Haemoflagellates

Leishmania

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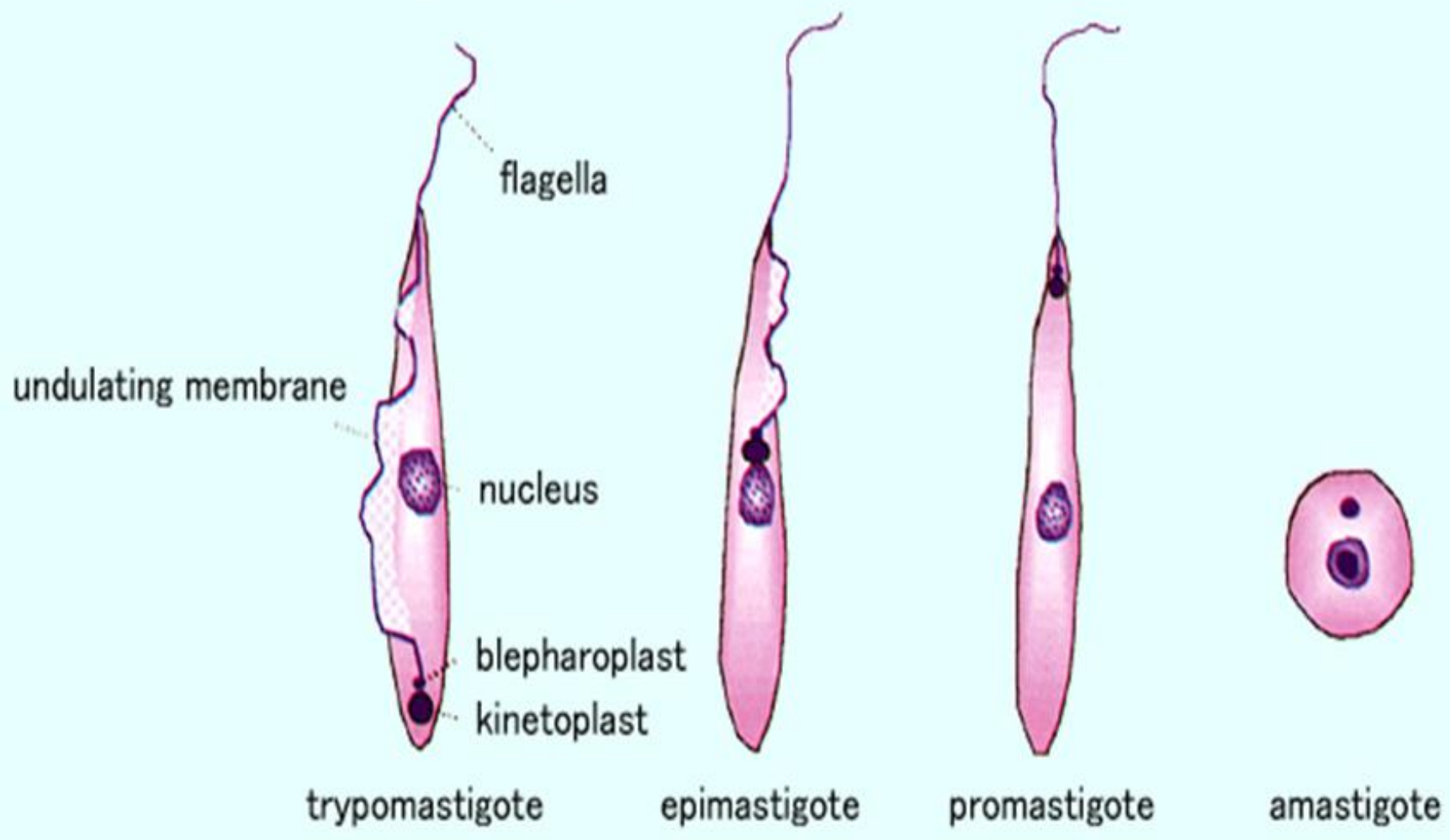
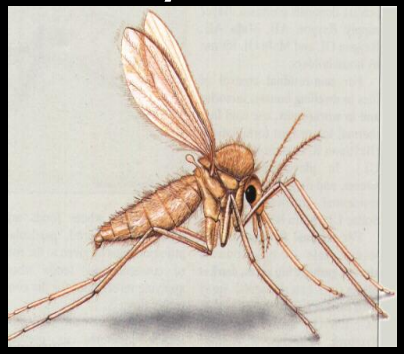
Different stages of Haemoflagellates



Lishmaniasis

- Lishmaniasis is a disease caused by parasites name Lishmania, it is spread by the bite of certain type of SANDFLIES.



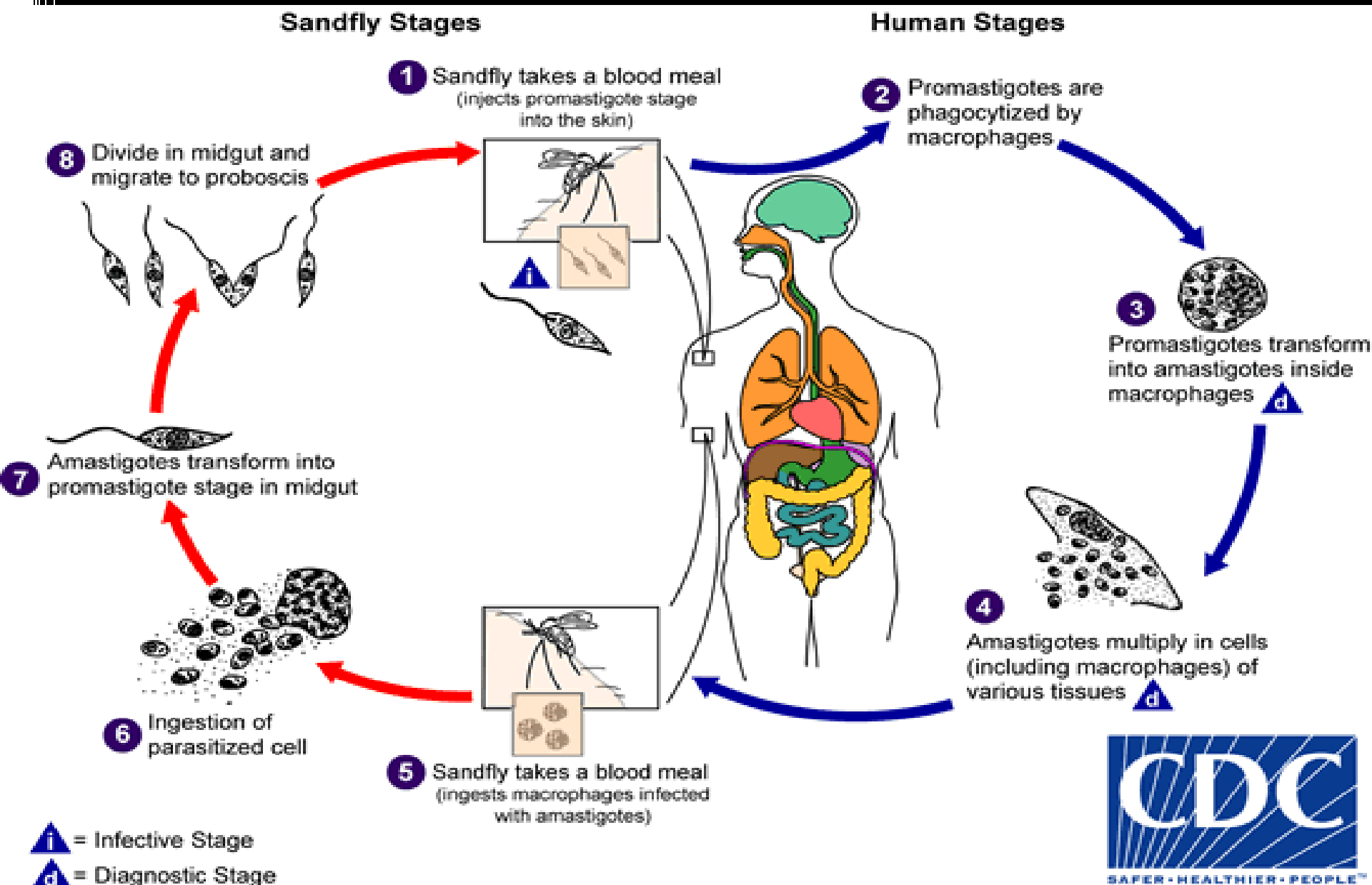
- The disease can present in three main ways :
- 1-Cutaneous
- 2-Mucocutaneous
- 3-Viseral (Kala-azar) most serious form of the disease can be fatal if not treated.

Leishmania Parasites and Diseases

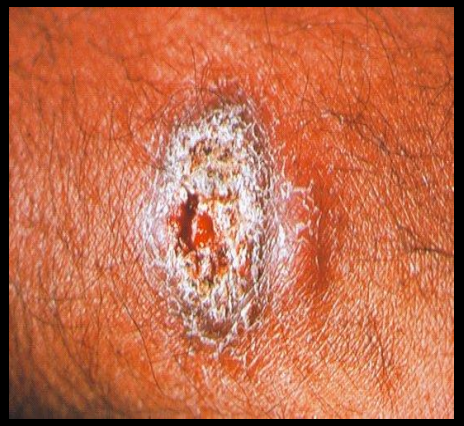
SPECIES	Disease
*Leishmania tropica** *Leishmania major** *Leishmania aethiopica* *Leishmania mexicana*	Cutaneous leishmaniasis
Leishmania braziliensis	Mucocutaneous leishmaniasis
*Leishmania donovani** *Leishmania infantum** *Leishmania chagasi*	Visceral leishmaniasis

* Endemic in Saudi Arabia

The life cycle of *Leishmania*



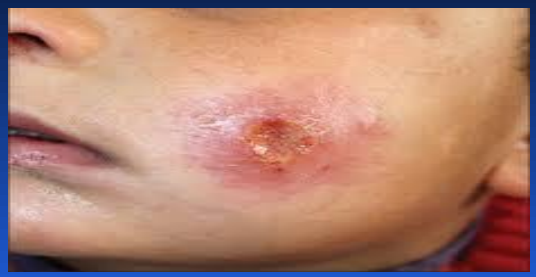
Clinical types of cutaneous leishmaniasis

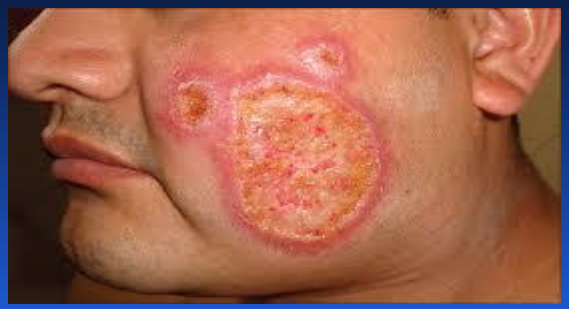


- ***Leishmania major***: Zoonotic cutaneous leishmaniasis: wet lesions with severe reaction

- ***Leishmania tropica***: (human to human) cutaneous leishmaniasis: Dry lesions with minimal ulceration

Oriental sore (most common) classical self-limited ulcer





CUTANEOUS LISHMANIASIS THE COMMON TYPE

This starts as a **painless papule** on exposed parts of the body ,generally the face.

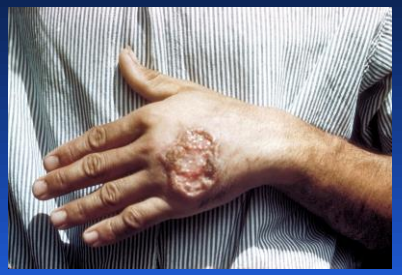
The lesion ulcerates after a few months producing an ulcer with an indurate margin. 1-

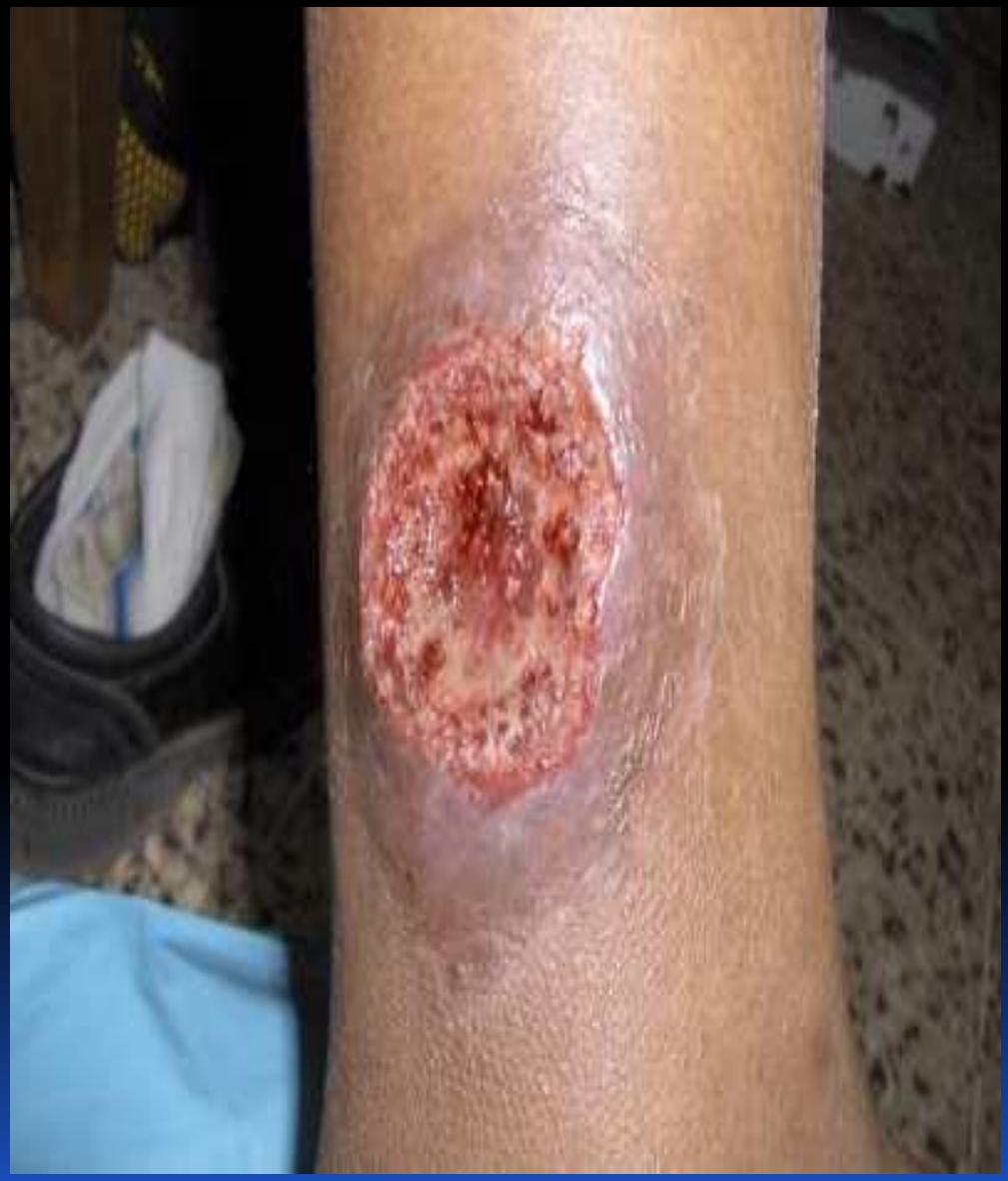
1-***dry-type-lesion***

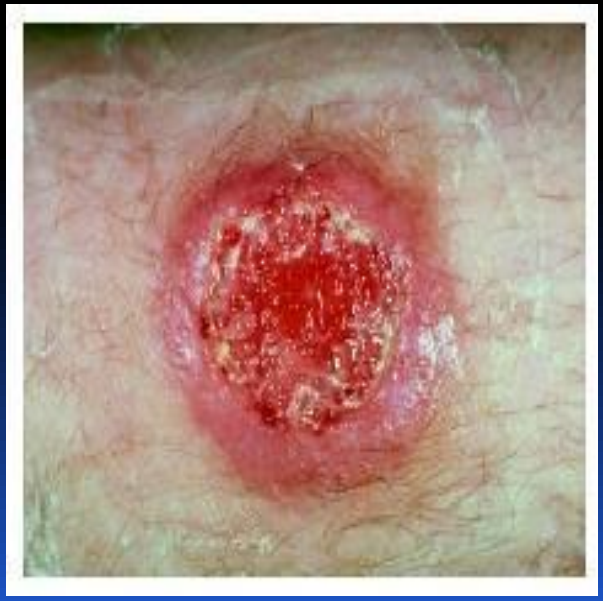
In some cases the ulcer remains dry and heals readily **(Lishmania Tropica , Oriental sore**

(2- ***wet-type-lesion***

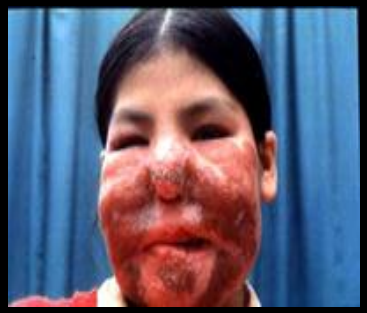
In some other cases the ulcer may spread with an inflammatory zone around , these known to heal slowly (Lishmania major)







UNCOMMON TYPES OF CUTANEUS 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 ,it needs numerous parasite.

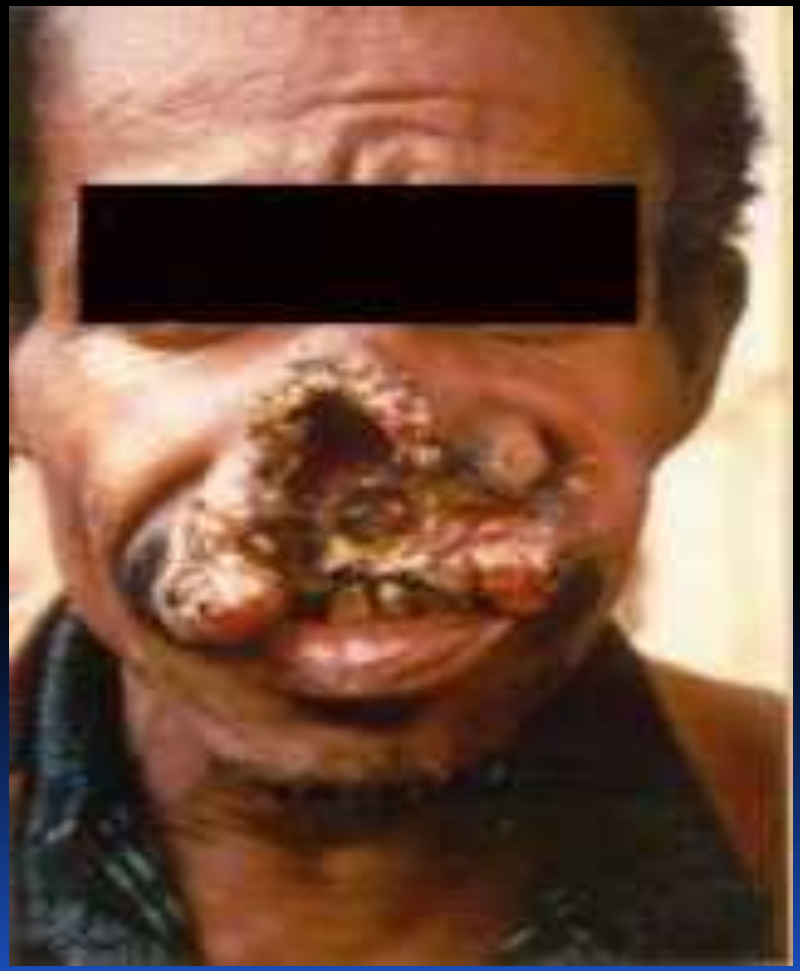
- **Leishmaniasis recidiva** (lupoid leishmaniasis):

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

Mucocutaneous leishmaniasis
Leishmania 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 infection is very common with destruction of the nasal cartilage and the facial bone.



cutaneous & muco-cutaneous leishmaniasis

Diagnosis:

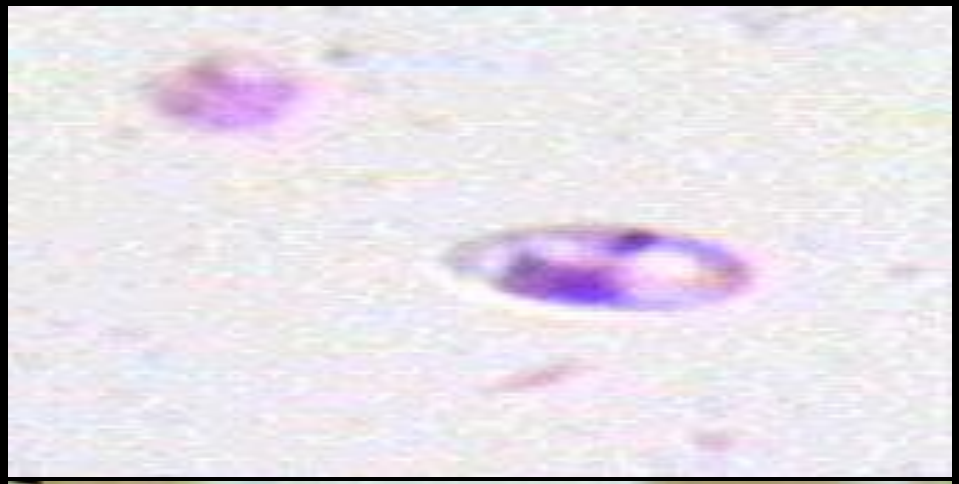
The parasite can be isolated from the margin of the ulcer.

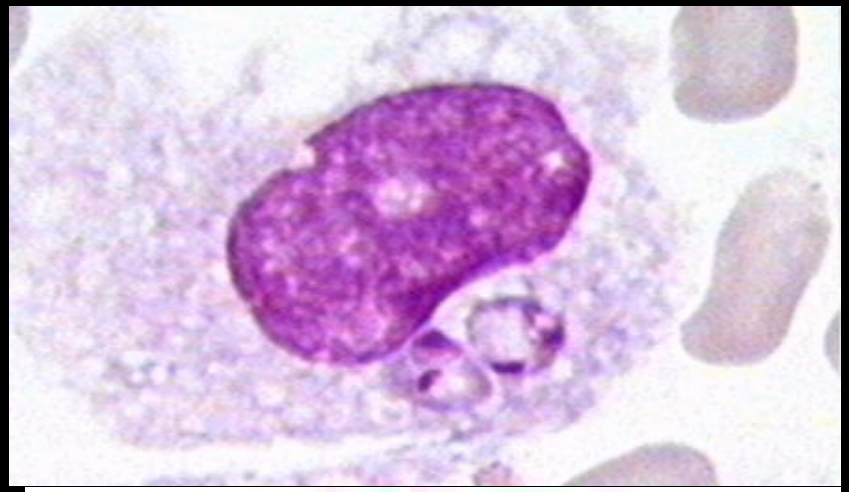
Smear: Giemsa stain – microscopy for LD bodies (amastigotes) in tissue macrophages.

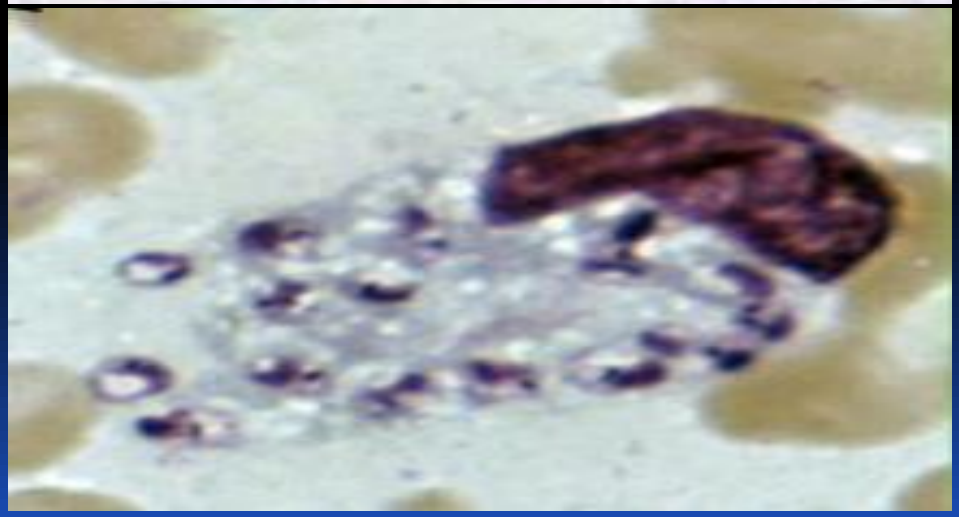
- ***Biopsy:*** microscopy for LD bodies or culture in **NNN** medium for promastigotes.

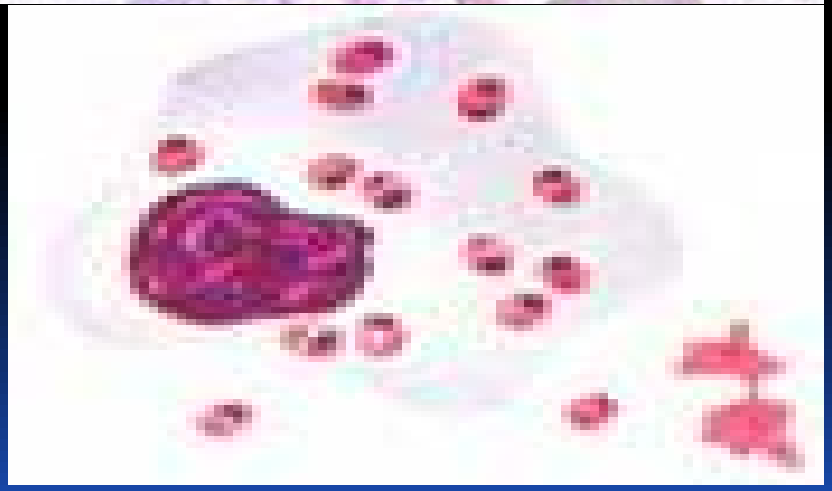
polymerase chain reaction (PCR) tests are available for the detection of *Leishmania* DNA

Amastigotes of Leishmania

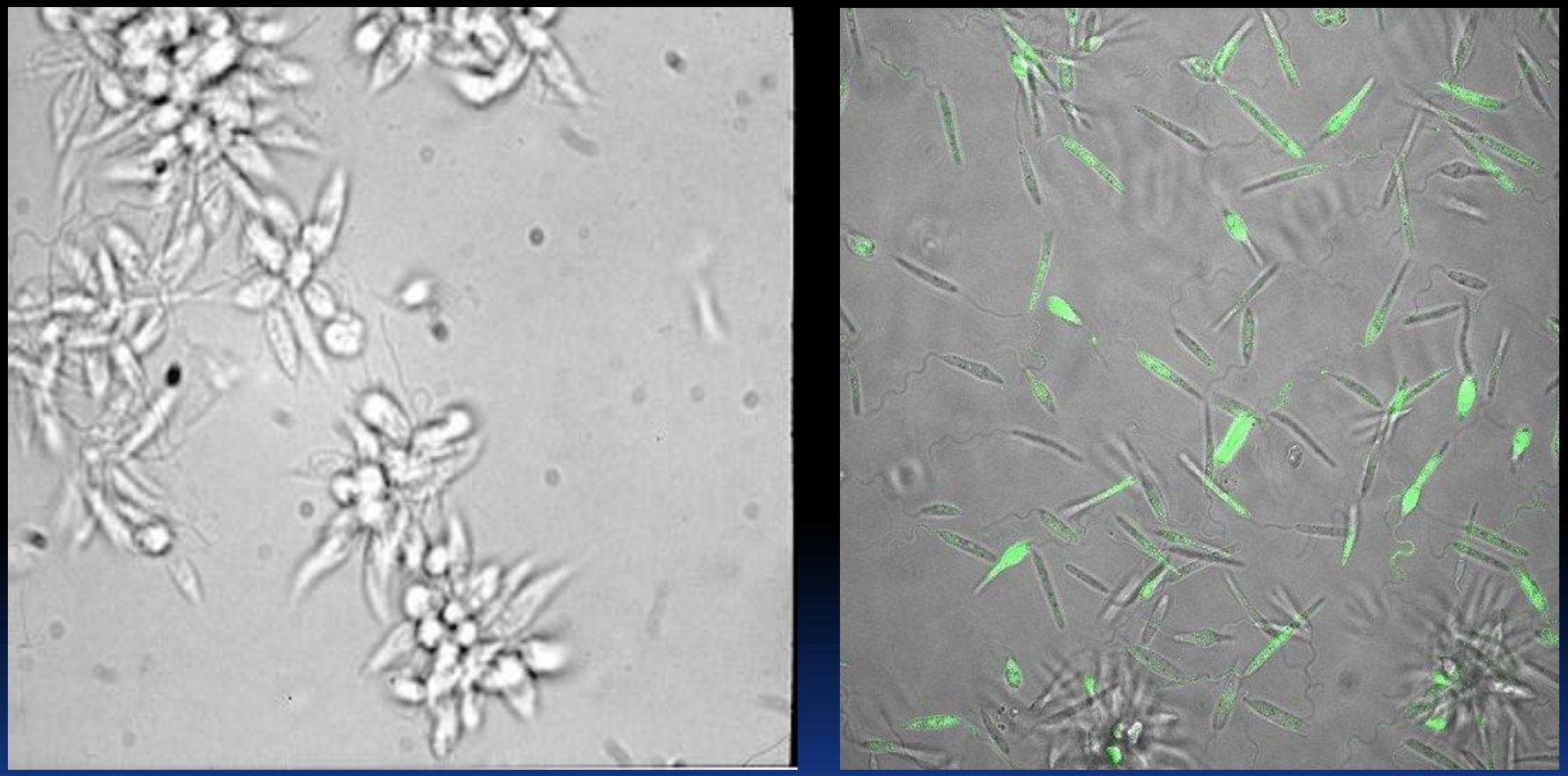








NNN medium



Promastigotes of Leishmania

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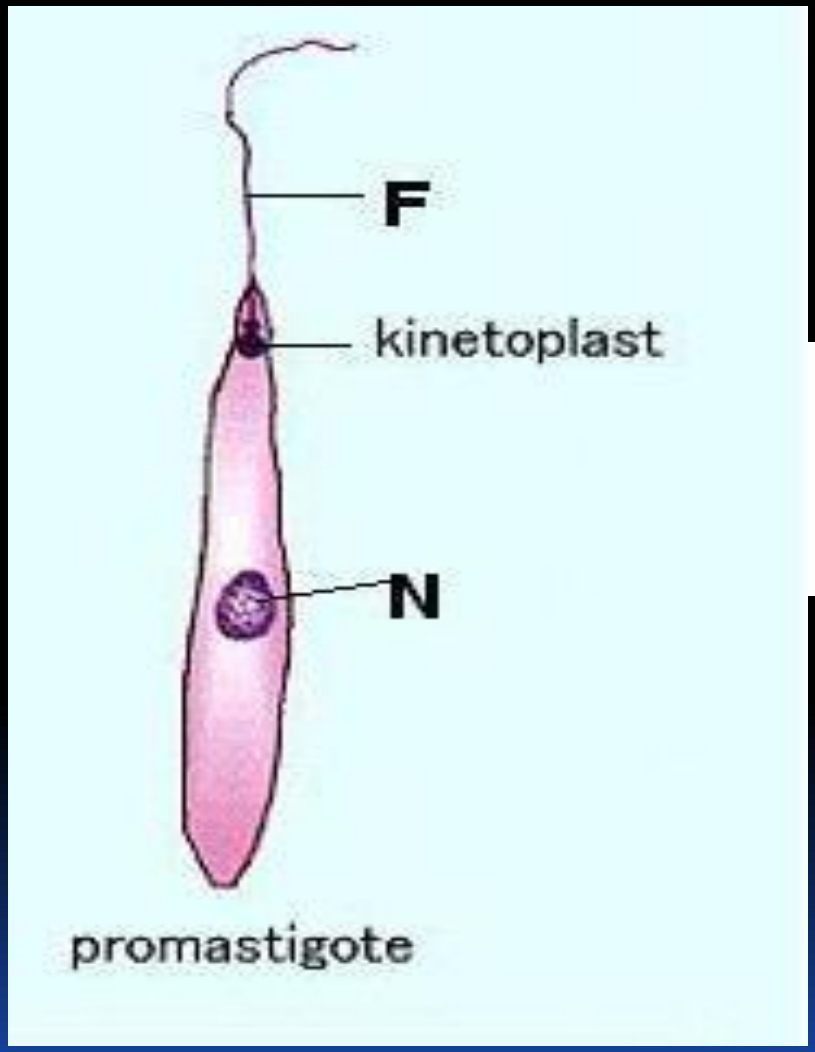
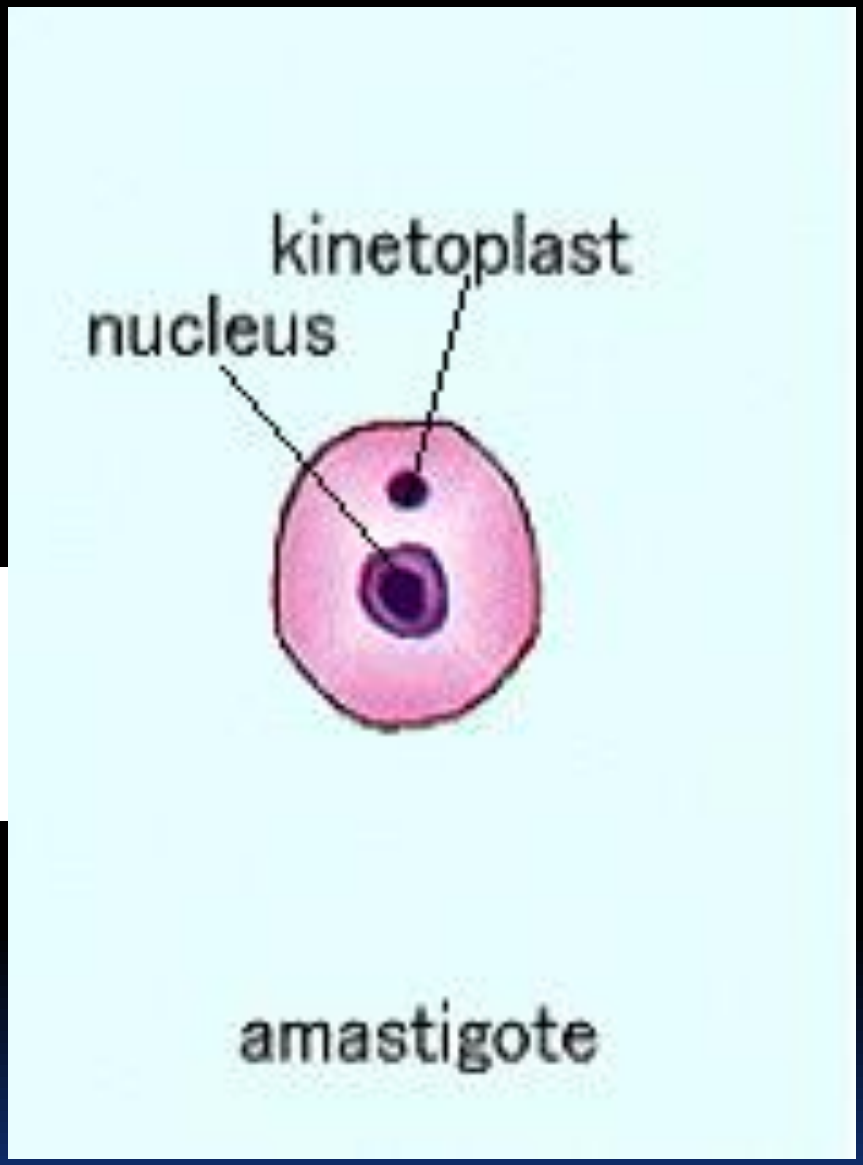




Amastigote of Leishmania

Treatment

- **No treatment** – self-healing lesions
- **Medical:**
  - **Pentavalent antimony (Pentostam),** An
  - Antifungal drugs
  - +/- Antibiotics for secondary bacterial infection.

- **Surgical:**
  - Cryosurgery
  - Excision
  - Curettage

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

Visceral leishmaniasis

- Is the most serious form, and is potentially fatal if untreated , There are geographical variations.
- The diseases is called **kala-azar**
- ***Leishmania infantum* mainly affect children**
- ***Leishmania donovani* mainly affects adults**
- The incubation period is usually 4-10 months.
- The early symptoms are generally low grade fever with malaise and sweating and anemia.
- In later stages ,the fever becomes intermittent and then liver enlargement , spleen enlargement or hepatosplenomegally because of the hyperplasia of the lymphoid –macrophage system and bone marrow.

Hepatosplenomegaly in visceral leishmaniasis

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:

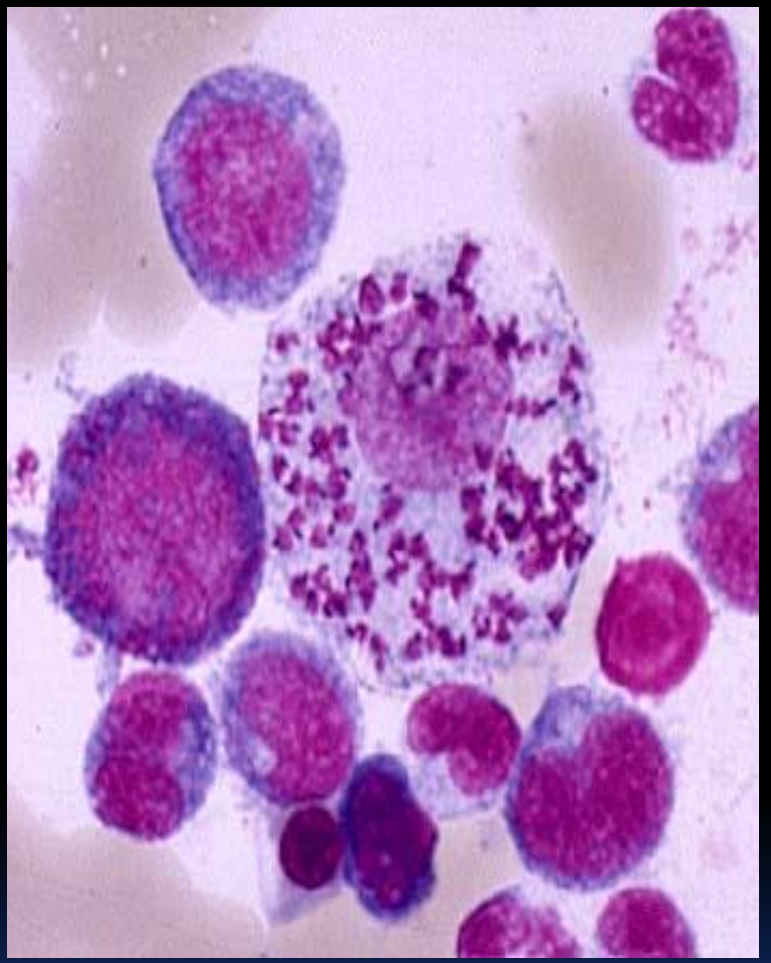
Bone marrow aspirate
Splenic aspirate
Lymph node
Liver biopsy

1. microscopy
2. culture in NNN medium

Diagnosis of Lishmaniasis

- Leishmaniasis is diagnosed in the hematology laboratory by direct visualization of the amastigotes (Leishman-Donovan bodies). **Buffy-coat** preparations of peripheral blood or aspirates from marrow, spleen, lymph nodes, or skin lesions should be spread on a slide to make a thin smear and stained with **Leishman or Giemsa stain** . Amastigotes are seen within blood macrophage and spleen monocytes or, less commonly, in circulating neutrophils .

Bone marrow aspiration



Bone marrow amastigotes

(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.
  (3) polymerase chain reaction (PCR) tests are available for the detection of *Leishmania* DNA

Treatment of visceral leishmanisis

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

Treatment of complications:

- Anaemia
- Bleeding
- Infections etc.

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