

Protozoa Haemoflagellates

Haemoflagellates

Phylum : Protozoa

Class : *Zoomastigophora**Leishmania* : Three main species are involved :

1. Cutaneous form : least virulent called **Baghdad boil** or **oriental sore** .
2. Mucocutaneous form : middle virulent called **espundia** .
3. Visceral form : most virulent called **Kala – azar** .

Leishmania donovani complex

There are (3) members (subspecies) :

L. donovani chagasi .*L. donovani donovani* .*L. donovani infantum* .

} These subspecies vary in epidemiology information and identical in other sites , Lab . diagnosis and treatment .

Common name : Kala – azar, black fever and dum dum fever .**Disease** : Visceral leishmaniasis .**Habitat** : Macrophage of reticuloendothelial system (spleen, liver, mesenteric lymph nodes, intestine and bone marrow) .**Reservoir** : Dogs, cats and foxes .**Intermediate host and vector** : *phlebotomus* sand fly .**Infective stage** : Promastigote .**Geographic distribution** : Middle east; including Yemen, Oman, Kuwait, Iraq, Saudia Arabia, United Arab Emirates and Bahrain .

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Mode of infection :

1. Promastigotes which are injected with blood meal of sand fly .
2. When infected sand fly are crushed into the skin or mucus membrane .
3. Blood transfusion from person to person .

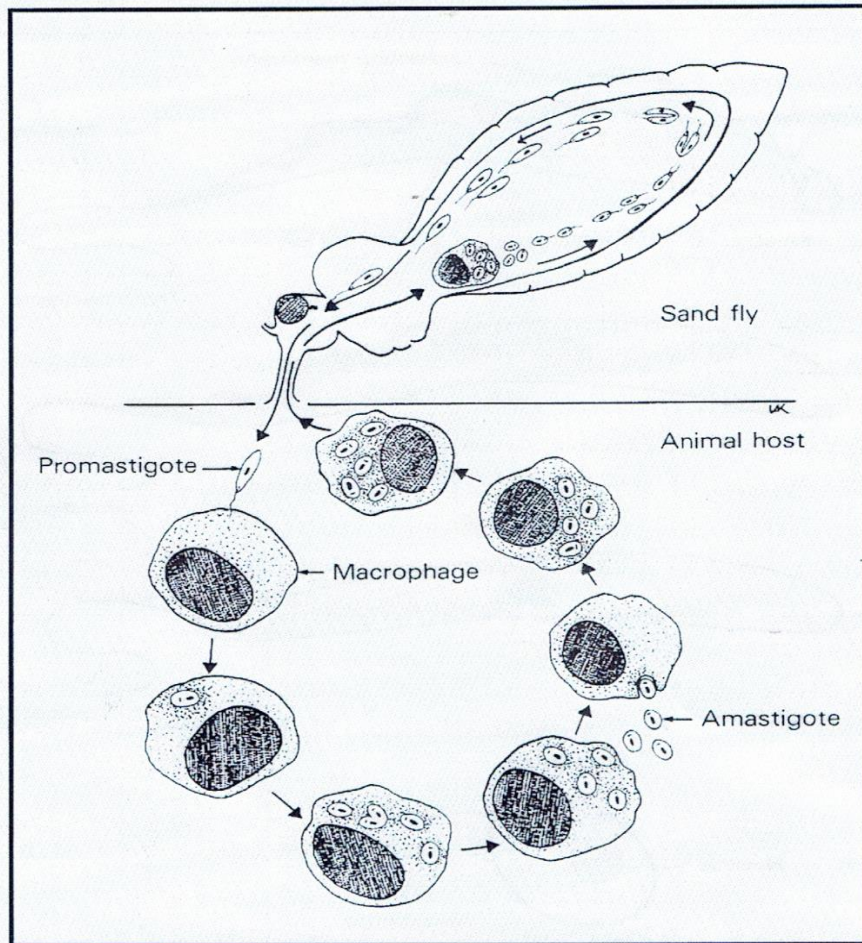
Diagnosis :

1. Slides were stained with Giemsa or leishman of :
 - Blood .
 - Bone marrow and lymph node aspirates .
 - Biopsies of infected areas .
2. Blood and bone marrow culture on semisolid media .
3. Serological tests :
 - Polymerase chain reaction (PCR) .
 - IFAT .
 - SDS and western blot .
 - Dot blot immunobinding assay .
 - Complement fixation test (C . T) .
 - DAT (Direct agglutination test) .
 - Immunochromatographic strip assay (Dipstick assay) .

Clinical aspects :

1. Abdominal illness .
2. Hepatosplenomegaly .
3. Fever and chills may resemble malaria .
4. The onset of such symptoms is gradual and follows an incubation period .
5. Diarrhoea .
6. Anemia .
7. Weight loss and emaciation (invasion liver and spleen) .
8. Kidney damage .
9. Granulomatous areas of skin repaired area of a body marked by fibrous connective tissue (fibrosis) . Also fibrous connective tissue surrounding an antigen source .
10. Secondary bacterial infection lead to leukopenia .
11. Chronic cases usually lead to death in one or two years .

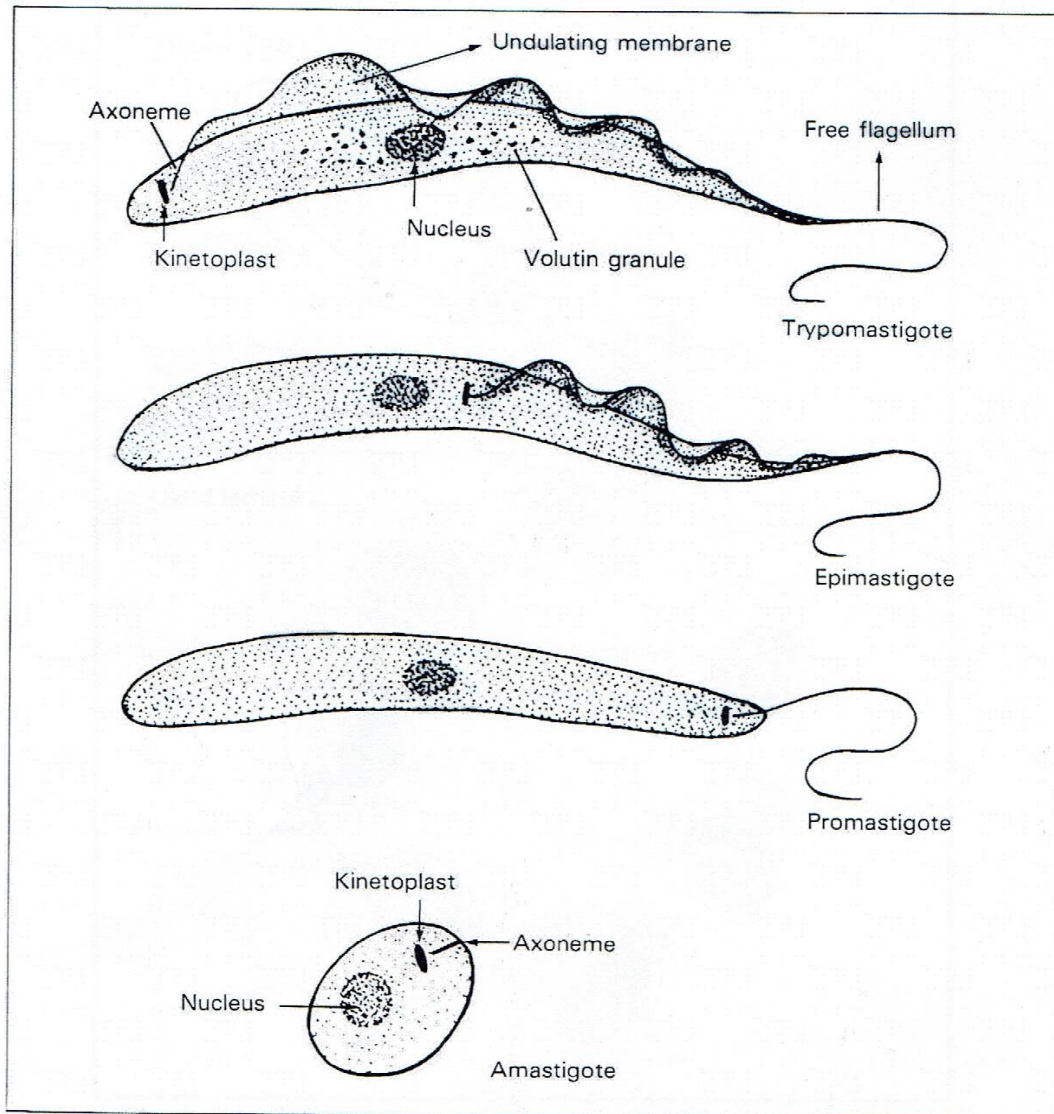
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Life cycle of *Leishmania donovani*.

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* **Morphological forms in haemoflagellates.** **Trypomastigote** — Kinetoplast is at the extreme posterior end. **Epimastigote** — Kinetoplast is lying anterior to the nucleus. **Promastigote** — Kinetoplast is at the extreme anterior end. **Amastigote** — Free flagellum is absent and the cell has become ovoid.



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Leishmania tropica complex .

There are (3) members (subspecies) :

L . major, reservoir : gerbils , other rodents .

L . tropica, reservoir : possibly dogs .

L . aethiopica, reservoir : rock hyrax .

Common name : Old world leishmaniasis .

Oriental sore .

Baghdad or Delhi boil .

Habitat : It was founded in endothelial cells of capillaries of infected area inside of the macrophages .

Geographic distribution :

L . major : (Rural areas, Wet lesion) : USSR, Iran, Palestine, Jordan, part of Africa , and Syria .

L . tropica : (Urban, Dry lesion) : Mediterranean, part of USSR, Afghanistan, India, Kenya , and Middle East .

Vector and intermediate host : Sand fly (*phlebotomus*)

Disease : Cutaneous leishmaniasis .

Infective stage : Promastigotes .

Mode of infection : Female sand flies inject promastigote forms into the tissues during blood meal .

Protozoa Trypanosomes

Diagnosis :

1. Scrapings from the side or edge of an ulcer smeared on a slide and stained with Giemsa's and / Leishman stain will show the parasites in endothelial cells and monocytes .
2. Culture should be made in case amastigotes go undetected .
3. Aspiration by clean needle from the margin of the lesion .

Clinical aspects : Painless red papule (2 cm or more in diameter) of face and limbs and may cause intense itching and recovery from 3 – 12 month .

Trypanosomes infecting man : African trypanosomes .

Phylum : Protozoa

Class : Zoomastigophora

Trypanosoma gambiense**Disease :** West African (Gambian) sleeping sickness .**Habitat :** Lymph gland and lymphatic fluid .**Diagnostic stage :** (Pleomorphism ; intermediate, slender and stumpy) .**Vector :** Genus *Glossina* (Tsetse fly, mainly *G. palpalis*) .**Infective stage :** Metacyclic .**Mode of infection :** Infected Tsetse fly injects metacyclic forms into the tissue with saliva during it's blood meal .**Diagnosis :**

1. Giemsa – stained slides of blood and lymph node aspiration to detect trypomastigotes .
2. Microscopic examination of CSF sediment (trypomastigotes) .
3. Rise in IgM and protein level in blood and CSF .
4. Serological tests : CFT and FAT .

