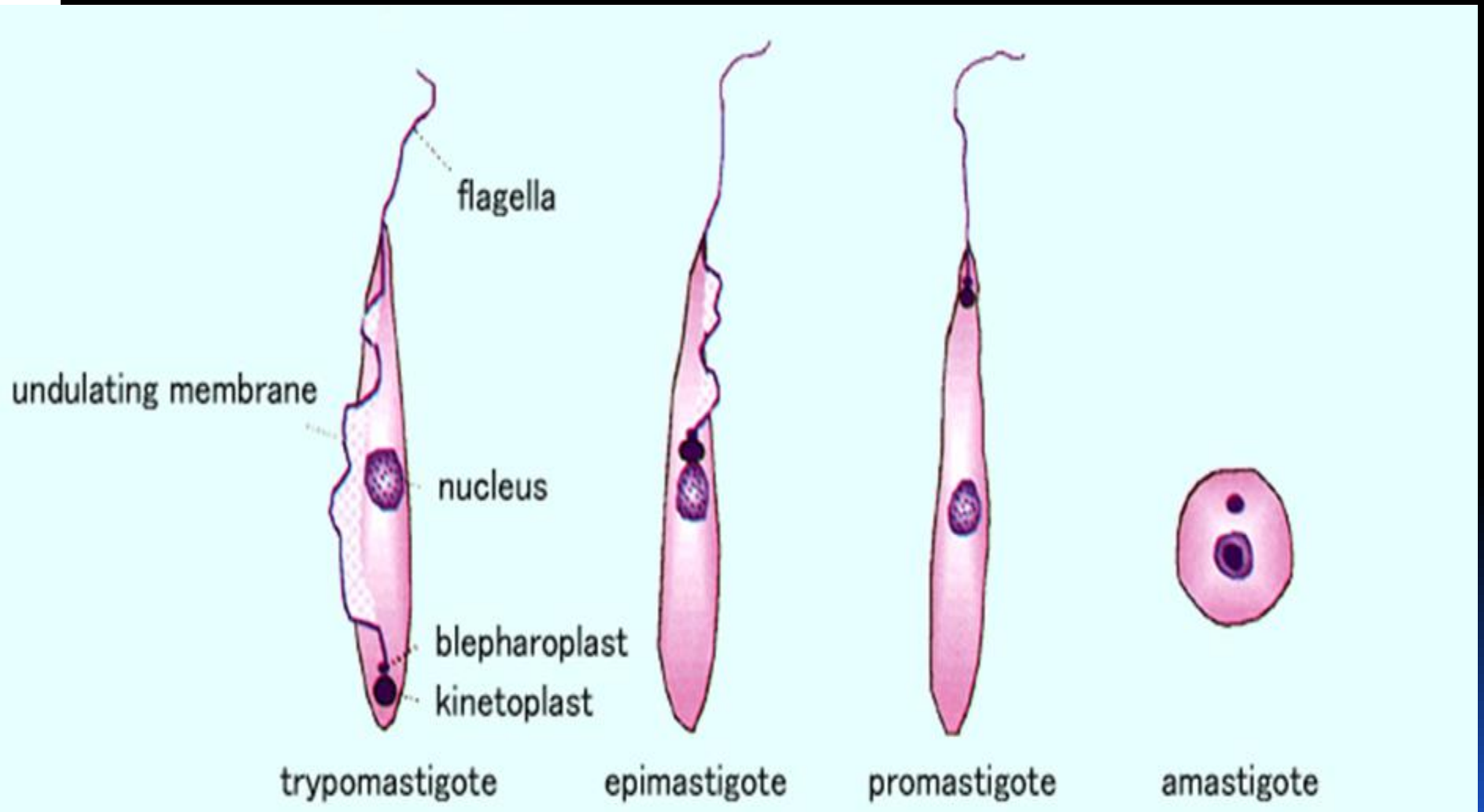
Haemoflagellate protozoa

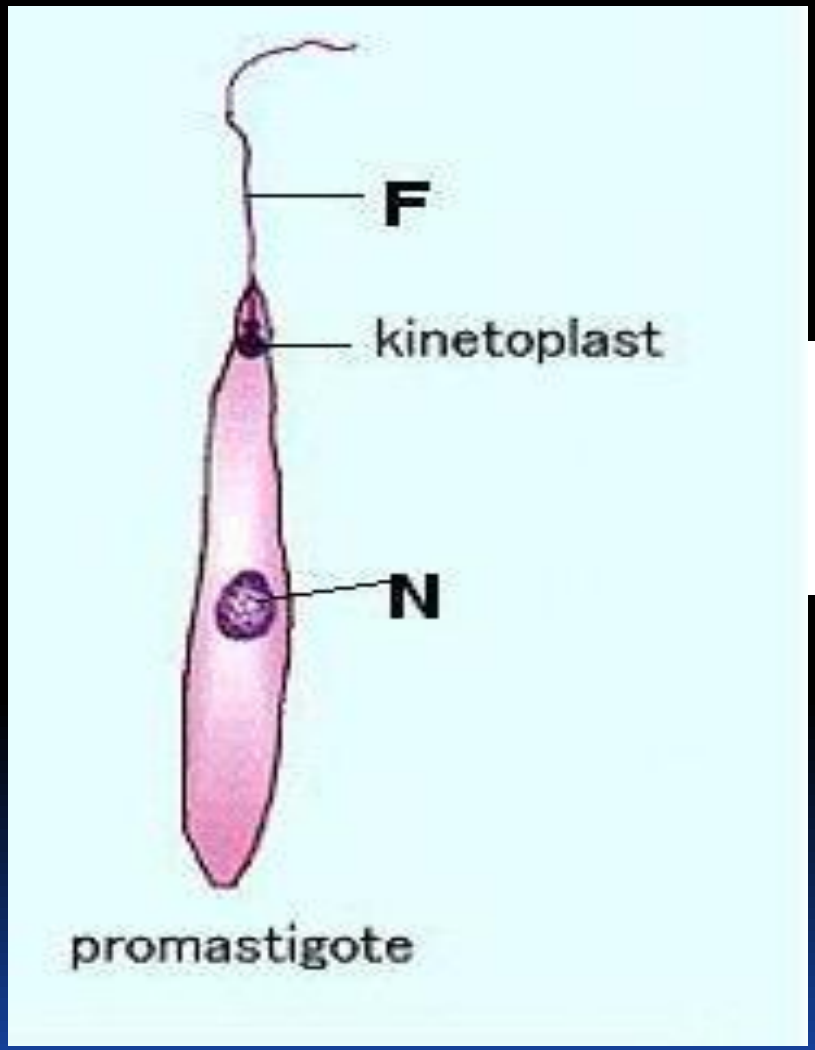
Leishmania

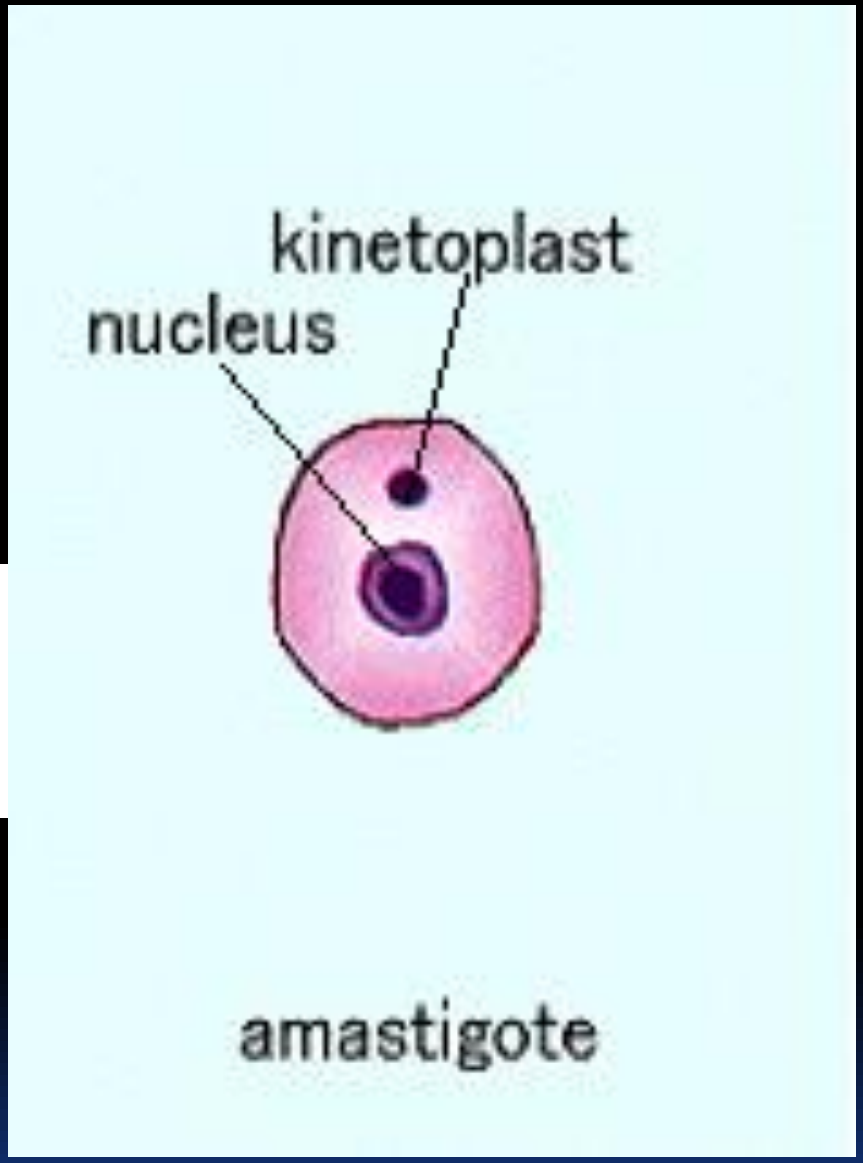
Dr MONA BADR

Different stages of Haemoflagellate protozoa



Promastigotes of Leishmania

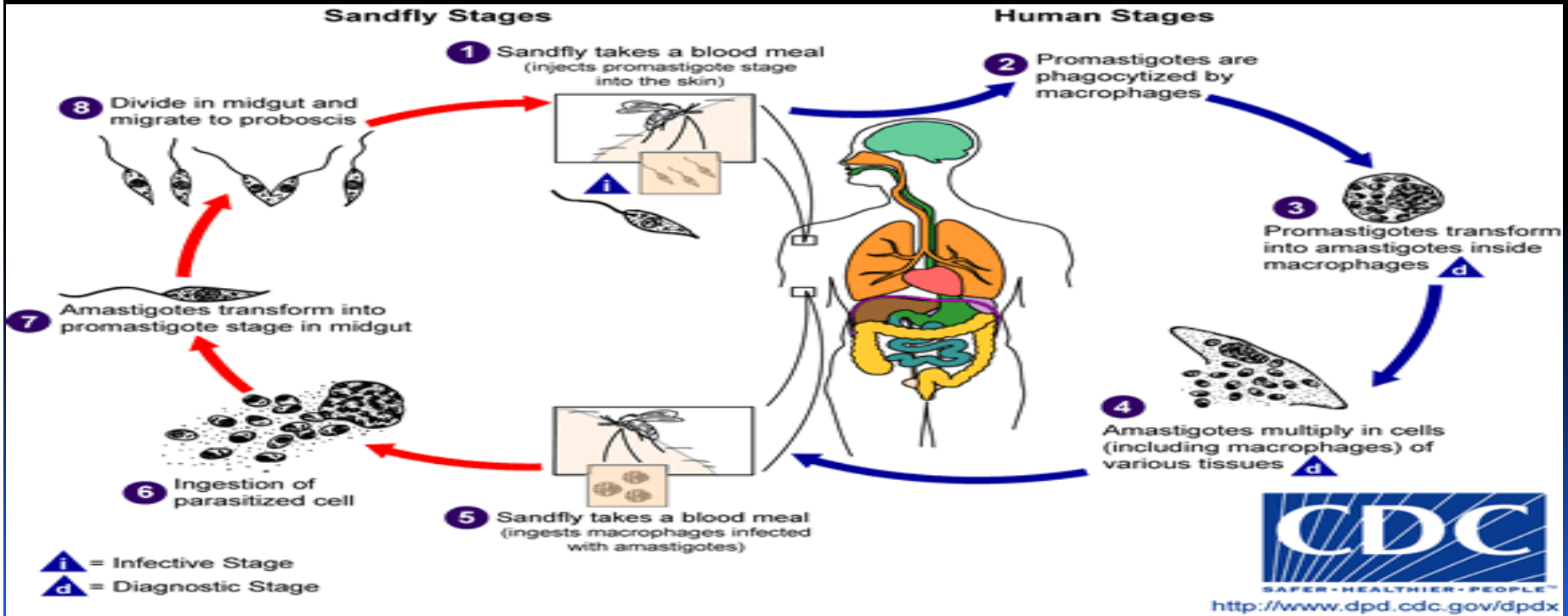




Amastigote of Leishmania

The life cycle of *Leishmania*

Lishmania spp survive within the ***macrophages*** in the human body as intracellular parasites –cell mediated immunity determines the host response to infection and clinical manifestations of the disease.



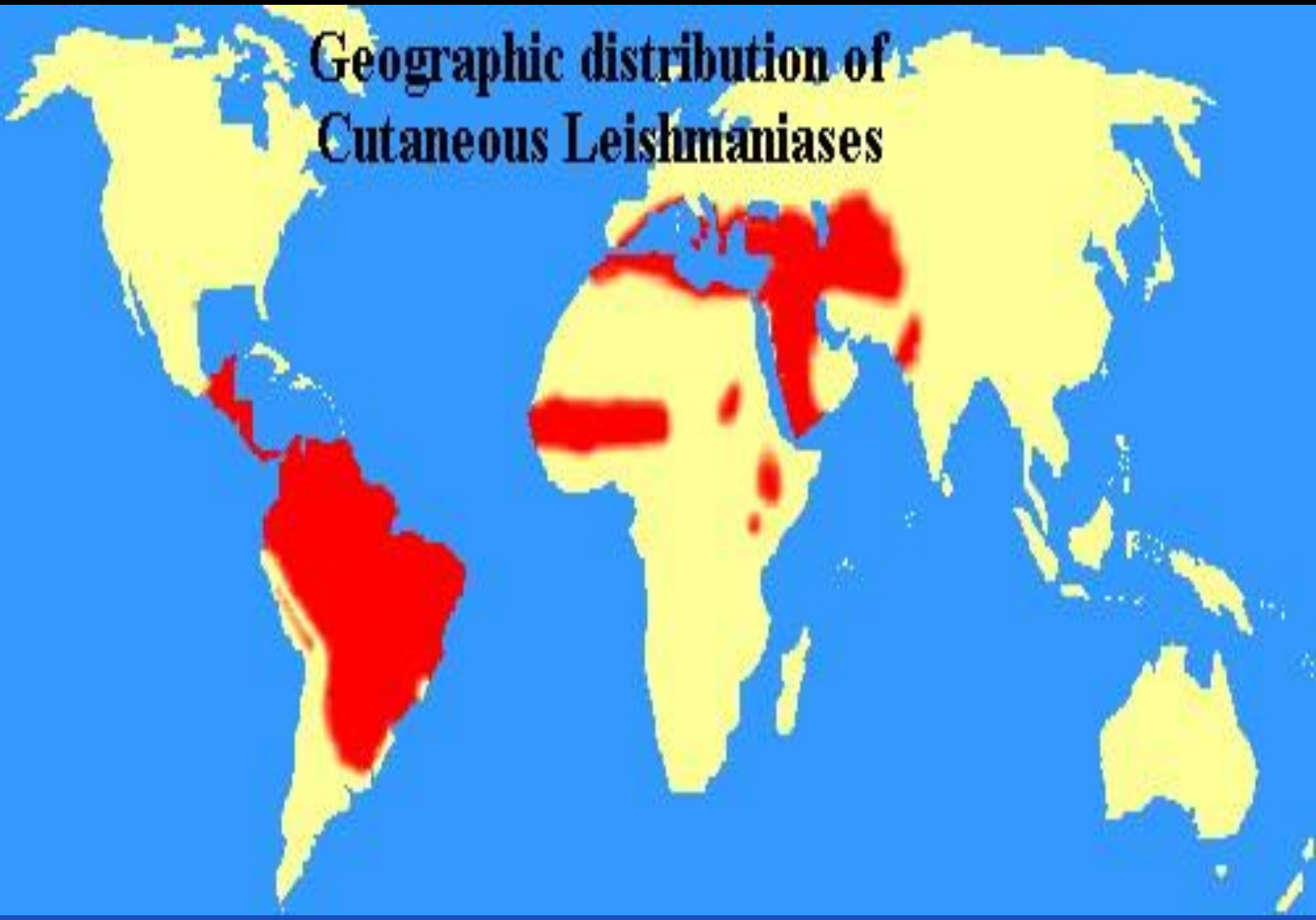
Leishmania Parasites and Diseases

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

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

Route of transmission : via the bite of infected blood –sucking **Sandlies**.


Geographic distribution of
Cutaneous Leishmaniases

Clinical types of cutaneousleishmaniasis 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.

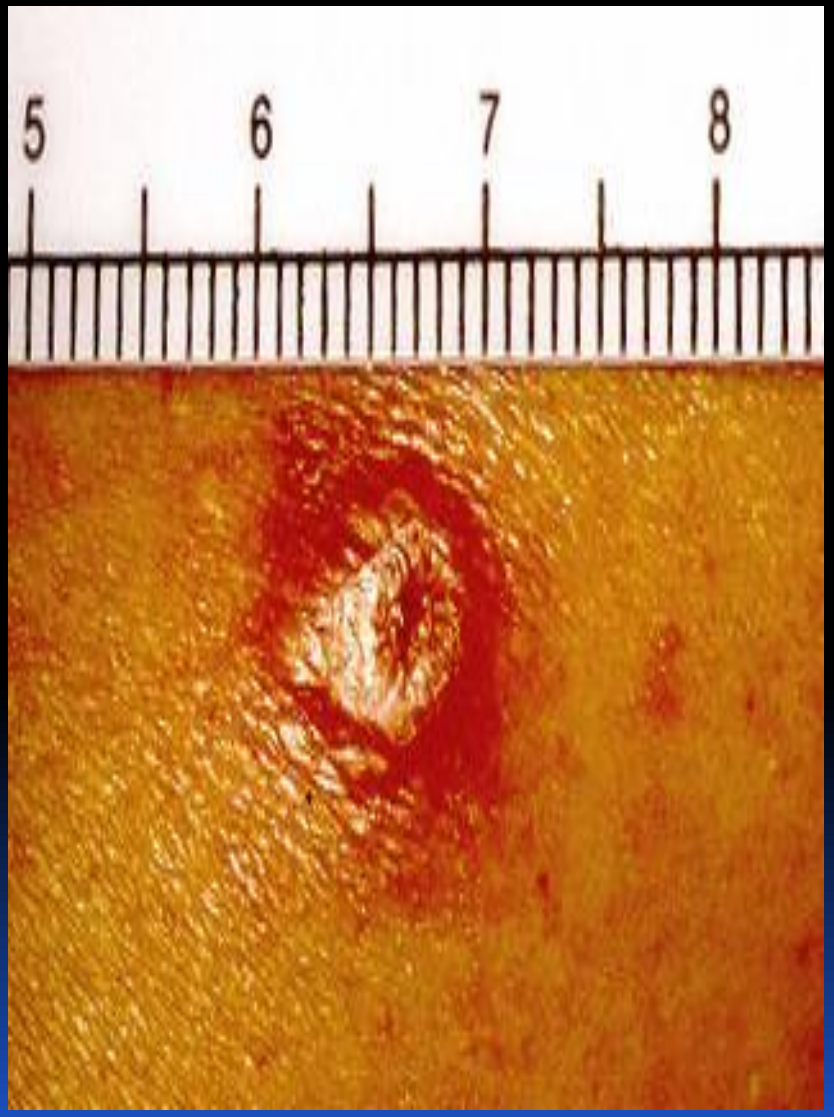
CUTANEOUS LISHMANIASIS THE COMMON TYPE

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**.

lesion of cutaneous lishmaniasis



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 .

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

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

Diffuse cutaneous leishmaniasis(DCL)

Leishmaniasis recidiva

Mucocutaneous leishmaniasis

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. **L. braziliensis.**

cutaneous & muco-cutaneous leishmaniasis

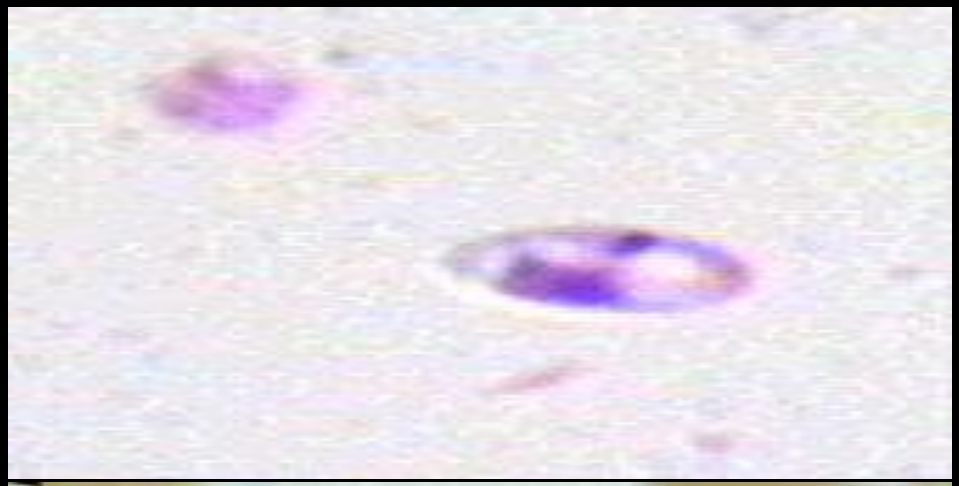
Diagnosis:

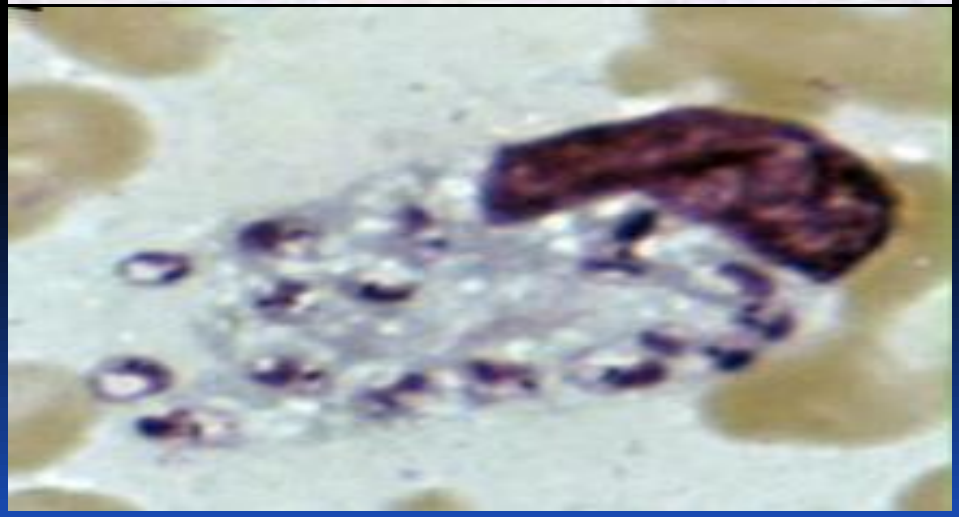
The parasite can be isolated from the margin of the ulcer.

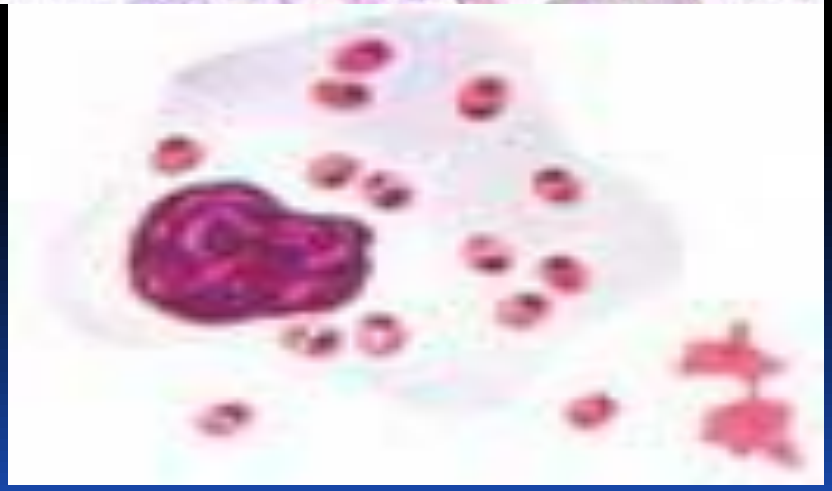
Smear: **Giemsa stain – microscopy for LD bodies (amastigotes) in the macrophages**.

- Biopsy: microscopy for LD bodies in the macrophages, or culture in **NNN** medium for finding promastigotes.

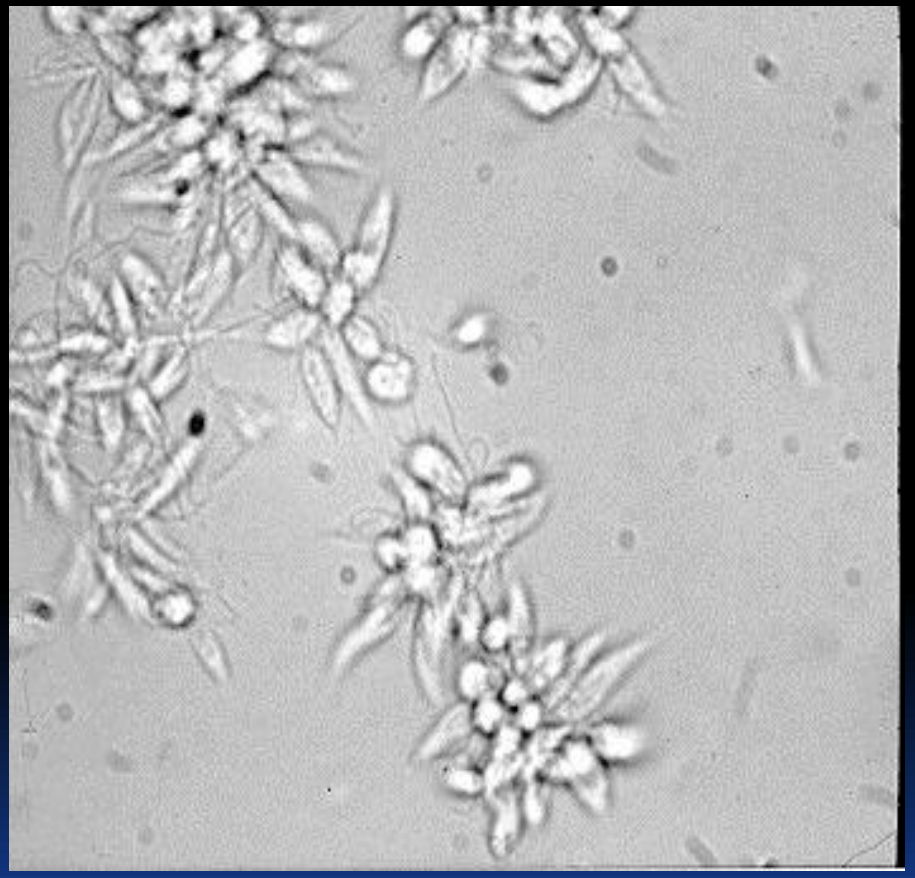
Amastigotes of Leishmania LD in macrophages

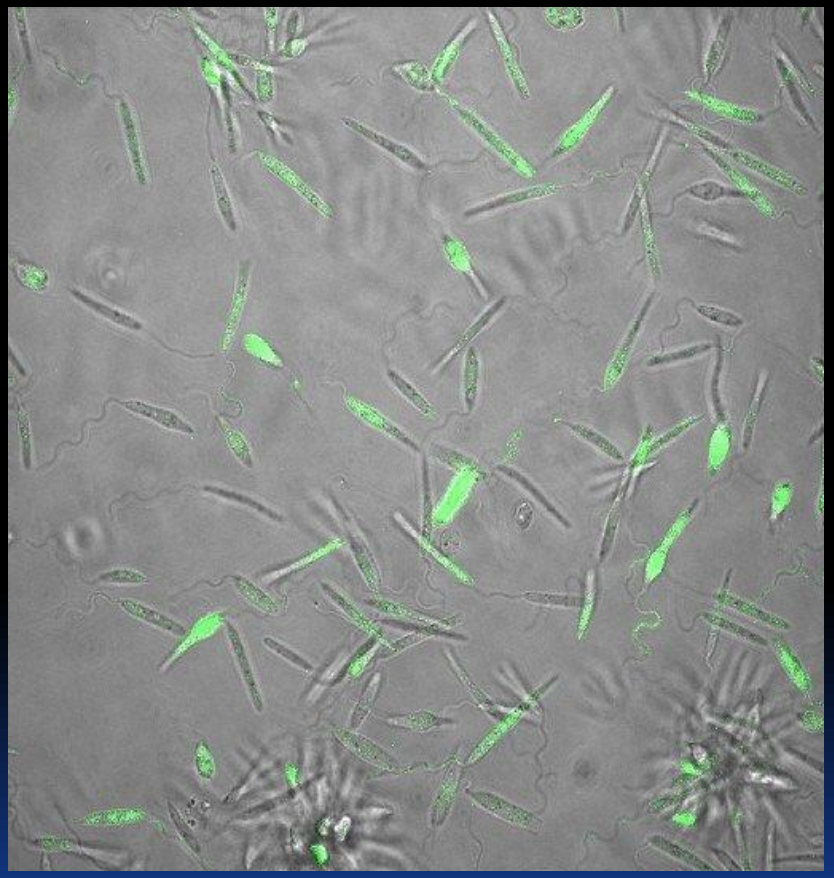






NNN medium





Promastigotes of Leishmania

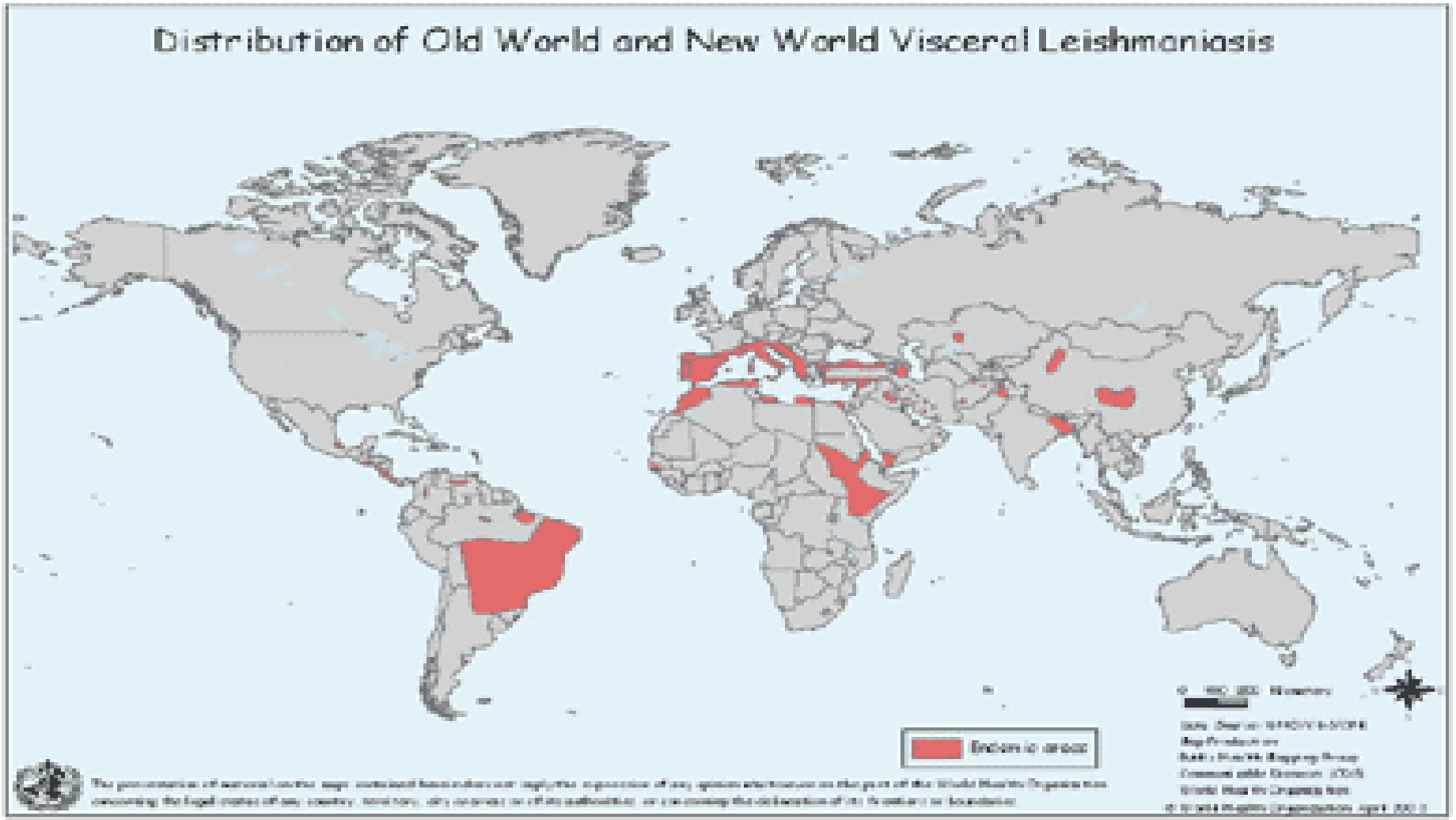
Treatment

- **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

World distribution of Visceral Leishmaniasis



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 ,anaemia ,leucopenia and sweating .
- Hepato-splenomegally can be seen because of the hyperplasia of the lymphoid –macrophage system.

* Both are endemic in Saudi Arabia

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

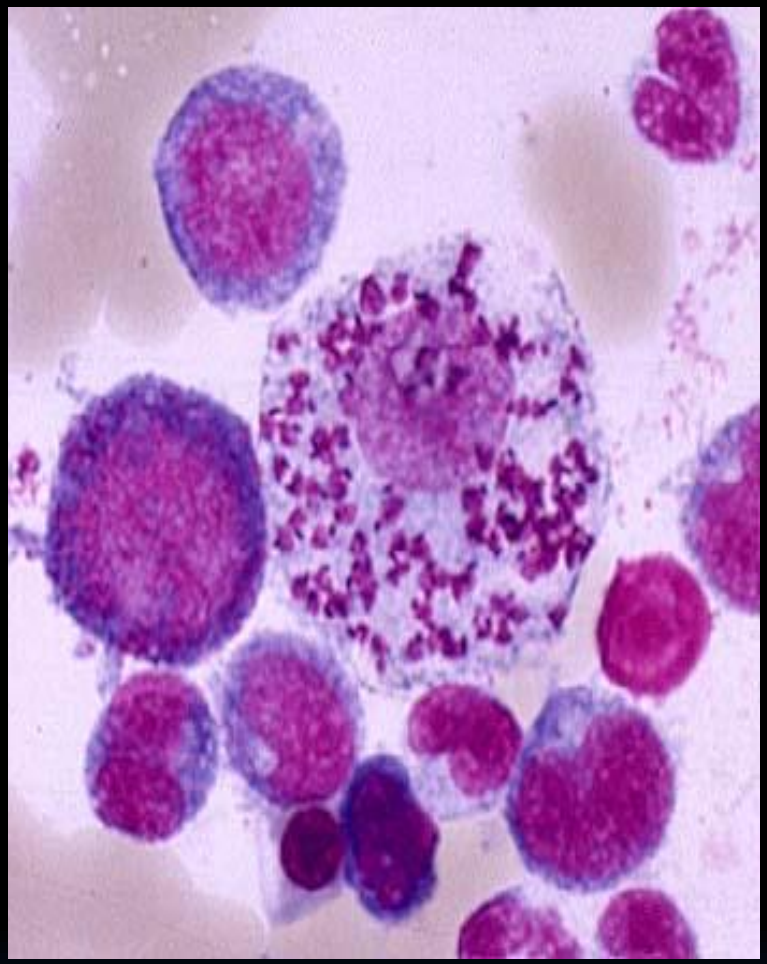
Lymph node

Tissue biopsy

. 1. microscopy

2-culture in **NNN** medium

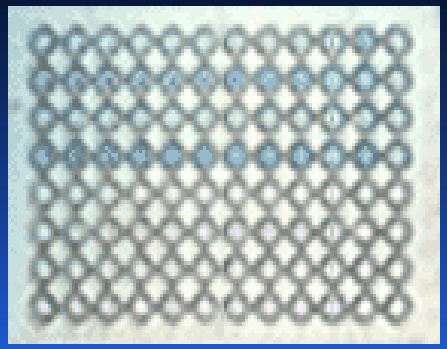
Bone marrow aspiration



Bone marrow to demonstrate (LD bodies) **amastigotes** in **macrophages.**

(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 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