AL-MA'MOON UNIVERSITY COLLEGE

DEPARTMENT OF MEDICAL LABORATORY TECHNOLOGY

MEDICAL PARASITOLOGY

(((LECTURE 5)))

FOR SECOND YEAR

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2024-2025

LECTURE 5

2.2. Haemoflagelates

2.2.1. Leishmania Species

Clinical disease - Veseral leishmaniasis

- Cutaneous leishmaniasis
- Mucocutaneous leishmaniasis

The species of leishmania exist in two forms, amastigote (aflagellar) and promastigote (flagellated) in their life cycle. They are transmitted by certain species of sand flies (Phlebotomus & Lutzomyia).

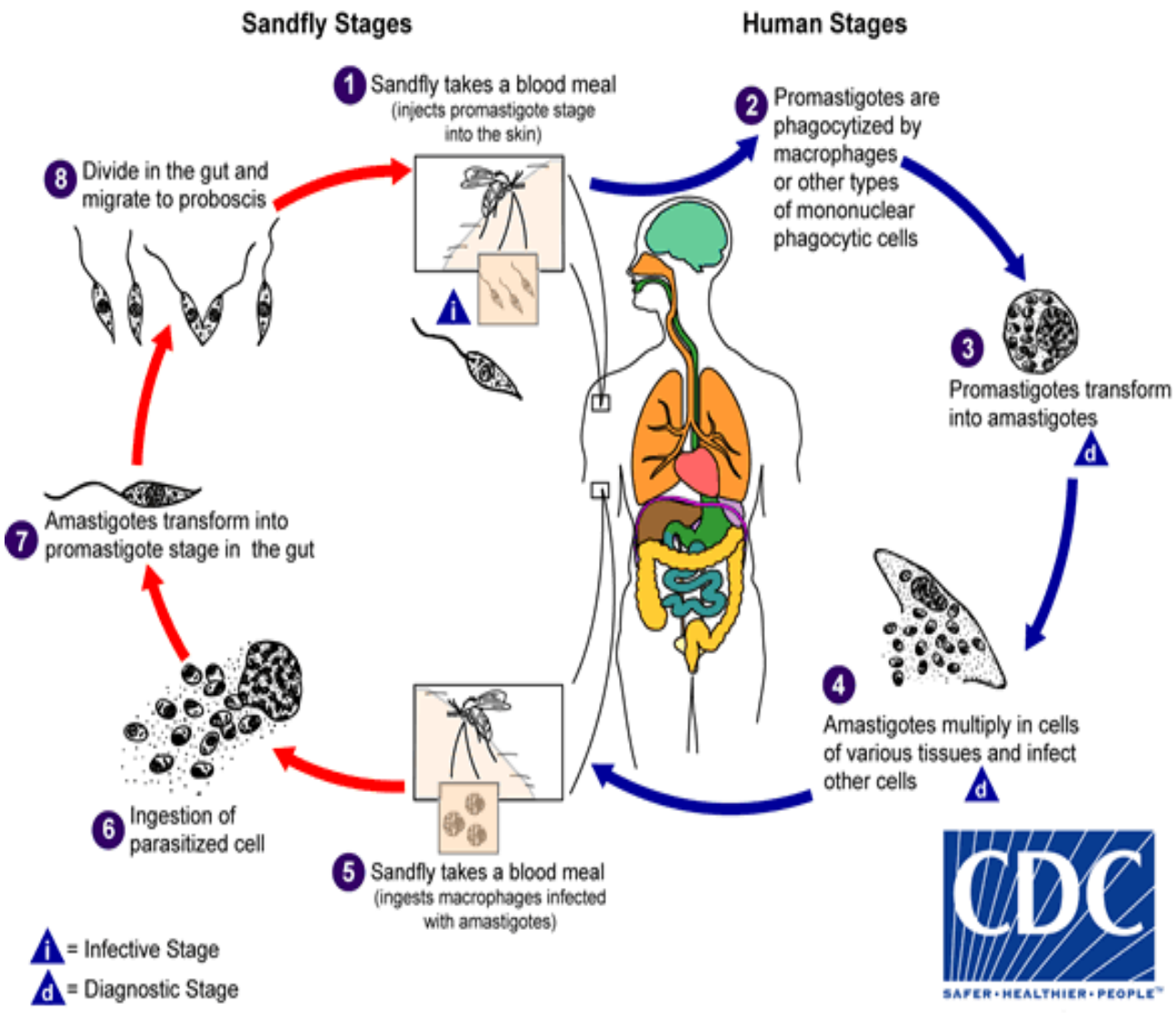
Leishmaniasis

There are many different species of Leishmania and the disease that they cause. directly linked to the species of Leishmania with which a person Several species of Leishmania are pathogenic for man:

- ***L. donovani*** causes visceral leishmaniasis (Kala-azar, black disease, dumdum fever).
- ***L. tropica*** cause cutaneous leishmaniasis (oriental sore, Delhi ulcer, Aleppo, Delhi or Baghdad boil)
- ***L. braziliensis*** (also, *L. mexicana and L. peruviana*) are etiologic agents of mucocutaneous leishmaniasis.

Life Cycle

Leishmania are transmitted by arthropod. In this case it is a small biting fly known as a sand fly. Leishmaniae spend part of their life cycle in the gut of the sandfly, but their life cycle is completed in a vertebrate host. Within the sandfly gut, the protozoa are carried as extracellular promastigotes, these parasites multiply in the gut and migrate toward the pharynx. Sandflies ransferred promastigotes to the vertrebrate host when the sandfly takes a meal blood by expelling leishmaniae into the bite wound of the mammalian host. From where they pass into the blood and tissues of the human host.



Life Cycle of leishmamia spp.

Pathogensis and clinical finding

Leishmaniasis is a parasitic disease caused by several species of genus.

Different species of leishmania cause different disease.

- ***L. donovani*** causes visceral leishmaniasis also called Kala-azar and Dum Dum fever. Spleenomegaly & hepatomegaly the infection is generalized and the parasite is distributed in the internal organs. The parasite may also cause a variety of skin lesions (dermal leishmaniasis) without any visceral manifestations.

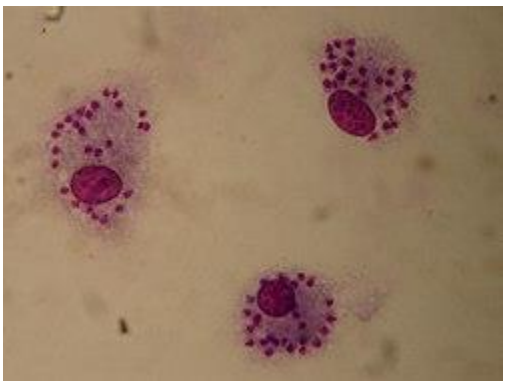
Laboratory Diagnosis

1. Giemsa-stained slides of blood, bone marrow lymph node aspirates and biopsies of the infected areas for the diagnosis of amastigote forms.

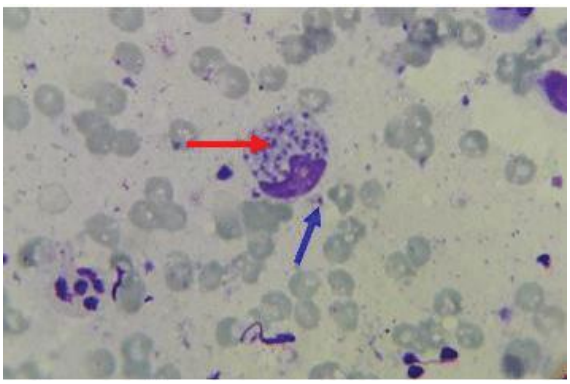
2. Culture of blood, bone marrow and other tissues these samples show the promastigote forms.

3. Serological tests.

- ***L. tropica***: causes tropic sore or Baghdad boil, oriental sore and cutenaeous Leishmianiasis. The infection is limited to a local lesion of the skin and subcutaneous tissues.



Leishmania tropica



Leishmania tropica

Laboratory Diagnosis

1. Microscopic examination of giemsa-stained slides of aspiration of fluid underneath the ulcer bed for typical amastigotes.

2. Culture of the ulcer tissue may also reveal the promastigote forms.

3. Serological tests such as Indirect Fluorescent Antibody (IFA) also vailable.

- ***L. brasiliensis*** causes Espundia Mucocutaneous leishmaniasis. The infection is limited to a local lesion of the skin but may metastasise to other areas of skin and oro-nasal mucosa. The primary lesion often disappears spontaneously, followed by mucocutaneous lesions that destroy the mucosal surface of the nose, pharynx, and larynx. If the condition is untreated, potentially fatal secondary bacterial infections and disfigurement may occur.

L. brasiliensis

Laboratory Diagnosis

1. The specimen of choice for identify the amastigotes of Leishmania braziliensis is a biopsy of the infected ulcer.

2. Microscopic examination of the Giemsa-stained preparations should reveal the typical amastigotes. Promastigotes may be present when the sample is collected immediately after introduction into the patient.

3. Culturing the infected material, which often demonstrated the promastigote stage.

4. Serological tests.