American trypanosomiasis (Chagas' disease)

Trypanosoma cruzi

- **Chagas disease**
- Endemic to Central and South America
- Reduviid bug (kissing bug) is the vector
  - Bug feces is inoculated into a cutaneous portal
- Local lesion, fever, and swelling of lymph nodes, spleen, and liver
- Heart muscle and large intestine harbor masses of amastigotes
- Chronic inflammation occurs in the organs (especially heart and brain)
- Treatment nifurtimox and benzonidazole

Etiology :Chagas' disease is caused by the protozoan hemoflagellate, *Trypanosoma cruzi*.

Epidemiology

American trypanosomiasis, also known as Chagas' disease, is scattered in

Central and South America

,. It is estimated that 16-18 million people are infected by the parasite

About 50,000 people die each year from the disease

Morphology

Depending on its host environment, the organism occurs in **three different** forms

1-The trypanosomal **(trypomastigote)** found inmammalian blood, is 15 to 20 microns long

and morphologically similar to African trypanosomes.

2-The crithidial **(epimastigote))** is found in the insect intestine.

3-The leishmanial **(amastigote)** found intracellularly or in in mammalian viscera

(particularly in myocardium and brain),

is round or oval in shape, measures 2-4 microns and lacks a prominent flagellum.

Life cycle

An infected insect vector (or "kissing" bug) takes a blood meal and releases **trypomastigotes**

in its feces near the site of the bite wound.

Trypomastigotes enter the host through the wound or through intact mucosal membranes,

such as the conjunctiva

1. Inside the host, the trypomastigotes invade cells, where they differentiate into intracellular amastigotes

2. The amastigotes multiply by binary fission and differentiate int trypomastigotes, and then are released into the bloodstreamas trypomastigotes

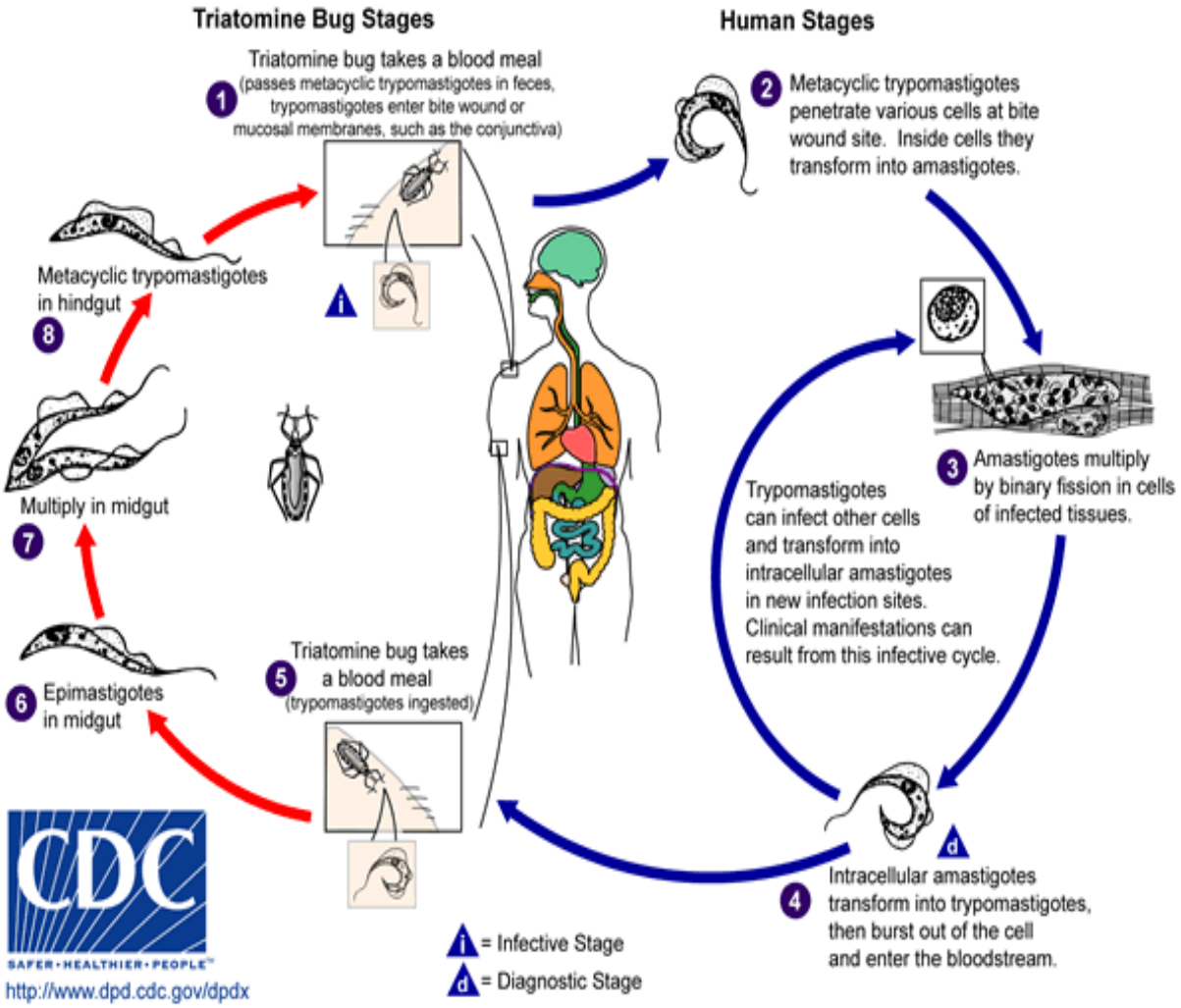
4. Trypomastigotes infect cells from a variety of tissues and transform into **intracellular amastigotes** in new infection sites. Replication resumes only when the parasites enter another cell or are ingested by another vector.

The "kissing" bug becomes infected by feeding on human or animal blood that

contains circulating parasites

5. The ingested **trypomastigotes** transform into **epimastigotes** in the **midgut**

6. The parasites multiply and differentiate in the midgut into infective **metacyclic trypomastigote** in the hindgut8 .Trypanosoma cruzi can also be transmitted through blood transfusions, organ transplantation, , and in laboratory accidents



symptoms
Chagas' disease can be divided into three stages:

1-The **primary lesion**, chagoma, appearing at the site of infection,

.. It is usually found on the face, eyelids, cheek, lips or the conjunctiva, but may occur on the abdomen or limbs

2-Acute Stage: It is characterized by restlessness, sleeplessness, malaise, increasing, chills, fever and bone and muscle pains. Chagas' disease may cause meningo-encephalitis and coma.

3-Chronic Stage. The chronic disease results in an abnormal function of the hollow organs, particularly the heart, esophagus and colon

Diagnosis
-Clinical diagnosis is usually easy among children in endemic areas.

. Definitive diagnosis requires the demonstration of trypanosomes by microscopy

- Serological test provide presumptive diagnosis.

Treatment and Control.

-Benzonidazol used in acute stage of the disease,

-Control measures are limited to those that reduce contact between the vectors and man.