

# Brief review on Chagas disease in the state of Guerrero, Mexico

## Abstract

The current review attempts to understand the emergence of American trypanosomiasis, commonly known as “Chagas disease”. The lack of knowledge due to very few research studies on this disease in the State of Guerrero has led to deficient actions by the health authorities. However, the presence of the disease is demonstrated in different reports of studies performed by researchers, revealed in the present manuscript. The present review shows the efforts to increase the harmful effects of the disease in compromising the normal health of an individual in Guerrero, it is expected that with the present work a call for attention will be made to the corresponding health authorities in Guerrero for the planning of Campaigns for disease prevention and control of its vector.

**Keywords:** Chagas disease, American trypanosomiasis, Vector, Triatomino, Review, Guerrero State, Mexico

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**Abbreviations:** AT, american trypanosomiasis; CD, chagas disease

## Introduction

The American trypanosomiasis (AT) or Chagas disease (CD), was named after Carlos Chagas who first described it in 1909. It is an infectious zoonosis and is regarded as major issue of public health concern worldwide.<sup>1</sup> The causal agent is a protozoan hemoflagellate, which belongs to the Protozoan kingdom, Protozoan, Euglenzoa, Mastigophora subfamily, Kinetoplastea, Trypanosomatida, Trypanosomatidae, Schizotrypanum, Trypanosoma, and *T. cruzi* species.<sup>2</sup>

The majority of people infected with *Trypanosoma cruzi* (*T. cruzi*) are the natives of Latin America and the treatment should immediately follow the infection in order to ensure proper cure. Up to 30% of chronic patients exhibit cardiac alterations and up to 10% suffer from digestive, neurological or combined alterations. All these symptoms may require specific treatment.<sup>1</sup> This disease dates back to thousands of years and has known to infect human beings in Prehistory period throughout the whole American Continent.<sup>3</sup>

*T. cruzi* has a neotropical geographic distribution, ranging from the Southern United States of America to Argentina and Chile, depending on the presence of vectors, which have been able to develop capacities to adapt to microclimates inside houses. Due to urban growth and deforestation, triatomines have migrated from their natural habitat to anthropogenic environments, expanding their range of hosts and endangering human populations in rural and urban areas.<sup>1,4,5</sup>

It is estimated that 16 million people worldwide are infected due to *T. cruzi* infection.<sup>1</sup> There are about 1,800,000 cases, only in Mexico, out of which approximately 60% live in rural zones and the rest in urban and suburban areas.<sup>6</sup> According to the organization Doctors without Borders, the CD causes 12,500 deaths a year in Mexico. These data could be worse in situations where many people ignore the infection. So, thousands die without knowing the cause of their death.<sup>7</sup>

## Discussion

Chagas' disease is endemic of the State of Guerrero. There are reports of triatomines infected with *T. cruzi*, mainly in the areas of Costa Chica, Acapulco, Tierra Caliente, Valle de Iguala and Taxco de Alarcon.<sup>8-11</sup> Rodriguez<sup>12</sup> study in 2011, confirmed the distribution of triatomines inside houses (19%), and in the peridomicile area (54%) and 19% in peripheries and vacant lots located in diverse rural and urban localities of the municipalities of Acapulco, Chilpancingo, Iguala, Taxco and Zihuatanejo in the State of Guerrero. In 2015, Rodriguez<sup>13</sup> found serological the prevalence in people of all ages in the municipality of Taxco, and Mancilla et al.<sup>14</sup> found 3% in the municipality of Copala, both in the State of Guerrero.

In the State of Guerrero, the prevalence of the disease has increased with 107 cases during 2001-2005. Only in 2005, 37 cases were reported: 25 in localities of Costa Chica, five in Region Norte, four in Acapulco, two in Tierra Caliente, and one in Costa Grande.<sup>15</sup> The CD has been regarded as a top public health problem by the Ministry of Health, due to the lack of knowledge of some medical doctors about this disease, leading to underreporting clinical cases and deaths.<sup>16</sup>

According to information obtained in the Ministry of Health, the cases detected in the last five years are as follows: 28 cases in 2010; 13 cases in 2011; 22 cases in 2012; 21 cases in 2013, and 21 cases in 2014 (up to April), which confirms underreporting, coinciding with the findings of Lasso.<sup>7</sup> The most affected regions in 2015 were the Zona Central (Central Zone); Acapulco; Costa Chica (Small Coast), and the Norte (North), the lack of reports from other areas reflect the lack of research by health professionals as well as health authorities within the state of Guerrero. The Dirección de Protección Civil (Civil Protection Directorate) would only start prevention campaigns of the disease, once a report of infected people is received; Although there should be permanent programs of Environmental Education to prevent it.<sup>17, 18</sup>

Two cases were confirmed by Xenodiagnosis in the Municipality of Acapulco in 1990.<sup>19</sup> During the same year, seventy-five people, including minors, had antibodies to *Trypanosoma cruzi* in Acapulco,

Costa Chica and Tierra Caliente.<sup>8</sup> In 1995, sixty patients who attended the General Hospital were diagnosed with chronic chagasic cardiopathy.<sup>20</sup> Cadena et al.<sup>21</sup> conducted a serological study on dogs whose owners were domiciled in three peripheral colonies in the western part of the city of Acapulco, where 9% of the dogs were reactive which proved that the CD is present in the municipality. It is also necessary to emphasize that the dogs serve as sentinels or indicators for the infection of Chagas.

The existence of this disease dates back thousands of years, since it has been shown to affect humans from prehistory throughout the American continent.<sup>3</sup> The ability to adapt to the microclimates in the houses allows them to survive in a wide variety of hosts and climatic conditions for optimal development of their populations.<sup>4</sup> This in turn risks the human population in rural and urban areas and has resulted in ecological and environmental imbalances, as a consequence of deforestation and by processes that affect the environment of vectors. In this way the species invade the anthropogenic environments, when their natural habitat is modified. This promotes the migration and domiciliation of triatomines inducing the disappearance of natural spaces.<sup>5,22,23</sup>

## Conclusion

It is necessary for researchers to do more epidemiological research on the Chagas disease as well as its transmitting vector. Simultaneously the health authorities in the State of Guerrero should collaborate with schools, universities and civil societies to organize prevention campaigns to combat the vector in order to reduce the risk of natural transmission of *T. cruzi*.

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## Conflicts of interest

The authors declare that there is no conflicts of interest.

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