Biology of Visceral Leishmaniasis

Agent, Vector, Pathogenesis
Visceral Leishmaniasis is a parasitic disease that is transmitted by the female *Phlebotomus argentipes* sandfly vector. The disease agent is the parasitic protozoa *Leishmania donovani* or *Leishmania infantum*. While the *Leishmania donovani* complex is common in East Africa and the Indian subcontinent, *Leishmania infantum* is in Europe, North Africa and Latin America. *L. infantum* infects mostly children and immunosuppressed individuals, and *L. donovani* infects all age groups.

The lifecycle of *L. donovani* shows two distinct forms: a promastigote flagellar form found in the gut of the sandfly vector and an amastigote form, which develops in the mammalian host (See Figure 3). When the sandfly bites the host’s skin, the promastigotes are taken up by dendritic cells and macrophages in the dermis and are transformed to their amastigote form. As amastigotes, the parasites are able to multiply and survive in phagolysosomes through a complex parasite–host interaction. The amastigotes then spread throughout the lymphatic and vascular systems and infect other white blood cells in order to infiltrate the bone marrow and lymph nodes. At stage 5 as labeled in Figure 3, the sandfly takes a blood meal ingesting infected cells. In the sandfly gut, the amastigotes are transformed back to the promastigote stage, divide, and migrate back to the proboscis to infect another host.