)
- Apply insect repellent to exposed skin and under the ends of sleeves and pant legs. Follow the instructions on the label of the repellent. The most effective

repellents generally are those that contain the chemical DEET (N,N-



diethylmetatoluamide).

-When indoors:

- Stay in well-screened or air-conditioned areas.
- Keep in mind that sand flies are much smaller than mosquitoes and therefore can get through smaller holes.
- Spray living/sleeping areas with an insecticide to kill insects.
- use a bed net

فقط للاطلاع لوجود بعض الامراض التي درسناه

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## Main vectors and diseases they transmit

### **Mosquitoes**

- *Aedes*
  - Chikungunya
  - Dengue fever
  - Rift Valley fever
  - Yellow fever
  - Zika
- *Anopheles*
  - Malaria
- *Culex*
  - Japanese encephalitis
  - Lymphatic filariasis
  - West Nile fever



### **Sandflies**

- Leishmaniasis
- Sandfly fever (phlebotomus fever)

### **Ticks**

- Crimean-Congo haemorrhagic fever
- Lyme disease
- Relapsing fever (borreliosis)
- Rickettsial diseases (spotted fever and Q fever)
- Tick-borne encephalitis
- Tularaemia

### **Triatomine bugs**

- Chagas disease (American trypanosomiasis)

### **Tsetse flies**

- Sleeping sickness (African trypanosomiasis)

### **Fleas**

- Plague (transmitted by fleas from rats to humans)
- Rickettsiosis

### **Black flies**

- Onchocerciasis (river blindness)

### **Aquatic snails**

- Schistosomiasis (bilharziasis)