

## Silent murderer: Chagas disease

José David Navarrete Santiago\*

Medical Care Center, Independencia Medical Clinic, Mexico

### Abstract

**Introduction:** Chagas disease is the infection produced in man *trypanosome cruzi*; it is estimated that in the American continent there are 35,000,000 people infected and close to 100,000,000 people exposed to the infection, in Mexico the endemic areas are the Central and South States, having a predilection for rural places. The case-fatality rate in Mexico is currently unknown.

**Material and methods:** The objective of this work was to identify the lethality rate of Chagas disease through a retrospective study, taking as a period of time a lapse of 9 years from 2004 and 2013, taking the data used for this study. The General Directorate of Health Information (DGIS), all data obtained, were ordered by sex and suffering secondary to Chagas disease, 3 tables and 3 charts were made, one of morbidity, one of mortality and one showing the lethality rate of this condition.

**Results:** In men, morbidity, mortality and lethality showed a great predilection for chronic causes that affect the heart secondary to Chagas disease (morbidity: 235, Mortality: 168, case fatality rate: 71 per 100 patients diagnosed). In women it is shown that the same cause in both morbidity and mortality and in the case-fatality rate, continues to have the greatest prominence and importance (morbidity: 203, mortality: 132, case-fatality rate: 65 per 100 patients diagnosed). These results only highlight the importance of this condition in deaths due to acute myocardial infarction, in addition to demonstrating the health crisis that this means in our country, highlighting the strategic errors of the Mexican health system, calling for a new direction in the integral approach of this disease (prevention, diagnosis, treatment).

**Keywords:** Chagas; Cardiopathies, Lethality, Morbidity, Mortality

### Introduction

Chagas disease is the infection produced in man and animals by the parasite: *trypanosoma cruzi*, first observed in Brazil in the year of 1909 by the Brazilian researcher Carlos Chagas and since then to date the paracyte has been found practically in all the countries of America [1,2]. It is estimated that in the American continent there are some 35,000,000 people infected and close to 100,000,000 people exposed to the infection due to living within endemic areas, which makes it a public health problem that requires great efforts, an example of this crisis. is Brazil, in this country Chagas disease is a priority problem, with heart damage being the most common of complications and sudden death being the most common form of death in young people, but they are not the only complications that can have infected people, among the complications we can find the alterations of organs such as the intestine and esophagus (mega esophagus and megacolon), in Argentina it is believed that some 10,000,000 people are exposed to contracting the infection and about 2.5 million people are infected, in Chile the number of infected people is estimated to be around 350,000; in Peru of 80,000; in Venezuela it comprises more than 4,000,000 people who are exposed to the infection [1,2]; in Mexico it is known that the states of Oaxaca, Chiapas, Jalisco, Michoacán, Guerrero, Zacatecas, Yucatán, Veracruz, Estado de México, Sonora, Nayarit and Tabasco, having a predilection for rural places, areas where poverty and lack are palpable, thus helping to understand the disinterest of pharmaceutical companies and international associations [2-4].

The numbers are alarming, the Mexican newspaper Notimex on April 24, 2014 in his note "Mal de Chagas, the silent killer of Latin America highlights that the Drugs Neglected Disease Initiative researcher, Eric Steobbaerts, said "that in Mexico there is more than a million infected and only 0.5% are treated and many of those infected are in a chronic phase without knowing it [5]. This only shows that the little or no information given to the doctors, as well as the little information given to the population, does nothing but help this problem to become a silent crisis, a murderer who lurks in the shadows for years, it is known that this disease can remain asymptomatic for

decades, generating an excessive growth of the heart due to the parasite (cardiomegaly secondary to Chagas disease), and although in its acute state it can present complications, it is very rare, as well as the acute manifestations of the infection by this parasite, which makes this disease a very dangerous disease, not only because of its nature but because of how easy it has been to ignore it for so long [6].

Adding that the available treatment only works during the trypomastigote phase, which is the pre-invasive phase of tissues, which makes the treatment only effective during the acute phase or during the destruction-invasion intervals of tissues, in addition to having important adverse effects in 40-70% of cases such as: vomiting, anorexia, memory loss, weakness, paresthesias, polyneuritis, and its administration should be in very long periods (2-3 months), despite advances in therapies seeking even with antifungals with special selection of *trypanozoma cruzi*, such as posaconazole and the combination of different drugs, the evidence is still inconclusive. [1-3,7,8] What makes the treatment deficient and its advantages questionable and this is only explained by the disinterest of the big

pharmaceutical companies in the research and production of new and better drugs, since the affected population is recognized as a population with low resources grating in extreme poverty.

In addition to the growing crisis of ignorance about the disease, it is known that in Mexico of the 39 species of triatomines that inhabit our national territory, 20 of these are naturally infected by the *trypanosoma*

**\*Corresponding author:** Navarrete Santiago JD, General Surgeon, Medical Director of the Medical Care Center, Medical Director of the Independencia Medical Clinic, Mexico, Tel: 7831135784; E-mail: [dochnava93@gmail.com](mailto:dochnava93@gmail.com)

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*cruzi*, being the natural reservoirs, the opossums and small rodents, these with a seroprevalence of between 8 - 62%, thus demonstrating that zoonosis is an important geographical contribution for this disease to spread, being the main problem that is not really known what is the magnitude of the problem in the human being [8].

The importance of this disease transcends, not only in the search for endemic American countries, in 2007 the World Health Organization presented an international program for the eradication of Chagas disease, in just 3 years, which generates a continuous conflict Although the experts in tropical diseases assure that the infection rate has been reduced from almost half a million people a year to a few 50,000, it is still a disease that represents a monumental challenge for current medicine, one of the main reasons for this. It is the permanent existence of a natural reservoir in the environment, another would be the inexistence of an economical and efficient diagnostic method, that although a great advance has been achieved, the battle is still arduous and long [9,10].

One of the main objectives of this work is to highlight the lack of information and research on the proper management of Chagas disease, there are few works that demonstrate a clinical relevance of the diagnosis of this disease, we can highlight two of them that highlight the importance of screening for this disease in Stroke, the first written by FJ Carod Artal and his team in 2003, in which they found that 81.6% of patients diagnosed with Chagas disease presented vascular risk factors, for example that cardiomyopathy was more frequent in patients with Chagas disease and stroke (45.58% vs 24.69%) as well as 38.23% of patients with stroke were diagnosed with this disease [11,12], meanwhile Leonardo C. Paixao and His team in 2009 identified that in 201 patients studied, showing an odds ratio of 7.17, compared to the odds ratio of a history of stroke or ischemic attack. transient of 6.98, thus demonstrating that Chagas disease is an independent risk factor for stroke [13].

Another relevant aspect is the transformation of the disease thanks to globalization and the movement of populations around the world, especially migration to non-endemic places of affected populations, an example of this is what is happening in Spain, at work. Joaquin Gascón and his team presented in 2007, in their work presents a guide to diagnosis, management and treatment of Chagas disease in non-endemic areas, proposing as the main cause of appearance of these diseases the movement of populations migrating from America to European countries [14], which contrasts with what was found by Morven S. Edwards in 2018, who together with his team identified neonates infected by vertical transmission, highlighting that endemic cases in the United States of America are practically nil, but the incidence of vertical transmission path is increasing due to the migration of a greater number of central populations and South American [15].

The main problem of this abandonment and ignorance is what Dr. Chagas mentioned at that time, the research and searches for information on this disease, always indicate and point to a poorly fed, vulnerable and abandoned population, embraced by a poverty that does not They chose but have to endure [16], and we can add that despite the efforts of international organizations, the great increase in the disease as a risk factor and the migration of sick populations, it remains a poorly studied disease and the development of an ideal treatment is still a long way from being possible.

## Material and Methods

The General Death Database: 1979-2013 [17] and the Hospital Discharge Database for Morbidity in Public Institutions, 2004-2013 [18], from the General Directorate of Health Information (DGIS) were used. To consult the number of deaths and morbidity related to Chagas

disease, using both databases, taking the same period of time in both databases, the period 2004-2013.

The variables studied were: sex, hospital discharges recorded in the period 2004-2013 for acute heart disease linked to Chagas disease, acute heart-related disease linked to Chagas disease, chronic heart disease linked to Chagas disease, chronic disease that affects the digestive system linked to Chagas disease, chronic disease that affects the nervous system linked to Chagas disease, chronic disease that affects other organs linked to Chagas disease.

Statistical analysis: descriptive statistics were used to determine absolute frequencies, proportions and percentages, Excel 2016 program was used to process statistical data.

Table 1 shows the number of deaths by cause, caused by Chagas disease divided by sex in the period 2004-2013, which shows the great importance and relevance of the degenerative and chronic characteristics of this disease as well as that the target organ by marked preference is the heart.

In Table 2, we see captured the numbers of male and female patients, discharged with some morbidity from Chagas disease, again as in Table 1, the chronic causes that affect the heart are the most important and present in our country.

Using these two tables, a general diagnosis of mobility and mortality from Chagas disease is made, in addition to this, a biostatistical study of the lethality rate of this disease in Mexico is carried out during the period 2004-2013.

With Table 3, we can realize that the importance of chronic disease that affects the heart, table 3 not only shows a very severe problem, it also reflects a complete error on the part of the Mexican health system, which suffers from a disability in the prevention, diagnosis and treatment of this disease.

In ascending order, the causes of death in men caused by Chagas disease are: acute that affects the heart, chronicles that affect other organs and finally and as leader of this chart, chronicles that affect the heart, on the other hand in women we realize that the most important ones are ascendingly chronic: that affects the digestive system, acute that

2004-2013	Masculine	Femenine	Total
Acute affecting the heart	6	9	15
Acute that does not affect the heart	3	1	4
Chronicle that affects the heart	168	132	300
Chronic affecting the digestive system	1	5	6
Chronic affecting the nervous system	0	0	0
Chronic affecting other organs	4	0	4
Total	182	147	329

Table 1: Deaths from Chagas disease in Mexico due to death in the period 2004-2013.

2004-2013	Masculine	Femenine	Total
Acute affecting the heart	31	15	46
Acute that does not affect the heart	19	14	33
Chronicle that affects the heart	235	203	438
Chronic affecting the digestive system	9	9	18
Chronic affecting the nervous system	5	0	5
Chronic affecting other organs	6	6	12
Total	305	247	552

Table 2: Morbidity due to Chagas disease in Mexico by cause in the period 2004-2013.

	Masculino	Femenino	Total
Acute affecting the heart	19.35	60.00	54.35
Acute that does not affect the heart	15.79	7.14	12.12
Chronicle that affects the heart	71.49	65.02	68.49
Chronic affecting the digestive system	11.11	55.56	33.33
Chronic affecting the nervous system	0.00	0.00	0.00
Chronic affecting other organs	66.67	0.00	33.33
Total	59.67	59.51	59.60

**Table 3:**Lethal Rate of Chagas disease in Mexico, by cause and sex, during the period 2004-2013.

affects the heart and lastly and demonstrating its chronic importance that affects the heart.

### Discussion and Conclusion

The fatality rates so high that this condition presents at the national level, are nothing more than the reflection of inefficient strategies or incapable of correcting the real problem from the roots, being only makeup artists, in the specific action program for the prevention and control of Chagas disease 2013-2018 proposed by the Mexican Ministry of Health in its sectoral health program, it exposes a mortality rate for Chagas disease nationwide from

0.02 to 0.03 per 100,000 inhabitants , making special emphasis in 2012 and 2013 [19], which, in contrast to what is presented here, is an error in the perspective of data perspective, by the health secretary, since when focusing on the mortality of a disease so specific and underdiagnosed and calculating it with the general motility, its importance is neglected, presenting very low levels, one of the probable solutions to this problem would be to change the focus to the case fatality rate as presented here to make a data crossing between the patients killed by chagas in 10 years and sick patients in those 10 years, this would enhance the disease and allow it to be given greater importance.

The solution is not only the correct diagnosis of this disease, nor the effective treatment, the real solution is a comprehensive work that is addressed at a preventive, diagnostic and therapeutic level.

Chronic heart disease in patients with Chagas disease is not only the most common, it is the most lethal of all, thus demonstrating that correct preventive control in these patients is not only for therapeutic purposes, but a primary and essential axis of effective and comprehensive treatment of Chagas disease

In order to bring down this crisis, it is necessary to follow a plan, first carry out a correct education of all health workers at the national and international level, so that there is a correct and early diagnosis of this disease, and thus the treatment is in time and correct form and this encourages an increase in research to improve treatment.

The main problem during the preparation of this work was the search for adequate and current bibliography, this is explained by the general lack of interest at national and international level for this disease, since for the pharmaceutical companies it does not represent an economic gain.

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