

LECTURE: Leishmania

Editing File

- Important
- Doctor's notes
- Extra explanation
- Only F or only M

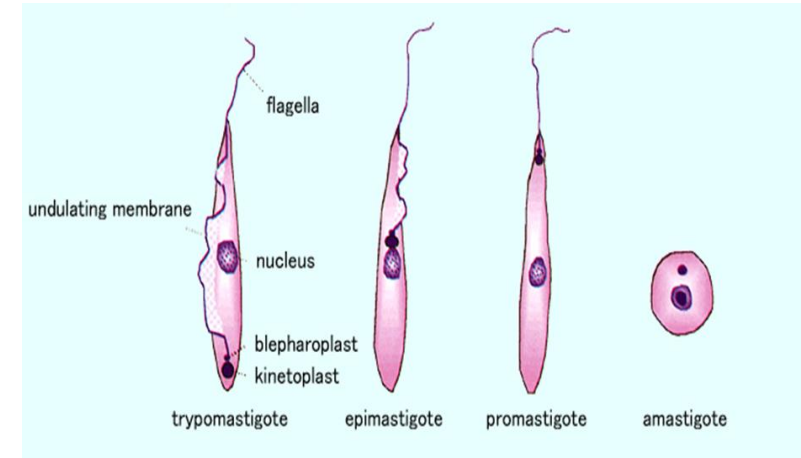
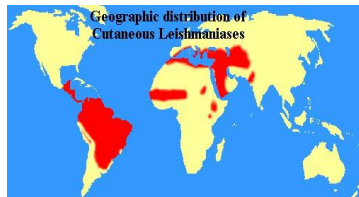
"لا حول ولا قوة إلا بالله العلي العظيم" وتقال هذه الجملة إذا
داهم الإنسان أمر عظيم لا يستطيعه ، أو يصعب عليه القيام به .

Leishmania Parasites and Diseases

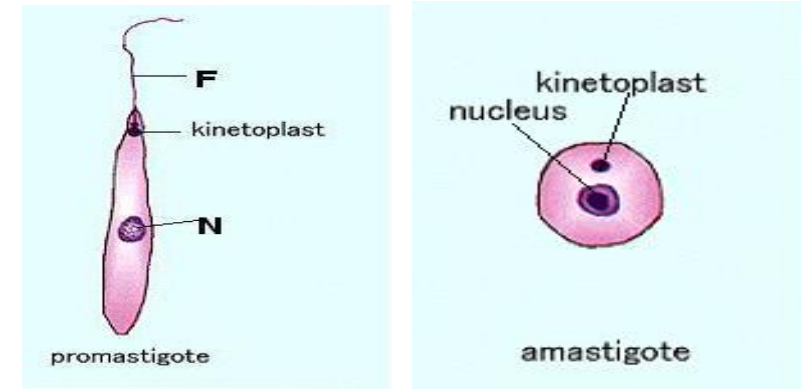
There are three 3 main form of Lishmaniassis each caused by a different species :

SPECIES	Disease
Leishmania tropica* Leishmania major* Leishmania aethiopica Leishmania mexicana	Cutaneous leishmaniasis Affects the skin only
Leishmania braziliensis	Mucocutaneous leishmaniasis In the areas containing mucous membrane
Leishmania donovani* Leishmania infantum* Leishmania chagasi	Visceral leishmaniasis Internal

* Endemic in Saudi Arabia



Different stages of Haemoflagellate protozoa



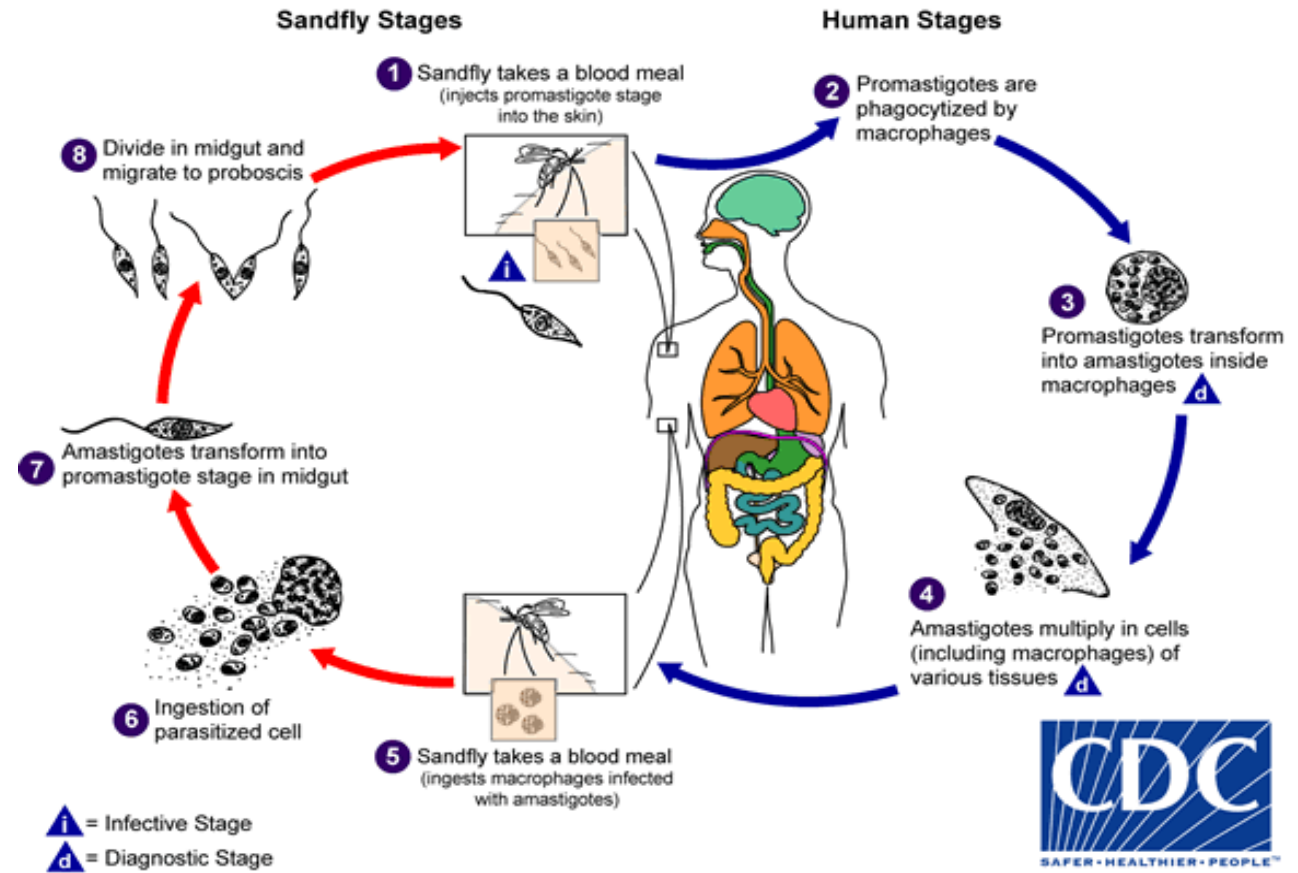
Promastigotes of Leishmania

Amastigote of Leishmania

The life cycle of Leishmania:

Leishmania 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. **The disease is more severe in immunocompromised patients.**

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

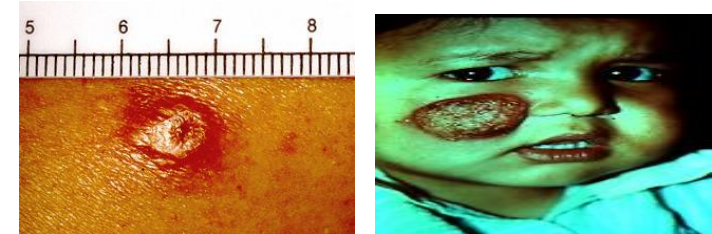


1- Clinical types of cutaneous leishmaniasis

COMMON TYPES :

known as (oriental sore) : Oriental sore is classical self-limited ulcer. يتشافي لحاله اذا كانت الاميونتي له سليمة من قبل. موجودة في الشرق الاوسط وفي السعودية	
Leishmania major:	Leishmania tropica:
human and Zoonotic cutaneous leishmaniasis(dogs,rodents) : wet lesions with severe reaction. From human to human or from human to animal or from animal to human موجودة في الشرق الاوسط وفي السعودية	Anthroponotic (human only) cutaneous leishmaniasis: Dry lesions with minimal ulceration. From human to human only
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 other cases the ulcer may spread with an inflammatory zone around , these known as (wet-type-lesion) which heal slowly. Which takes more time than dry lesions	In some cases the ulcer remains dry and heals readily (dry-type-lesion)

lesion of cutaneous lishmaniasis:



1- Clinical types of cutaneous leishmaniasis

Un COMMON TYPES :

Diffuse cutaneous leishmaniasis (DCL):	Leishmaniasis recidiva (lupoid leishmaniasis):
<p>-Caused by <i>L. aethiopica</i>, diffuse nodular non-ulcerating lesions, seen in a part of Africa, people with low immunity to <i>Leishmania</i> antigens.</p> <p>-Diffuse cutaneous (DCL) , and consists of nodules and a thickening of the skin, generally without any ulceration .</p>	<p>Severe immunological reaction to <i>leishmania</i> antigen leading to persistent dry skin lesions.</p>



Diffuse cutaneous leishmaniasis(DCL)



Leishmaniasis recidiva

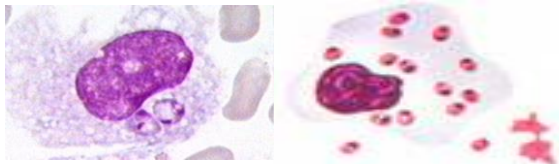
2- Mucocutaneous leishmaniasis

- In the nasopharyngeal area
- 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.
- **Caused by:** *L. braziliensis*. يجي في جنوب أمريكا



For cutaneous & muco-cutaneous leishmaniasis :

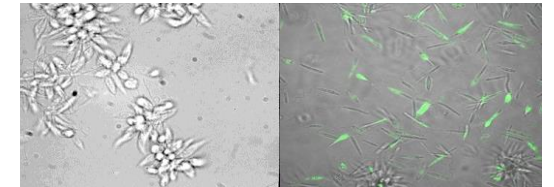
Diagnosis:		
The parasite can be isolated from the margin of the ulcer.	Smear: Giemsa stain – microscopy for LD bodies (amastigotes) in the macrophages.	Biopsy: microscopy for LD bodies in the macrophages, or culture in NNN medium for finding promastigotes.
Treatment:		
No treatment – self-healing lesions	Medical: <ul style="list-style-type: none"> • Pentavalent antimony (Pentostam), Amphotericin B • Antifungal drugs • +/- Antibiotics for secondary bacterial infection. 	Surgical: <ul style="list-style-type: none"> • Cryosurgery • Excision • Curettage



- Amastigotes of Leishmania LD in macrophages
- The diagnostic stage



- NNN medium
- We culture the macrophages which have amastigotes inside them in NNN medium and look for promastigotes



- Promastigotes of Leishmania
- The infective stage

3- Visceral leishmaniasis (Kala-azar)

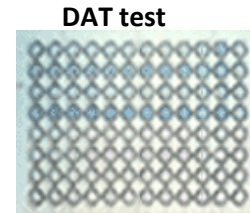
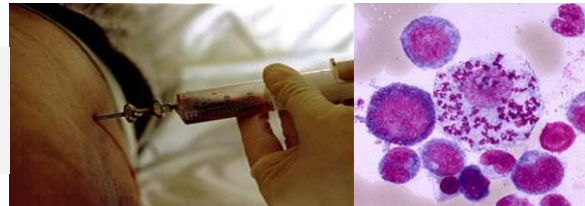
Both are **endemic in Saudi Arabia***:

1-Leishmania infantum mainly affect children

2-Leishmania donovani mainly affects adults

incubation period:	usually 2-8 months.
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.
Diagnosis:	1- Parasitological diagnosis: A. Specimen: Bone marrow aspirate (the golden standard) / Splenic aspirate / Lymph node / Tissue biopsy B. microscopy C. culture in NNN medium
	(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.

Bone marrow to demonstrate (LD bodies) amastigotes in macrophages , **in the medium it will be promastigotes:**



*they involve lymph nodes and bone marrow

Treatment of visceral leishmaniasis

- Recommended treatment varies in different endemic areas:
 - ✓ Pentavalent antimony- sodium stibogluconate (Pentostam)
 - ✓ Amphotericin B
- Treatment of complications:
 - ✓ Anaemia
 - ✓ Bleeding
 - ✓ Infections etc.

- Untreated disease can be fatal
- After recovery it might produce a condition called post kala-azar dermal leishmaniasis (PKDL)



World distribution of Visceral Leishmaniasis :



SUMMARY:

	Leishmania					
	<i>Cutaneous</i>		<i>Mucocutaneous</i>	<i>Visceral</i>		
<i>Transmission</i>	<u>Diagnostic</u> : Amastigote in macrophages <u>Infective</u> : Promastigote in sand fly (vector) [note: response depends on host immunity]					
<i>Pathogenesis</i>	oriental sore = self limited ulcer (painless papule)		Dry destruction of nasal cartilage and facial bone.	Kala-azar		
<i>Species</i>	Leishmania major	Leishmania tropica	Leishmania Braziliensis	Leishmania infantum	Leishmania donovani	
	<ul style="list-style-type: none"> • Human & zoonotic • Severe • Wet 	<ul style="list-style-type: none"> • Anthroponotic • Minimal • Dry 		<ul style="list-style-type: none"> • Fever, malaise, • weight loss, • splenomegaly, hepatomegaly, • anemia, leucopenia, • Post kala-azar dermal leishmaniasis • Untreated may be FATAL. 		
	<u>Uncommon type</u> : <ul style="list-style-type: none"> • Diffuse cutaneous leishmaniasis (DCL) = L. Aethiopica • Leishmaniasis recidiva 					
<i>Diagnosis</i>	<u>Microscopy</u> : sample from margin of ulcer and look for LD bodies (amastigote in macrophages) with GEMSA stain <u>Culture</u> : NNN medium for promastigote.			<u>Microscopy</u> : sample from BONE MARROW and look for LD bodies (amastigote in macrophages) <u>Culture</u> : NNN medium for promastigote. <u>Serology</u> : ELISA + skin test		
<i>Treatment</i>	Medical + surgical			Treat disease and complications		

QUIZ:

- 1. Which of the following is the infective stage of leishmaniasis ?**
a) Trypomastigote b) Amastigote c) Promastigote
- 2. Which of the following is vector of leishmania ?**
a) Testes fly b) Sand fly c) Triatomine
- 3. Which of the following can be seen in L. tropica infection?**
a) Wet lesions b) minimal ulceration c) Sever reaction
- 4. Which of the following parasites cause destruction of nasal cartilage?**
a) L. Braziliensis b) L. Major c) L. donovani
- 5. For detecting L. Tropica , Is found on microscopy .**
a) Trypomastigote b) Amastigote c) Promastigote
- 6. Which medium is used for diagnosing L. donovani?**
a) NNN b) Chocolate c) MacConkey
- 7. Which of the following species of leishmania cause hepato-splenomegaly?**
a) L. Braziliensis b) L. Major c) L. donovani
- 8. Which of the following is the golden standard site of aspiration when suspecting L. infantum infection?**
a) Lymph node b) bone marrow c) splenic aspiration



THANK YOU FOR CHECKING OUR WORK, BEST OF LUCK!



Doctors slides



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