



كلية الرشيد الجامعة

قسم تقنيات المختبرات الطبية

الطفيليات الطبية

Haemoflagelates

Leishmania

المرحلة الثانية – النظري

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3- Haemoflagelates

Leishmania

The major parasite species of Leishmania are :

- 1- Leishmania donovani : causing visceral leishmaniasis
- 2- Leishmania tropica : causing cutaneous leishmaniasis
- 3- Leishmania braziliense : causing mucocutaneous leishmaniasis

Morphology

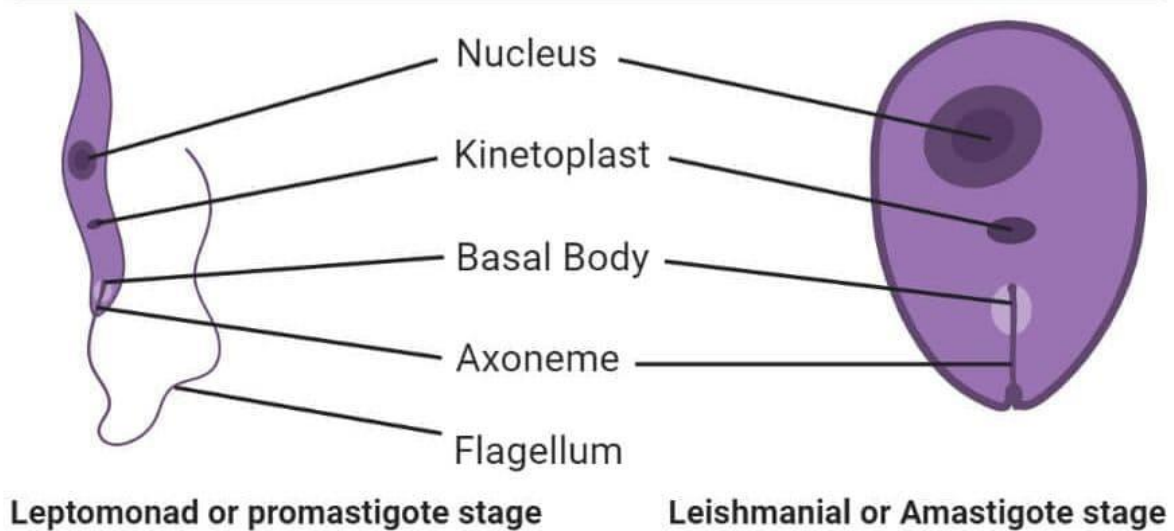
The parasite exists in 2 forms :

1- Amastigote

- They are also known as LD bodies.
- Exist in humans and other mammals.
- The amastigote form (LD body) is an ovoid or rounded cell, about 2–4 μm in size
- Consist of single nucleus and kinetoplast.

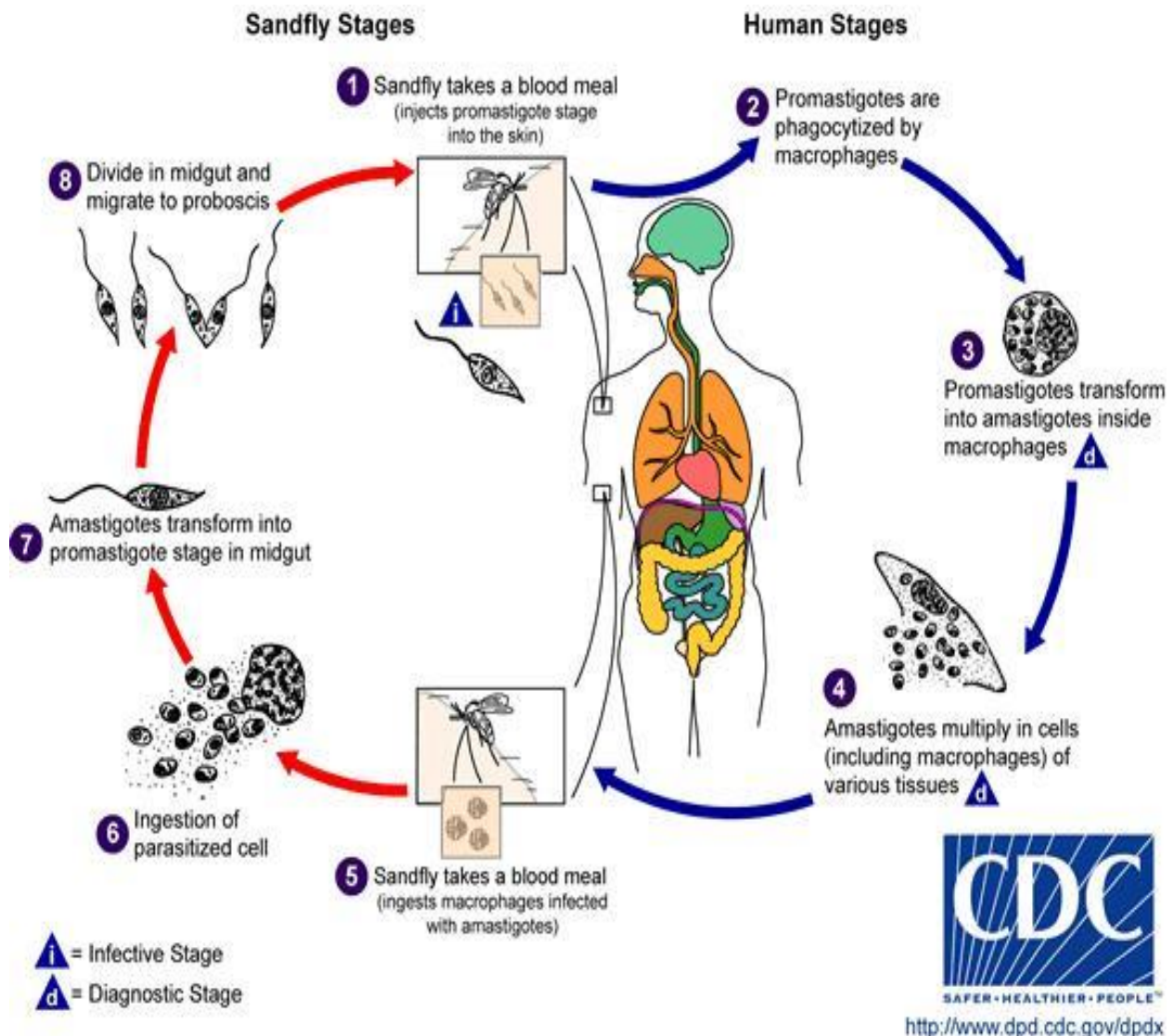
2- Promastigote

- It is a flagellar stage and is present in insect vector, sand fly and in cultures.
- The promastigotes, which are initially short, oval or pear shaped forms, subsequently become long spindle shaped cells, 15–25 μm in length and 1.5–3.5 μm in breadth.
- The flagellum is single, delicate, and measures 15–28 μm .



Life Cycle

- completes its life cycle in 2 hosts .
- Definitive host: Man, dog, and other mammals.
- Vector: Female sandfly (*Phlebotomus* species)
- Infective stage: Promastigote form present in midgut of female sandfly.
- Humans acquire by bite of an infected female sandfly.
- Incubation period: Usually 2–6 months, occasionally it may be as short as 10 days or as long as 2 years.



Habitate

1- *Leishmania donovani* : liver,spleen,bonemarrow,kidnys

2- *Leishmania tropica* : exposed part of the body e.g. hand and legs

3- *Leishmania braziliense* : mouth, nose and Larynx

Pathogenicity

1- *Leishmania donovani*

Symptoms begin with intermittent fever, weakness, and diarrhea; chills and sweating that may resemble malaria symptoms are also common early in the infection. As organisms proliferate & invade cells of the liver and spleen, marked enlargement of the organs, weight loss, anemia, and emaciation occurs. With persistence of the disease, deeply pigmented, granulomatous lesion of skin referred to as post-kala-azar dermal leishmaniasis, occurs. Untreated visceral leishmaniasis is nearly always fatal as a result of secondary.

2- *Leishmania tropica*

The first sign, a red papule, appears at the site of the fly's bite. This lesion becomes irritated, with intense itching, and begins to enlarge & ulcerate. Gradually the ulcer becomes hard and crusted and exudes a thin, serous.

3- *Leishmania braziliense*

membranes, cartilage, and skin in mucocutaneous leishmaniasis. A granulomatous response occurs, and a necrotic ulcer forms at the bite site. Secondary lesions occur on the skin as well as in mucous membranes. Nasal, oral, and pharyngeal lesions may be

polypoid initially, and then erode to form ulcers that expand to destroy the soft tissue and cartilage about the face and larynx

Laboratory Diagnosis

1- Leishmania donovani

- Examination of tissue biopsy, spleen aspiration, bone marrow aspiration or lymph node aspiration in properly stained smear e.g. Giemsa stain The amastigotes appear
- Culture of blood, bone marrow, and other tissue often demonstrates the promastigote stage of the organisms .
- Serologic test

2- Leishmania tropica.

3- Leishmania braziliense

- stained smears of ulcer biopsy specimen
- Leishman skin test
- Serological tests