

Recidivance Leishmaniasis (Lupoid)

- Agent: *L. tropica*
- Can occur years after a cutaneous lesion has healed and is often on the face
- New ulcers and papules form over the edge of the old scar
- Dormant parasites or new infection may be the cause but these infections tend to be resistant to treatment
- Only in Iran and Iraq



Old World Visceral Leishmaniasis (OWVL)



Causative agents & Reservoir hosts of OWVL

❑ *L. donovani*

- India, Bangladesh, Nepal, China and East Africa
- **Anthroponotic** Visceral leishmaniasis
- Principal reservoir host: **Humans**



❑ *L. infantum*

- Europe, Mediterranean, Middle East, Western and Central Asia, China, North and West Africa
- **Zoonotic** Visceral Leishmaniasis
- Principal reservoir hosts:
Fox, Jackal, wolf and Rodents
- **Domestic dogs** play the most important role in transmitting the disease to humans



❑ *L. archibaldi*: Sudan (AVL & ZVL)

❑ *L. tropica*: Middle East & India



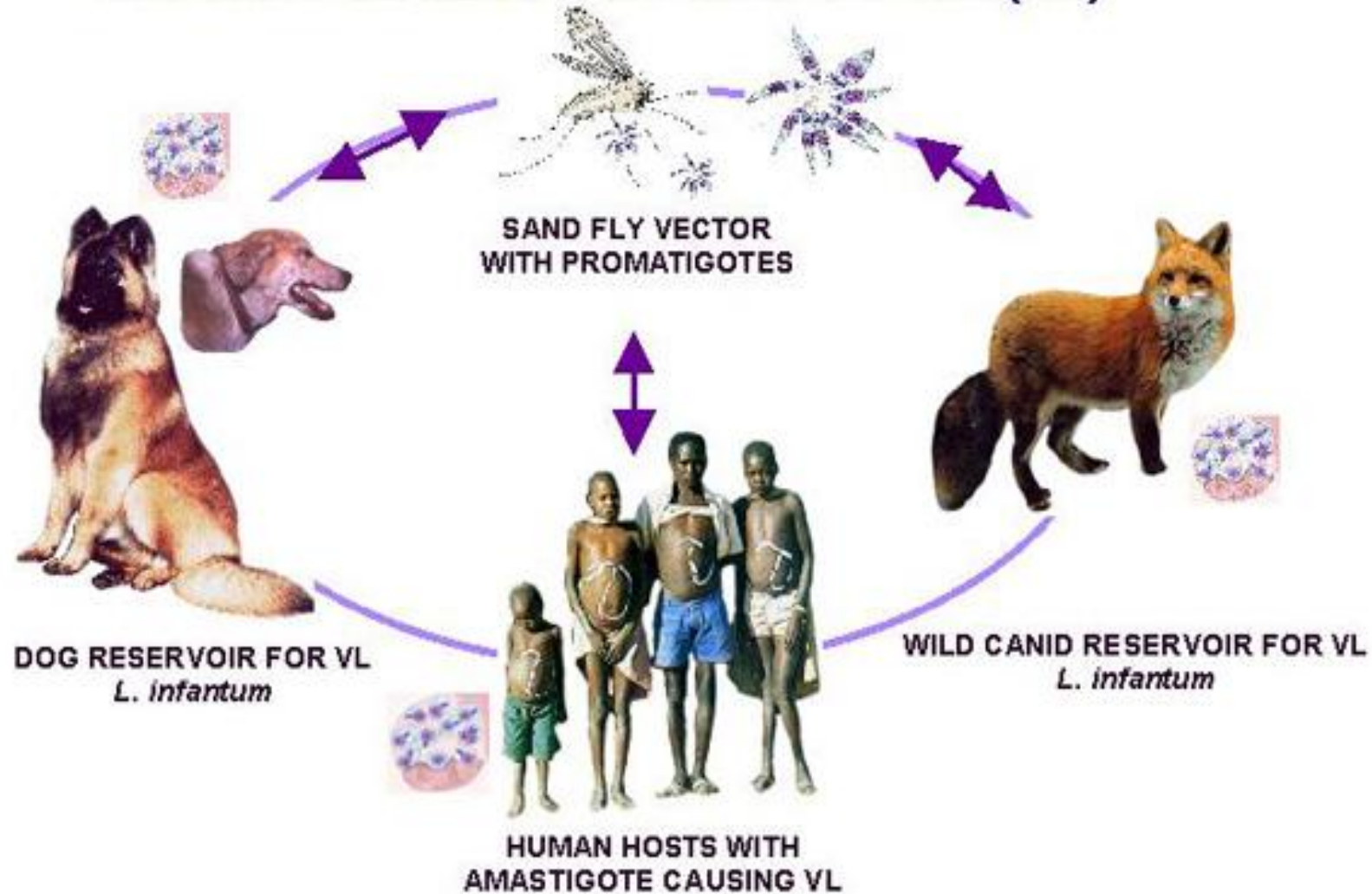
Vectors of OWVL



- *P. (Eu.) argentipes* (India, Bangladesh, Nepal)
- *P. (La.) oriethalis* & *P. martini* (Africa)
- *P. (Pa.) alexandri* & *P. (Ad.) chinensis* (China)
- *P. (La.) major* & *P. (La.) neglectus* (Greece)
- *P. (La.) tobbi* (Cyprus, Caucasus)
- *P. (La.) perniciosus* & *P. (La.) arisi* (Spain, France)

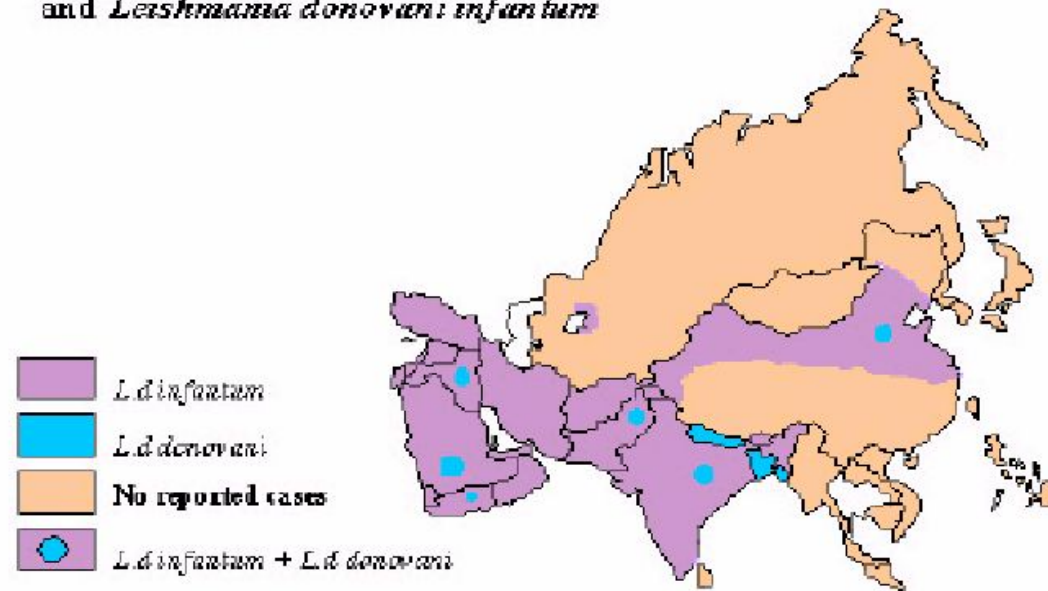


LIFE CYCLE OF *LEISHMANIA* CAUSING VISCERAL LEISHMANIASIS (VL)



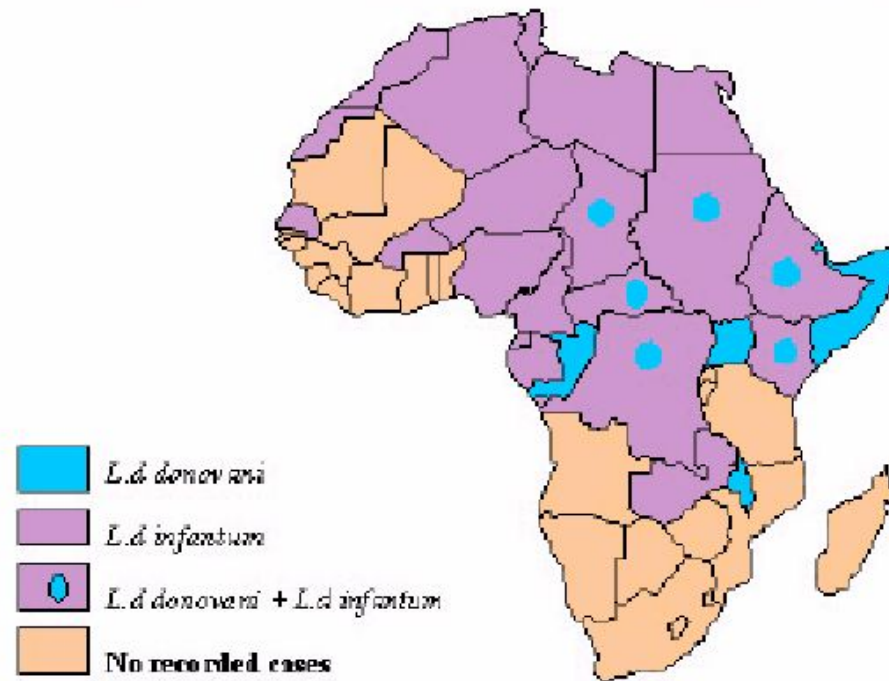
Kala-azar in Asia

Distribution of visceral leishmaniasis in Asia and the Mediterranean due to *Leishmania donovani donovani* and *Leishmania donovani infantum*



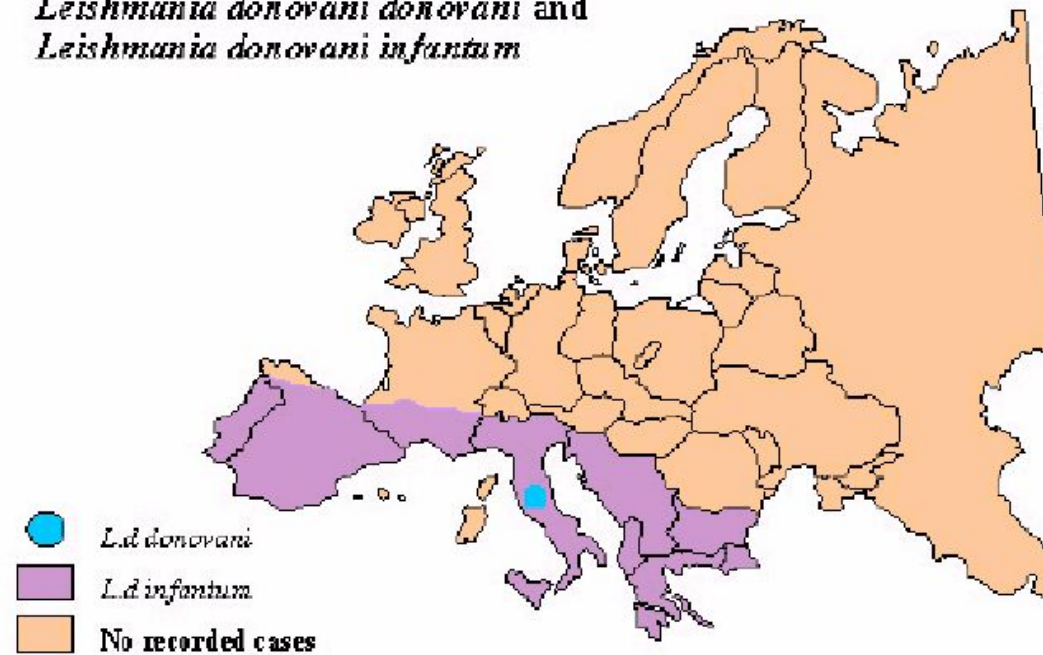
Kala-azar in Africa

Distribution of visceral leishmaniasis in Africa due to *Leishmania donovani donovani* and *Leishmania donovani infantum*



Kala-azar in Europe

Distribution of visceral leishmaniasis in Europe due to
Leishmania donovani donovani and
Leishmania donovani infantum



Mediterranean Kala-azar

- Mediterranean regions, south Europe, Western and Central Asia, China
- *L. infantum*
- Endemic and sporadic
- Infants and children (1 - 5 years old)
- Zoonotic visceral leishmaniasis
- **Wild canids, domestic dogs** and **Rodents** (*R. rattus* in Europe) are reservoir hosts



African Kala-azar

- ▣ *L. donovani*: AVL , East Africa
- ▣ *L. infantum*: ZVL , North and West Africa
- ▣ *L. archibaldi*: Sudan
- ▣ Children (5- 9 years old) and adults
- ▣ Sudan
 - ▣ Sporadic: ZVL / Reservoir: *Arvicanthus niloticus*
 - ▣ Epidemic: AVL / Reservoir: **Humans**



African grass Rat



Indian Kala-azar

- India, Bangladesh, Nepal, East Africa, China
- *L. donovani*
- **Humans** are principal reservoir hosts
- Adults (10 – 20 years old)



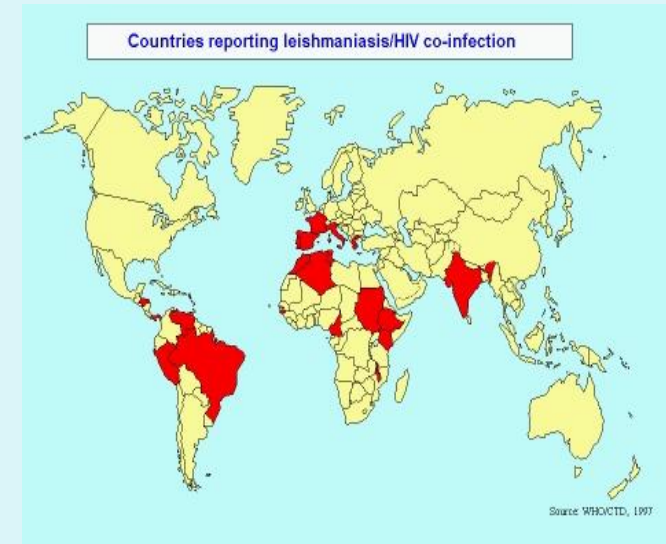
Post kala-azar Dermal Leishmaniasis (PKDL)

- Occurs after recovery in some cases of visceral leishmaniasis caused by *L. donovani*
- Characterized by macular or nodular rash around the mouth, which spreads
- Dermal lesions may contain parasites in great numbers (source of infection for sandflies)
- In India, PKDL is seen in 20% of successfully treated (2-10 years after treatment)
- In Africa (Sudan and Kenya), PKDL is seen 50% of successfully treated (6 month after treatment)



Visceral Leishmaniasis and HIV co-infection

- Leishmania and HIV co-infections have been reported in **35** out of 98 countries in which leishmaniasis is endemic
 - Almost all the cases of co-infection are very prone to VL relapses, even after carefully managed anti leishmanial treatment.
- The overlapping geographical distribution of VL and AIDS is due to the spread of the AIDS pandemic and spread of VL from rural to suburban areas



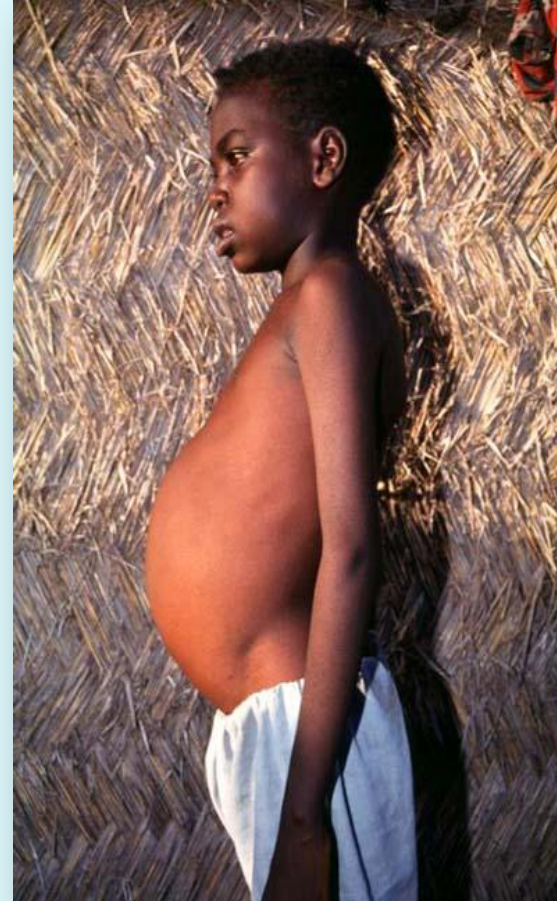
Clinical symptoms in VL in Human

- ☐ Prolonged Irregular fever
- ☐ Hepatomegaly
- ☐ Splenomegali
- ☐ Anemia , Leukopenia and Thrombocytopenia
- ☐ Lymphadenopathy
- ☐ Weight loss , Weakness , Fatigue , Anorexia , Cachexia
- ☐ Coughing and chronic diarrhea
- ☐ Darkening of the skin



Clinical symptoms in VL in Human

- Splenomegaly, distended abdomen and severe muscle wasting.



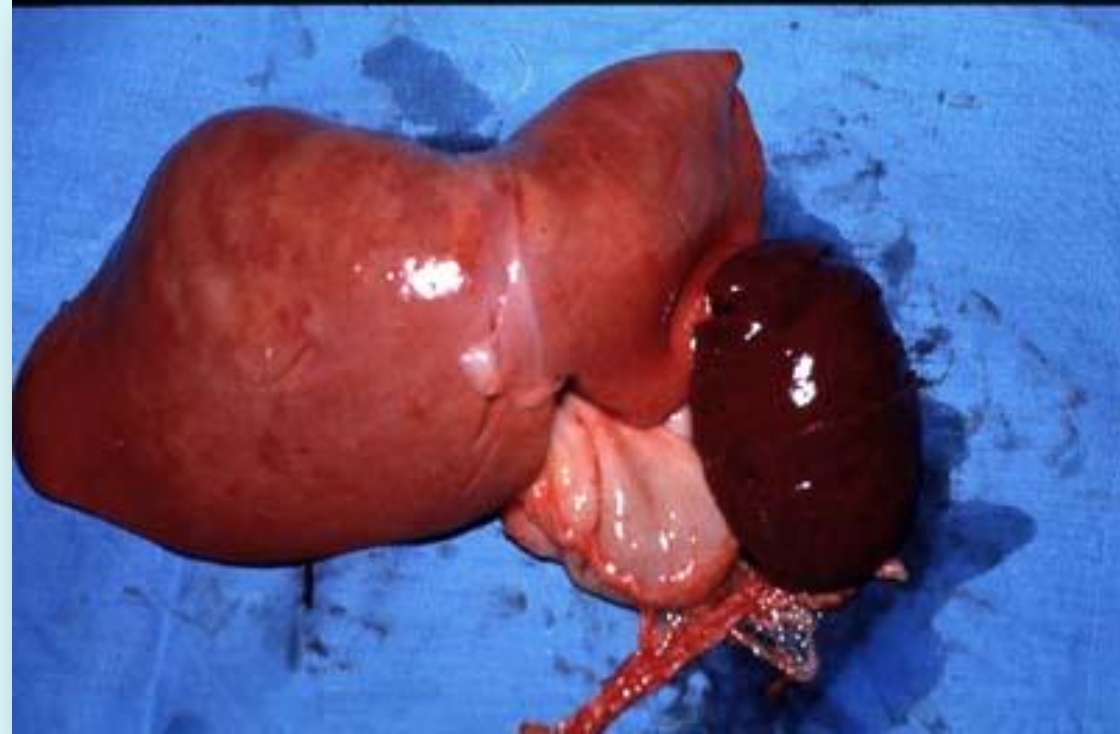
Clinical symptoms in VL in Human

- Splenomegaly , severe muscle wasting and Cachexia



Clinical symptoms in VL in Human

- Hepatomegaly and Splenomegali in an autopsy of an infant dying of visceral leishmaniasis.



Clinical symptoms in VL in Human

- Jaundice hands of a VL patient



Clinical symptoms in VL in Dogs

- ❑ Progressive loss of weight
- ❑ Localized or generalized loss of hair
- ❑ Hypertrophy of claws
- ❑ Cachexia
- ❑ Opacification of the cornea
- ❑ Hind legs paraplegia
- ❑ Apathy
- ❑ Intestinal bleeding



Diagnosis of VL

- The incubation period for VL is 10 days to 1 year (or 2 to 6 months)
- Duration of disease about 1 to 20 weeks
- Because symptoms are non-specific and often start after redeployment there is usually a delay in diagnosis
- Visceral leishmaniasis should be considered in any chronic FEVER patient returning from an endemic area.



Diagnosis of VL

☐ Clinical

- Symptoms and clinical signs

☐ Parasitological

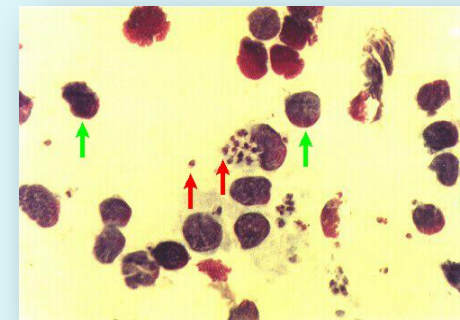
- Spleen and liver biopsy
- Marrow and lymph gland biopsy
- Inoculation to sensitive animals (Balb/C, Souri and Golden Hamster)

☐ Serological

- Indirect Fluorescent Antibody Test (IFAT)
- Direct Agglutination Test (DAT)
- Enzyme Linked Immunosorbent Assay (ELISA)
- Formol Gel test

☐ Molecular techniques (PCR)

Bone marrow aspiration



Leishmania found in humans

<i>L. (Viannia)</i>	<i>L. (Viannia)</i>	<i>L. (Leishmania)</i>	<i>L. (Leishmania)</i>	Subgenus
		<i>L. major</i>	<i>L. donovani</i>	Old World
		<i>L. tropica</i>	<i>L. infantum</i>	
		<i>L. killicki</i>		
		<i>L. aethiopica</i>		
		<i>L. infantum</i>		
<i>L. braziliensis</i>	<i>L. braziliensis</i>	<i>L. infantum</i>	<i>L. infantum</i>	New World
<i>L. panamensis</i>	<i>L. guyanensis</i>	<i>L. mexicana</i>		
	<i>L. panamensis</i>	<i>L. pifanoi</i>		
	<i>L. shawi</i>	<i>L. venezuelensis</i>		
	<i>L. naiffi</i>	<i>L. garnhami</i>		
	<i>L. lainsoni</i>	<i>L. amazonensis</i>		
	<i>L. lindenbergi</i>			
	<i>L. peruviana</i>			
	<i>L. colombiensis</i>			

Mucotropic

Dermotropic

Dermotropic

Viscerotropic

Principal tropism

