

Leishmaniasis

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Objective

By the end of this lecture the student should know :

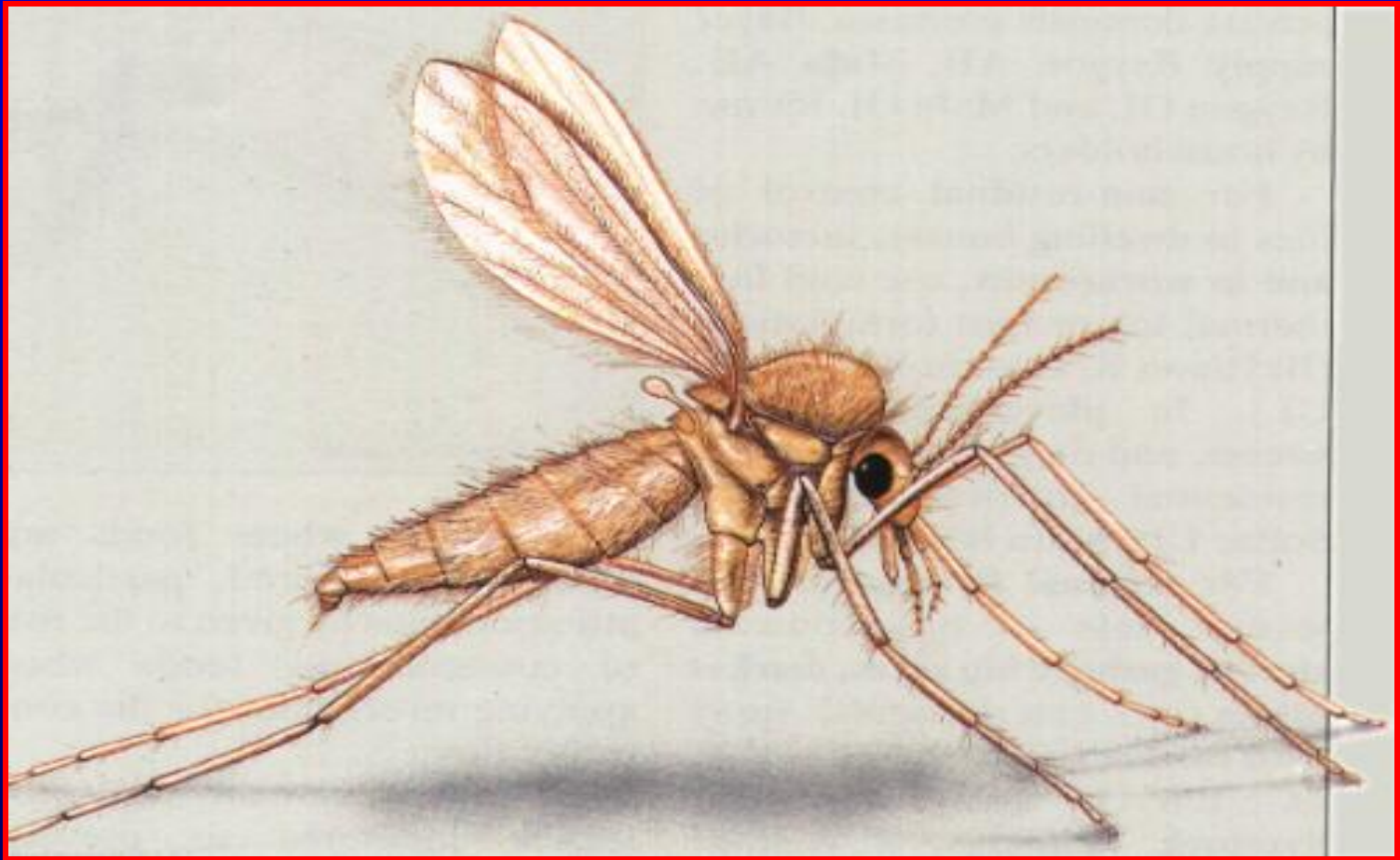
- Etiology , Epidemiology and life cycle of Leishmaniasis
- Types and clinical presentation of leishmaniasis
- Diagnosis Treatments & prevention

Introduction

- Leishmaniasis is a parasitic disease transmitted by the bite of sand flies.
- Found in parts of at least 88 countries including the Middle East and Mediterranean area
- Three main forms of leishmaniasis
 - **Cutaneous:** involving the skin at the site of a sandfly bite
 - **Visceral:** involving liver, spleen, and bone marrow
 - **Mucocutaneous:** involving mucous membranes of the mouth and nose after spread from a nearby cutaneous lesion (very rare)
- Different species of *Leishmania* cause different forms of disease

LEISHMANIASIS

Vector: female sandfly



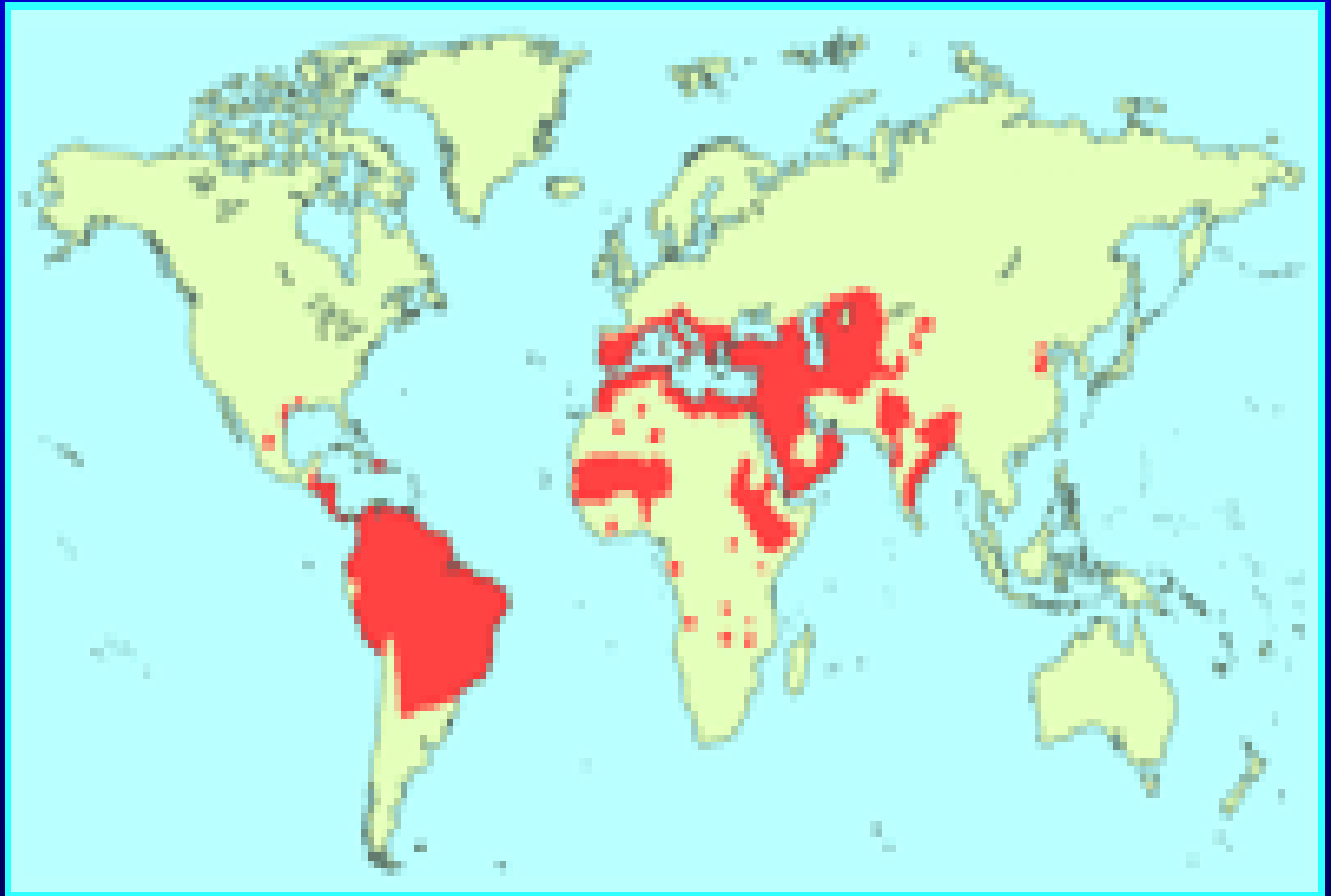
ETIOLOGY AND RESERVOIR

- *Leishmania infantum* and *L. donovani* are the main causative agent of kalazar,
- *L. tropica* ,and *L. major* are the major causative agents of cutaneous leishmaniasis
- **Reservoir of infection:** There are variety of animal reservoirs, e.g. dogs, jackals, foxes, rodents.

Epidemiology

- About 1.5 million new cases of cutaneous leishmaniasis in the world each year
500,000 new cases of visceral leishmaniasis estimated to occur each year also

Endemic Areas for Leishmaniasis



Epidemiology-cont.

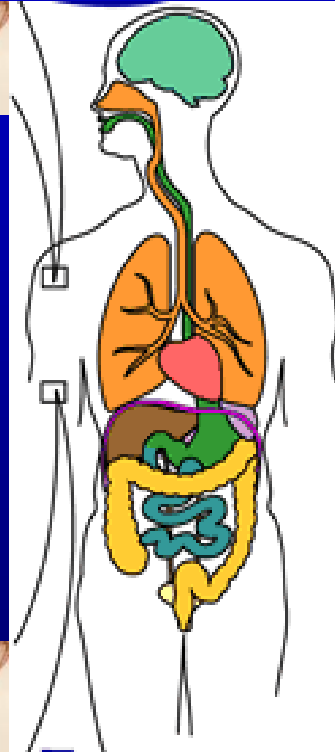
- 90% of cutaneous leishmaniasis occurs in Afghanistan, Iran, Saudi Arabia, Syria, Brazil and Peru
 - Sore is commonly called the Baghdad boil
- 90% of all visceral leishmaniasis occurs in Bangladesh, Brazil, India, and the Sudan
- 90% of mucocutaneous leishmaniasis occurs in Bolivia, Brazil and Peru

Life Cycle

1- Sandfly bites animal and ingests blood infected with *Leishmania*

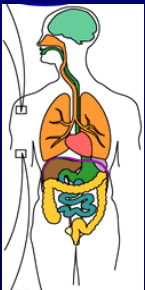


2- Sandfly bites human and injects *Leishmania* into skin



3- Another sandfly bites human and ingests blood infected with *Leishmania*

4- Cycle continues when sandfly bites another human or animal reservoir



Cutaneous Leishmaniasis

Cutaneous Leishmaniasis

- Most common form
- Characterized by one or more sores, papules or nodules on the skin
- Sores can change in size and appearance over time
- Sores are usually painless but can become painful if secondarily infected
- Swollen lymph nodes may be present near the sores
- Two forms : Localized Cutaneous Leishmaniasis ,and diffuse cutaneous Leishmaniasis (rare)





Cutaneous Leishmaniasis

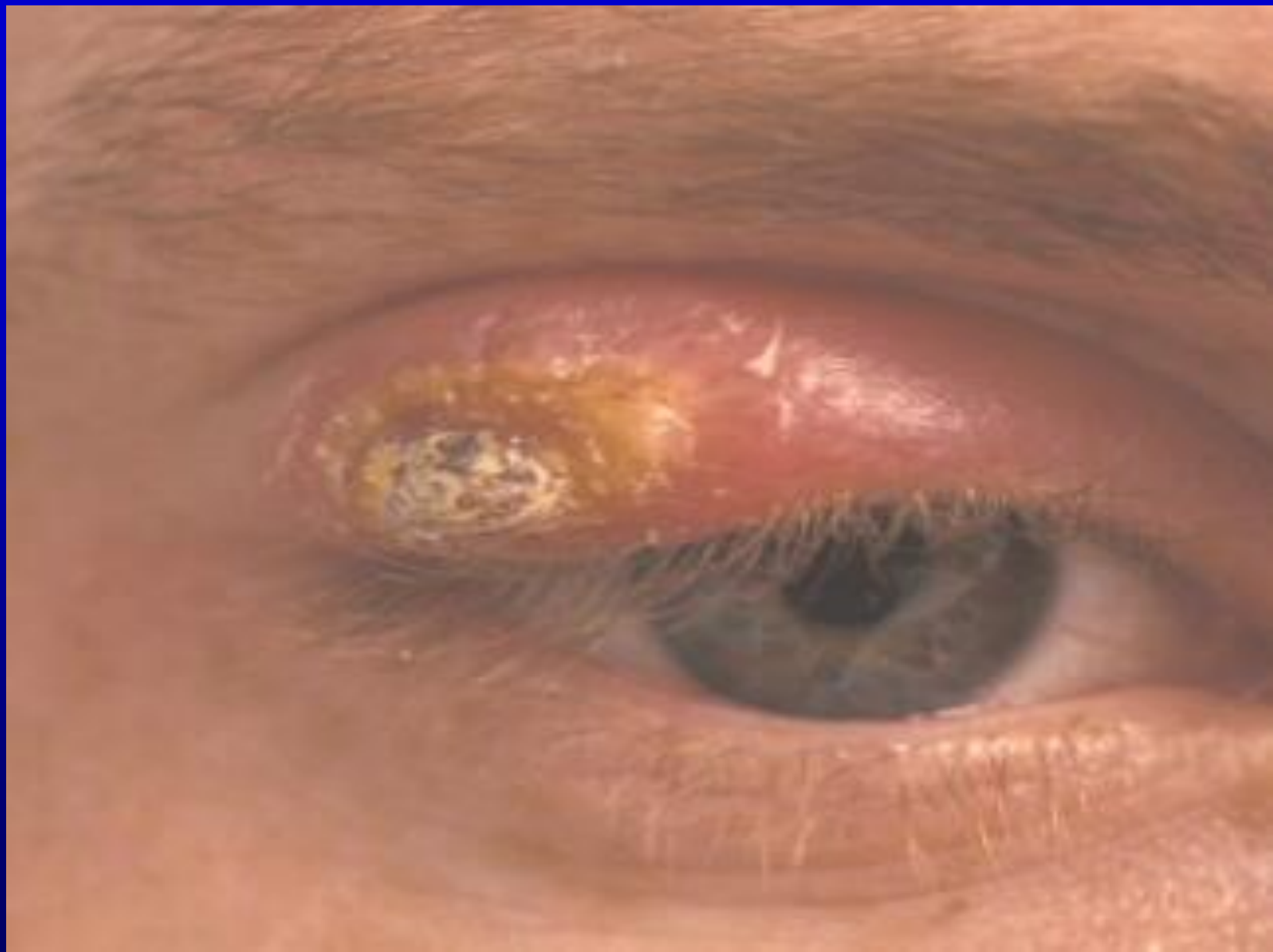
- Most sores develop within a few weeks of the sandfly bite, however they can appear up to months later
- Skin sores of cutaneous leishmaniasis can heal on their own, but this can take months or even years
- Sores can leave significant scars and be disfiguring if they occur on the face
- If infection is from *L. tropica* it can spread to contiguous mucous membranes (upper lip to nose)















Localized Cutaneous Leishmaniasis (cont.)



Localized Cutaneous Leishmaniasis (cont.)



Localized Cutaneous Leishmaniasis (cont.)



Mucocutaneous Leishmaniasis

Mucocutaneous Leishmaniasis (Espundia)

- Most commonly reported in the New World (with *L. braziliensis* and *L. panamensis*)
- 1-3% of patients of all infected patients

Espundia



Mucocutaneous Leishmaniasis

- Occurs with *Leishmania* species from Central and South America
- Very rarely associated with *L. tropica* which is found in the Middle East
 - This type occurs if a cutaneous lesion on the face spreads to involve the nose or mouth
 - This rare mucosal involvement may occur if a skin lesion near the mouth or nose is not treated
- May occur months to years after original skin lesion
- Hard to confirm diagnosis as few parasites are in the lesion
- Lesions can be very disfiguring



Visceral Leishmaniasis

Visceral Leishmaniasis (kala-azar)

- Typically affects children <5 yr of age in the New World and Mediterranean region (*L. infantum/chagasi*) and older children and young adults in Africa and Asia (*L. donovani*).
- chronic intracellular disease
- Incubation Period: quite variable, generally 1-4 months, about 10 days to 2 years.

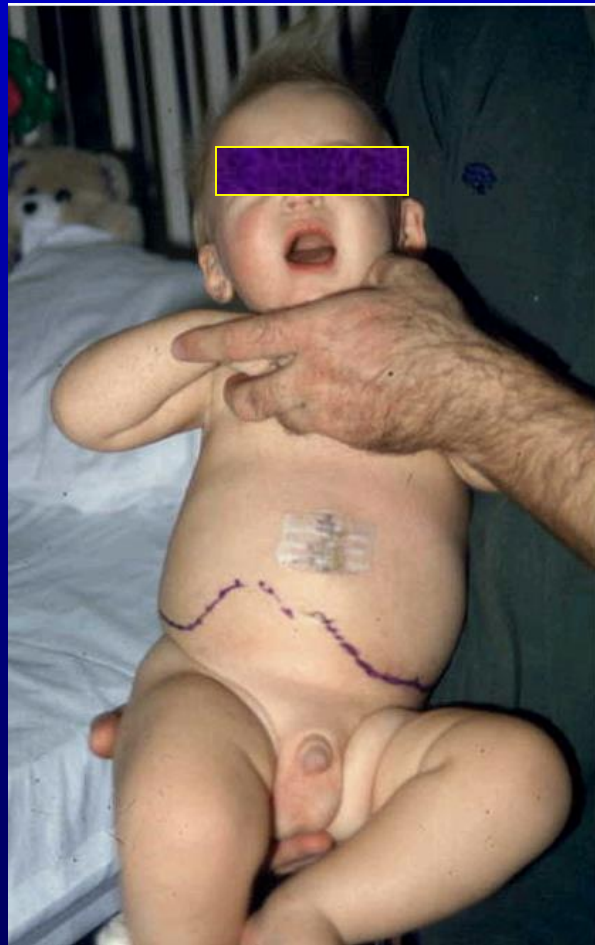
Visceral Leishmaniasis

- Infection may be asymptomatic , mild symptoms or active kalaazar
- Most severe form of the disease, may be fatal if left untreated
- Usually associated with fever, weight loss, and an enlarged spleen and liver (abd. Distention).
- Lymphadenopathy jaundice, edema, and ascites may be present
- VL is an opportunistic infection associated with HIV
- Anemia, leucopenia, thrombocytopenia , elevated hepatic transaminase, and hyperglobulinemia are common

Visceral Leishmaniasis

- Symptoms usually occur months after sandfly bite
- Because symptoms are non-specific there is usually a delay in diagnosis
- Visceral leishmaniasis should be considered in any chronic FEVER patient referred from an endemic area.

Visceral Leishmaniasis (cont.)





Diagnosis

- Epidemiological and clinical awareness of disease.
- Sores that will not heal have to be referred for evaluation – even if not “typical” for leishmaniasis
- Individuals with fevers, weight loss, abd. distention, gastrointestinal complaints, anemia, abnormal liver tests should be referred for evaluation

Diagnosis: Cutaneous Leishmaniasis

- The development of 1 or several slowly progressive, nontender, nodular, or ulcerative lesions in a patient who had potential exposure in an endemic area should raise suspicion of CL.
- Biopsy is required for diagnosis
microscopy (to look for amastigotes) , and culture

Diagnosis: Visceral Leishmaniasis

- Must be considered if diagnosis is to be made
- Presentation is usually very non-specific and should be considered in febrile patients
- Antibodies to *Leishmania* may be present in patient's serum but this will not confirm or exclude the diagnosis
- u/s abdomen , hypoechoic shadows
- Diagnosis requires finding *Leishmania* on biopsy of bone marrow, liver, enlarged lymph node, or spleen ,the gold standard for diagnosis is a bone marrow or liver biopsy to detect amastigotes.

Diagnosis

Mucocutaneous Leishmaniasis

- Early diagnosis and treatment is critical to avoid disfigurement
- Biopsies should be done but require special training to avoid further disfigurement
- Biopsies will be evaluated by the same methods as for cutaneous lesion
 - Because few parasites are present, PCR may be particularly useful

Treatment

- Antimony compounds {sodium stibogluconate (Pentostam)} is mainstay of antileishmanial chemotherapy for more than 40 yr , IV or IM for 20 days (CL) or 28 days (for ML and VL).
- Amphotericin B (VL and ML)
 - Amphotericin B desoxycholate daily or on AD for 14-20 doses,
 - Liposomal amphotericin-B
 - 3 mg/kg per day on days 1-5, day 14 and day 21

Treatment

- Paromomycin (VL)..India
- Oral Miltefosine (VL and some CL & ML)...India
- Fluconazole in high doses (up to 8 mg/kg/day) for 4-8 wk was demonstrated to be effective in treating CL

Prevention

- **Suppress the reservoir:** dogs, rats, gerbils, other small mammals and rodents
- **Suppress the vector: Sandfly**
 - Critical to preventing disease in stationary troop populations
- **Prevent sandfly bites: Personal Protective Measures**
 - Most important at night

Summary

- Leishmania is an important disease present in many places in our country
- It should be suspected in any child with fever and splenomegaly specially if came from endemic area
- Early diagnosis and treatment save the life and prevent the complication

