WASHOE COUNTY HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

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EPI-NEWS

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Chagas Disease

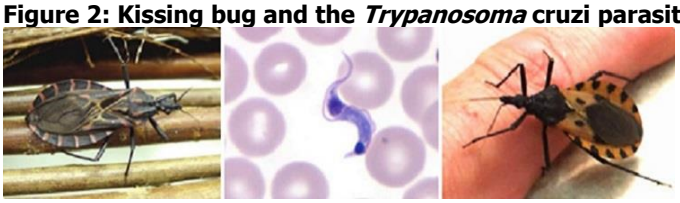
Introduction

Chagas disease, or American trypanosomiasis, is responsible for the greatest parasitic disease burden in the Western Hemisphere.[1] It is a vector-borne disease caused by *Trypanosoma cruzi (T. cruzi)*, a parasite only found in the Americas.[2] *T. cruzi* is spread by the triatomine bug, which is also known as the 'kissing bug.' It is mainly transmitted to animals and people in poverty stricken rural areas of Latin America. Large population migrations from rural to urban areas have led to more broad spread of this disease. Cases of Chagas disease, however rare, have been reported in the southern United States.[2]

Epidemiology

The "kissing bug" is a blood-sucking insect that feeds on animals and humans. These bugs are commonly found in rural parts of Mexico, Central America, and South America where housing conditions are poor (houses made of mud/adobe walls or thatched roofs made of palms and straw).[2,3] The bites are centralized to the face and around the eyes.[2] Transmission to a new host primarily occurs by infection of the bite wound or mucous membranes during the vector's blood meal and is supplemented when parasite fecal matter is rubbed or scratched into the bite wound by the sleeping victim.[1,2] Other routes of infection include, mother-to-baby (congenital), contaminated blood products (transfusions), organ transplant, laboratory accident, or contaminated food or drink.[2,3]

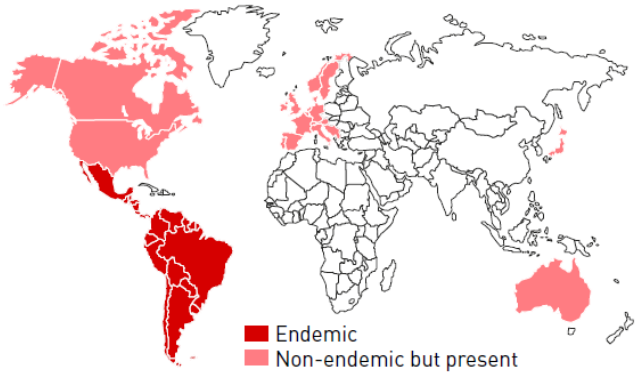
Figure 2: Kissing bug and the *Trypanosoma* cruzi parasite



Source: https://www.cdc.gov/parasites/chagas/index.html

There are an estimated 8 million individuals in rural parts of Mexico, Central America, and South America that are infected with Chagas disease.[3] While known to be present in the United States, there have been very few cases of Chagas disease caused by contact with the triatomine bug. The CDC estimates there are more than 300,000 individuals infected in the United States, most of which were infected in parts of Latin America where Chagas disease is endemic.[3] Approximately 10,000 deaths per year globally occur from Chagas disease and symptoms develop in up to 30% of infected persons.[4]

Figure 1: Areas Affected by Chagas Disease



Source: https://eportfolios.macaulay.cuny.edu/kowach16/2016/10/23/chagas-disease-what-is-it-and-how-is-it-being-treated/

Estimating the total number of persons infected with Chagas disease in the United States is difficult due to the sparse underlying data. The Pan American Health Organization published an updated estimate of prevalence of *T. cruzi* using the best available national data. Birth country prevalence and immigrant population totals are a key strategy to estimating the prevalence and burden of Chagas disease in this publication, however, there are limitations to this strategey.[1]

Prevention

In the areas that Chagas disease is endemic and present in triatomine bugs, efforts to improve housing conditions and insecticide usage to eliminate the bugs have significantly decreased transmission.[5] Screening blood donations for transfusions, as well as early detection and treatment of cases, has helped prevent the spread of disease and reduced the burden.[5] Some regions of Latin America have vector control programs who work to eliminate 'kissing bugs', the main vector for Chagas disease.[2]

Non-endemic areas should focus on implementing strategies to identify Chagas disease to prevent

spread from blood transfusion, organ transplants, and mother-to-baby transmissions.[5]

Signs & Symptoms

The symptomology and severity of a Chagas disease infection can vary based on several different factors such as age at time of infection, mode of infection, or strain of *T. cruzi*. Chagas disease has an acute phase and a chronic phase, both of which range from asymptomatic to life threatening.[2]

During the acute phase, a person may be asymptomatic or exhibit mild general symptoms including fever, fatigue, body aches, headache, rash, loss of appetite, diarrhea, and vomiting. More specific symptoms can include enlargement of the liver or spleen, swollen glands, and/or swelling at the infection site (Romaña's sign). Symptoms in the acute phase usually improve or resolve within a few weeks or months, however, if the infection is left untreated, it remains in the body. Young children may die from severe inflammation and infection of the heart or brain; however, this is rare and occurs in less than 5% of pediatric cases. Individuals with compromised immune systems may experience more severe symptoms.[2]

Figure 3: Example of Romaña's sign

Source:
https://www.cdc.gov/parasites/chagas/gen_info/detailed.html#intro

The chronic phase can last for decades (or even a lifetime), and most people remain asymptomatic. However, 20-30% of individuals develop cardiac complications and/or gastrointestinal complications.[2]

Diagnosis & Testing

Chagas disease is diagnosed using blood tests. The parasite can be identified circulating in the blood during the acute phase using microscopy to analyze stained blood smears (both thick and thin) to visualize the parasites.[6] Molecular detection of *T. cruzi* DNA is performed for suspected acute infection, congenital Chagas disease, and if there is suspected laboratory exposure.[7]

During the chronic phase of Chagas disease, there are very low levels of parasite in the blood stream, so serologic tests are used to identify *T. cruzi* antigens.[7] Prior to conducting serologic test, clinical findings, and likelihood of being infected (such as birth country and where patient has lived) are considered.[1,6] Molecular detection may be used for chronic infections if a re-activation associated with immunosuppression is suspected.[7]

Treatment

While patients with chronic infection may benefit from treatment, early diagnosed infections, babies with congenital infections, and persons with suppressed immune system are recommended to receive treatment.[8] There are two different therapeutics: 1) antiparasitic treatment, which kills the parasite, and 2) symptomatic treatment that focuses on treatment and management of symptoms.[2]

Antiparasitic treatment can be used for all acute cases (including congenital), reactivated Chagas disease, and chronic infections in children up to age 18. Treatment is recommended for cases in adults up to the age of 50 with chronic infections, unless advanced cardiomyopathy has already developed. If the patient is over the age of 50, consult physician to weigh the benefits and risks of treatment for the patient.[9] There are two drugs that are approved by the FDA to treat infections with *T. cruzi*:

Drug	Age Group	Dosage and duration
Benznidazole	2–12 years of age*	5–8 mg/kg per day orally in 2 divided doses for 60 days
Lampit® (nifurtimox)	Birth to younger than 18 years of age, weighing at least 2.5 kg*	Body weight greater than or equal to 41 kg 8–10 mg/kg per day orally in 3 divided doses for 60 days
		Body weight less than 41 kg: 10–20 mg/kg per day orally in 3 divided doses for 60 days

*see source material for contraindications, disclaimers, and additional information on who treatment is recommended for.
Source:
https://www.cdc.gov/parasites/chagas/health_professionals/tx.html

Persons with Chagas disease should consult their health-care provider to find out whether and how they should be treated.[2]

Reporting

The list of reportable communicable diseases and reporting forms can be found at:
http://tinyurl.com/WashoeDiseaseReporting

Report communicable diseases to the Washoe County Health District. To report a communicable disease, please call 775-328-2447 or fax your report to the WCHD at 775-328-3764.

Acknowledgement

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