

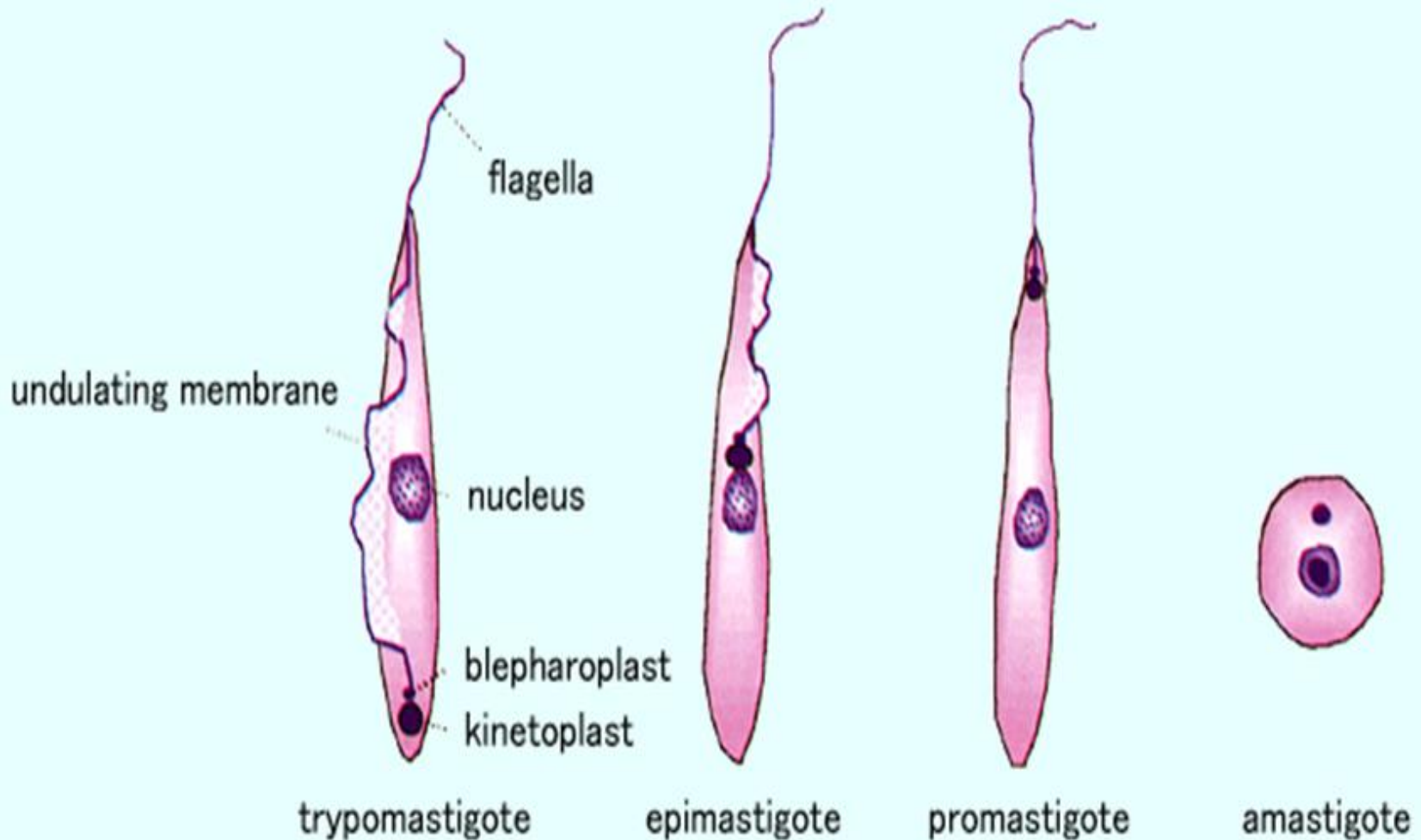
بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Haemoflagellate protozoa

Leishmania

Dr MONA BADR

Different stages of Hemoflagellates

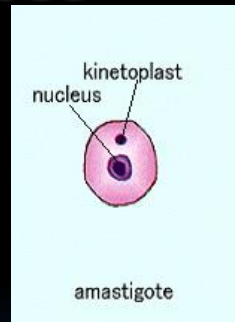
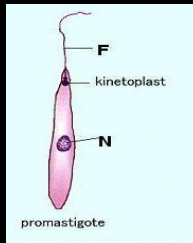


The life cycle of *Leishmania*

Leishmaniasis is transmitted by the bite of female **sandflies (vector)**.

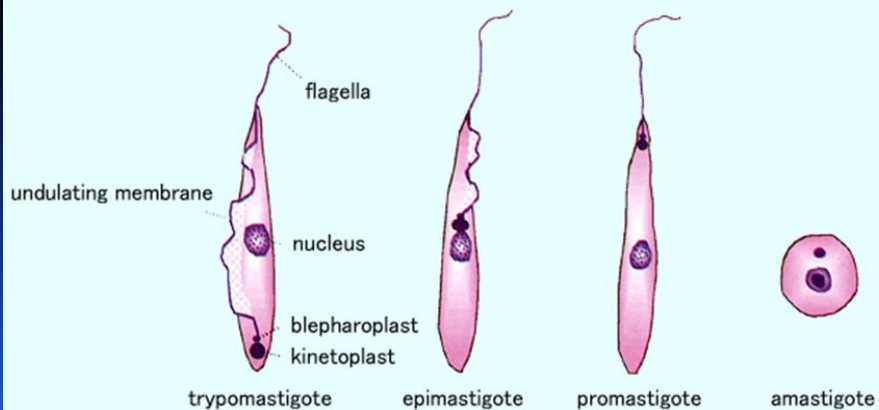
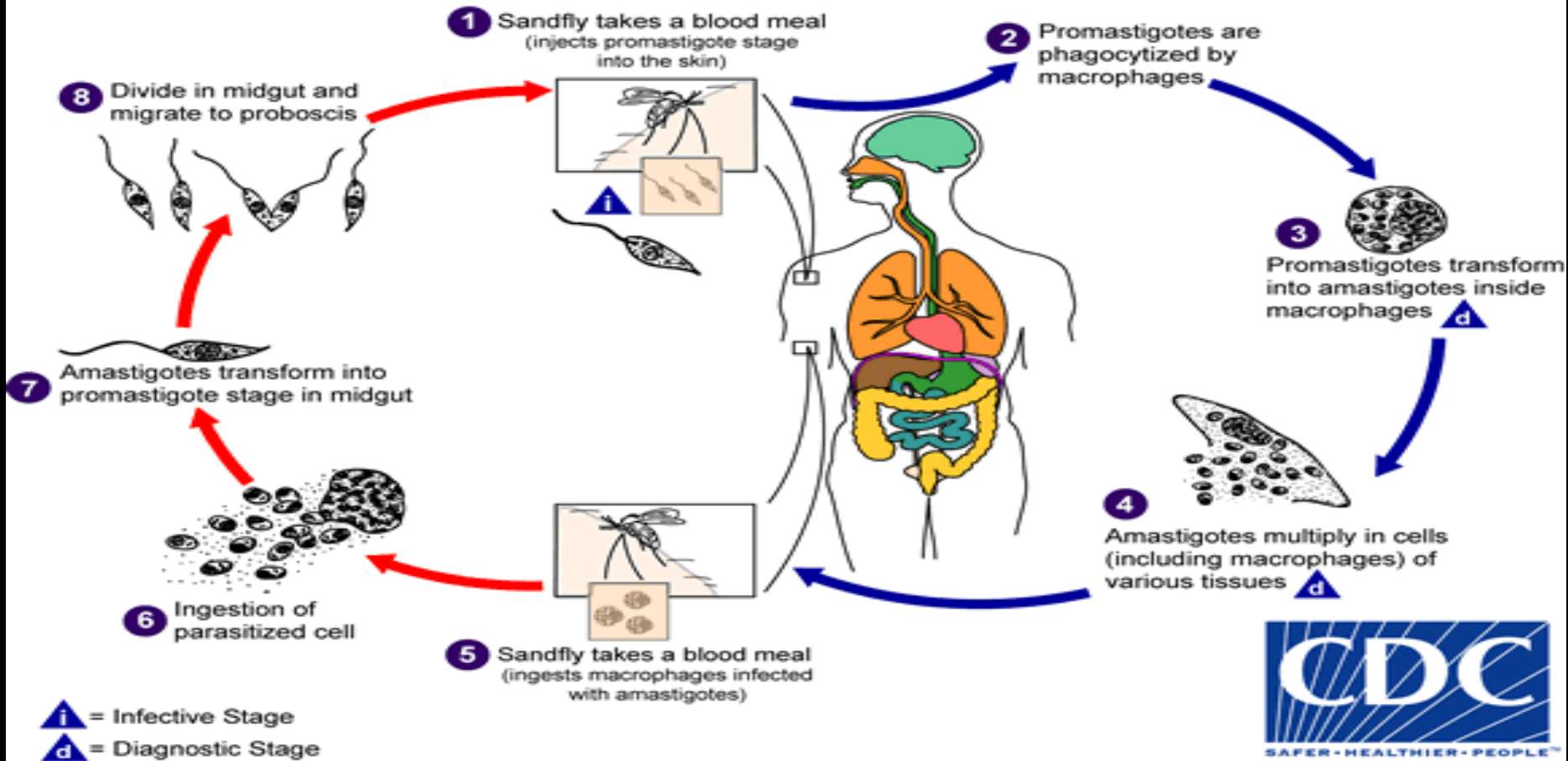


The sandflies **inject the infective stage (promastigotes)**, then the macrophages will engulf them and transfer them to **amastigotes (the diagnostic stage)**. *Leishmania* parasite survive within the *macrophages* (***amastigote stage***) in the human body as intracellular parasites, cell mediated immunity determines the host response to infection and clinical manifestations of the disease.



Sandfly Stages

Human Stages



Different stages of Hemoflagellate protozoa

Leishmania Parasites and Diseases

There are three 3 main form of Lishmaniassis each caused by a different species :

SPECIES	Disease
<i>Leishmania tropica</i> *	Cutaneous leishmaniasis
<i>Leishmania major</i> *	
<i>Leishmania aethiopica</i>	
<i>Leishmania mexicana</i>	
<i>Leishmania braziliensis</i>	Mucocutaneous leishmaniasis
<i>Leishmania donovani</i> *	Visceral leishmaniasis
<i>Leishmania infantum</i> *	
<i>Leishmania chagasi</i>	

* Endemic in Saudi Arabia

Sandflies vector of transmission

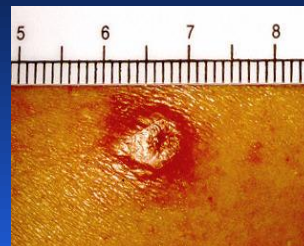
via the bite of infected blood –sucking



Clinical types of cutaneous leishmaniasis known as (Oriental sore)

- ***Leishmania major***: human and Zoonotic cutaneous leishmaniasis(dogs,rodents) : wet lesions with severe reaction.
- ***Leishmania tropica***: Anthroponotic (human only) cutaneous leishmaniasis: Dry lesions with minimal ulceration.

Oriental sore is classical self-limited ulcer.



CUTANEOUS LISHMANIASIS THE COMMON TYPE

This starts as a painless papule at the site of Sand fly bite ,generally the face ,which enlarges ,The lesion ulcerates after a few months with an indurated margin.

In some cases the ulcer remains dry and heals readily (**dry-type-lesion**) L.tropica .

In some other cases the ulcer may spread with an inflammatory zone around , these known as (**wet-type-lesion**) which heal slowly L.major.



UNCOMMON TYPES OF CUTANEOUS

LISHMANIASIS

- Diffuse cutaneous leishmaniasis (DCL):

Caused by *L. aethiopica*, diffuse nodular non-ulcerating lesions, seen in a part of Africa, people with low immunity to *Leishmania* antigens.



Diffuse cutaneous (DCL), and consists of nodules and a thickening of the skin, generally without any ulceration .

- Leishmaniasis recidiva (lupoid leishmaniasis):

Severe immunological reaction to *leishmania* antigen leading to persistent dry skin lesions.



Mucocutaneous leishmaniasis

L. braziliensis.

The lesion starts as a pustular swelling in the mouth or on the nostrils. The lesion may become ulcerative after many months and then extend into the naso-pharyngeal mucous membrane.

Secondary bacterial infection is very common with destruction of the nasal cartilage and the facial bone. *L. braziliensis*.

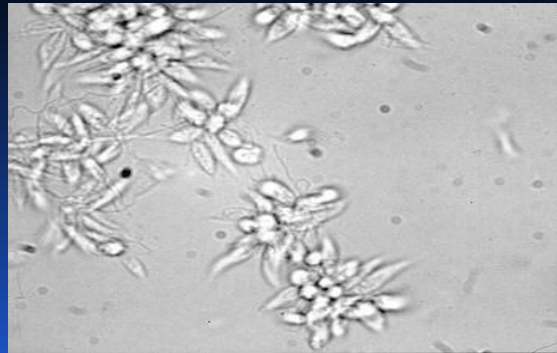
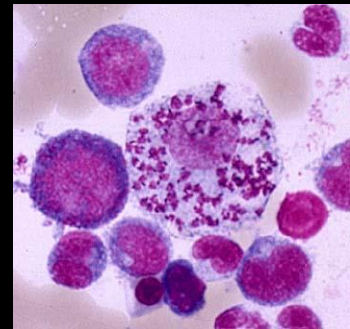


Diagnosis of cutaneous & muco-cutaneous leishmaniasis

The parasite can be isolated from the margin of the ulcer.

Giemsa stain – microscopy for LD bodies (amastigotes) in the macrophages.

- Culture in **NNN** medium:
for finding promastigotes.



Treatment

- No treatment – self-healing lesions
- Medical:
 - **Pentavalent antimony (Pentostam),** Amphotericin B
 - Antifungal drugs
 - +/- Antibiotics for secondary bacterial infection.
- Surgical:
 - Cryosurgery
 - Excision
 - Curettage



REFERENCE :WHO (2010) Control of leishmaniasis. Report of a meeting 571 of the WHO expert committee on the control of leishmaniasis.
http://whqlibdoc.who.int/trs/WHO_TRS_949_eng.pdf

Leishmania Parasites and Diseases

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<i>Leishmania infantum</i> *	
<i>Leishmania chagasi</i>	

* Endemic in Saudi Arabia

Visceral leishmaniasis (Kala-azar)

- 1-*Leishmania infantum* mainly affect children
- 2-*Leishmania donovani* mainly affects adults
- The incubation period is usually 2-8 months.
- The symptoms generally are: fever ,malaise, weight loss with splenomegaly ,hepatomegaly ,anemia ,leucopenia and sweating .
- Hepato-splenomegally can be seen because of the hyperplasia of the lymphoid –macrophage system.



* Both are endemic in Saudi Arabia



Untreated disease can be fatal

After recovery it might produce a condition called post kala-azar dermal leishmaniasis (PKDL)



Visceral leishmaniasis

Diagnosis

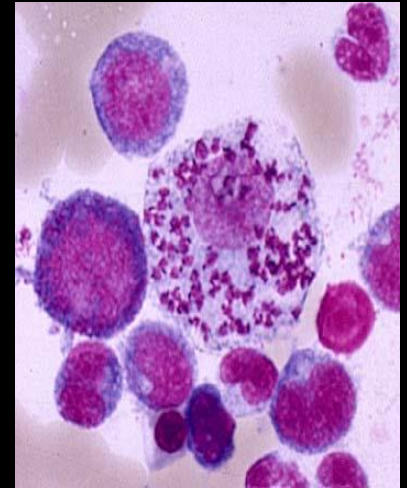
(1) Parasitological diagnosis:

Bone marrow aspirate

Splenic aspirate

Lymph node

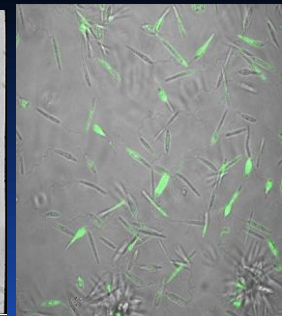
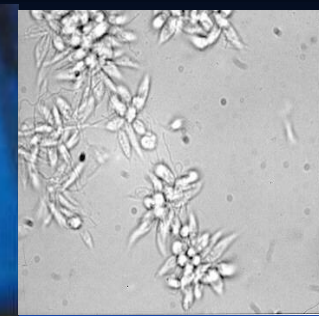
Tissue biopsy



1. microscopy(amastigotes)

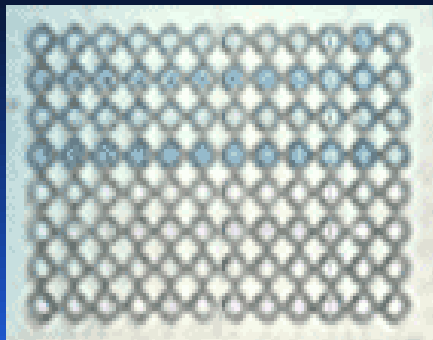
2-culture in **NNN** medium

Promastigotes



(2) Immunological Diagnosis:

- Specific serologic tests:
Direct Agglutination Test (DAT), ELISA, IFAT
- Skin test (leishmanin test) for survey of populations and follow-up after treatment.



DAT test



ELISA test

Treatment of visceral leishmaniasis

- Recommended treatment varies in different endemic areas:
 - Pentavalent antimony- sodium stibogluconate (Pentostam)
 - Amphotericin B

Side effect the treatment

- Anaemia
- Bleeding
- Infections etc.

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