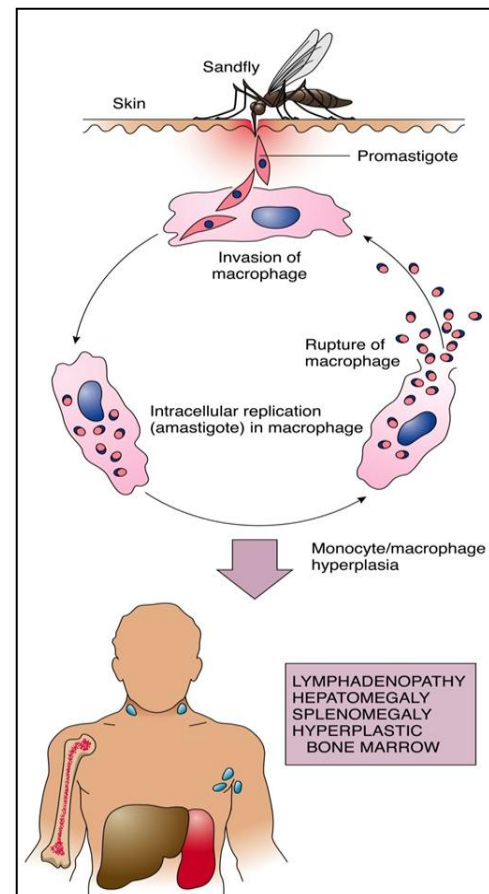




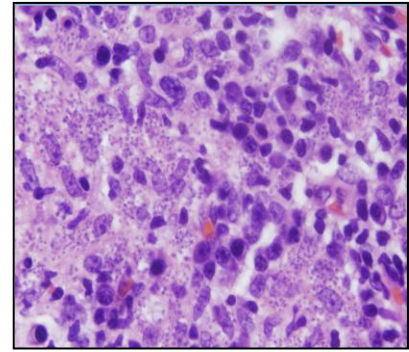
- **Leishmaniasis:**

- **Definition:** infection of the monocyte-macrophage system (reticuloendothelial system: RES) caused by the protozoan parasite leishmania.
- **There are 3 forms of the disease:**
  - ✓ Cutaneous.
  - ✓ Mucocutaneous.
  - ✓ Visceral.
- **Determinant factors in worldwide geographic variations of leishmaniasis:**
  - ✓ Infectious agent:
    - ❖ Protozoan parasite.
    - ❖ Genus: Leishmania.
    - ❖ *There are numerous species which differ in:*
      - ✚ Their natural habitat (they occur in different geographic regions).
      - ✚ Different reservoirs/host.
      - ✚ The form of disease which they produce.
  - ✓ Reservoir/ host (animal, man or both):
    - ❖ Leishmania is primarily a parasite of wild animals and a human becomes accidental host when intruding (يَتَطَفَّلُ) into the natural habitat of these animals (zoonotic leishmaniasis).
    - ❖ *Different leishmania species may have different specific zoonotic reservoirs:*
      - ✚ Common reservoirs hosts are: rodents (القوارض), dogs, foxes and jackals (ابن آوى).
      - ✚ Potential hosts include: cattle, horses, wild canine and sloth (الحيوان الكسلان).
      - ✚ Mexican cutaneous leishmaniasis: wild rodents.
      - ✚ Mediterranean visceral leishmaniasis: dogs.
  - ✓ Habitat (الموطن أو المسكن الطبيعي):
    - ❖ *Old world:* Asia, Africa and Mediterranean.
    - ❖ *New world:* Americas.
  - ✓ Vector:
    - ❖ *Leishmaniasis is transmitted by bites of female sandfly (phlebotomus in old world – lutzomyia in new world):*
      - ✚ They acquire infection from feeding on infected animals.
      - ✚ Time of activity: at night.
      - ✚ Flying range: low.
      - ✚ Feeding habits.
      - ✚ Reproductive activity.
      - ✚ Condition of alimentary canal: where the infective stage promastigotes are going to multiply in the midgut of a female sandfly.
- **Pathogenesis = life cycle (see the image).**
- **Localized cutaneous leishmaniasis:**
  - ✓ Causative species: L.tropica, L.major and L.aethiopia.
  - ✓ Common in: India, middle-east, northern Africa, central America and south America.
  - ✓ Pathology:





- ❖ The amastigote-filled macrophages ulcerate the overlying epidermis → Aleppo, Baghdad, oriental, tropical sore.
- ❖ Amastigotes in macrophages appear as (Leishman-Donovan bodies: see the image).
- ❖ Progressive development of cell-mediated immunity → macrophages will be activated to kill the parasite → leading to reduced amastigote-filled macrophages → which will eventually result in granulomatous reaction and the development of ulcer.
- ❖ Lesion will start as small itching solitary papule → it will erode to form a shallow ulcer (with sharp raised borders) → this ulcer will extend (6-8 cm) → satellite lesion will develop along draining lymphatics.
- ❖ Cutaneous leishmaniasis is self-limiting (ulcer will resolve in 3-6 months leaving a scar tissue).



- **Diffuse cutaneous leishmaniasis:**
  - ✓ Enormous numbers of macrophages containing large numbers of (Leishman-Donovan bodies).
  - ✓ This condition develops in patients who lack specific cell-mediated immune response to leishmania.
  - ✓ Pathology: begins as a single nodule → extension of ulcer → developing into multiple satellite foci along draining lymphatics.
- **Mucocutaneous leishmaniasis (a late complication of cutaneous leishmaniasis):**
  - ✓ Causative species: L.braziliensis
  - ✓ Common in: central and south America.
  - ✓ Reservoir: rodents and sloth.
  - ✓ Pathology:
    - ❖ Early course is similar to cutaneous leishmaniasis.
    - ❖ Years after healing of the ulcer → ulcer develops at mucocutaneous junctions (larynx: may lead to airway obstruction, nasal septum: its destruction will lead to nose deformity, anus and vulva: external female genitalia)
- **Visceral leishmaniasis (Kala-Azar):**
  - ✓ Definition: disseminated infection of the monocyte-macrophage system (in the liver, spleen and bone marrow).
  - ✓ Species causing it: L.donovani, L.chagasi (in south America) and L.infantum.
  - ✓ It is potentially fatal (if untreated).
  - ✓ Pathology:
    - ❖ Female sandfly bites → localized collection of infected macrophages with amastigotes of L.donovani → leading to ulcer.
    - ❖ 95% of infected persons can contain the disease, destroying L.donovani by cell-mediated immunity.
    - ❖ 5% (young children and malnourished persons) fail to contain the disease because they don't have adequate cell-mediated immunity.
    - ❖ Macrophages full with L.donovni amastigotes will replace normal architecture of liver (see the image) , spleen, lymph nodes and bone marrow leading to their massive enlargement

