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Case Report

# Sudden Cardiac Death Due to Unrecognized Chagas Disease: A Case Report with Autopsy Findings

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**Abstract:**

Chagas disease (CD), caused by *Trypanosoma cruzi*, ranks as the third most impactful infectious tropical disease globally, surpassed only by malaria and schistosomiasis. Classified by the World Health Organization (WHO) as a neglected tropical disease, it remains endemic throughout virtually the entire Latin American subcontinent, affecting an estimated 6 to 7 million people worldwide. Its most insidious characteristic is the indeterminate phase, during which patients remain asymptomatic for years or decades. We describe a case of sudden cardiac death with no prior diagnosis of CD, in which necropsy revealed an apical left ventricular aneurysm — a pathognomonic lesion of chronic Chagasic cardiomyopathy — and we conduct a comprehensive literature review emphasizing the silent and neglected nature of the disease. A 67-year-old male patient, with no previous diagnosis of cardiac disease, was referred for medicolegal autopsy after sudden death. Necropsy revealed a heart weighing 473 g, with reduced muscle wall thickness relative to the cardiac weight and an apical left ventricular aneurysm without intracavitary thrombi. Examination of the coronary arteries showed no obstructive atherosclerosis or signs of acute myocardial infarction, excluding ischemic etiology as the primary cause of the aneurysm. The presence of apical aneurysm was pathognomonic for Chagas cardiomyopathy in this case. This case paradigmatically illustrates CD in its most silent and fatal form: decades of asymptomatic infection, followed by sudden cardiac death as the first and only recognized clinical manifestation of the disease.

**Key words:** chagas disease; trypanosoma cruzi; chagasic cardiomyopathy; sudden cardiac death; ventricular aneurysm; neglected disease

## 1.Introduction

Chagas disease (CD), also known as American trypanosomiasis, is a parasitic infection caused by the protozoan Trypanosoma cruzi, first described in 1909 by Brazilian physician Carlos Ribeiro Justiniano Chagas during one of the most remarkable discoveries in the history of tropical medicine.[1] In a single seminal work, Chagas described the etiological agent, the vector, the animal reservoir, and the clinical disease — an unprecedented achievement in the history of parasitology.[2] CD constitutes the third most globally impactful nosological entity among infectious tropical diseases, after malaria and schistosomiasis.[3] Between 6 and 7 million people are estimated to be infected by T. cruzi worldwide, with approximately 75 million at risk of infection in the Americas.[4] The WHO classifies CD among the Neglected Tropical Diseases (NTDs), a group of conditions that predominantly affects impoverished populations, with insufficient investment in research, diagnosis, and treatment.[5]

Still endemic throughout virtually the entire Latin American subcontinent, CD has, in recent decades, extrapolated its historical boundaries and is now reported in non-endemic countries of North America, Europe, Australia, and Japan, driven by the migratory flows of populations from endemic areas.[6,7] This globalization of CD represents an additional challenge to diagnosis and clinical management, as healthcare professionals in non-endemic countries are frequently unfamiliar with the disease.[8]

CD presents with a generally self-limited and oligosymptomatic acute phase, followed by a prolonged indeterminate phase — potentially lasting decades — during which patients remain asymptomatic.[9] Approximately 30 to 40% of infected individuals progress to the symptomatic chronic phase, predominantly the cardiac form, characterized by heart failure, complex ventricular arrhythmias, thromboembolic events, and sudden cardiac death.[10] Chronic Chagasic cardiomyopathy (CCC) is the most severe and prevalent manifestation of CD in its chronic phase.[11]

The silent nature of CD during the indeterminate phase, combined with the unpreparedness of health systems for its diagnosis, contributes to the disease remaining underdiagnosed and undertreated on a global scale.[12] This reality is exemplified by the case presented herein: a 67-year-old patient who progressed to sudden cardiac death without ever receiving a diagnosis of CD in life, whose necropsy findings revealed an apical left ventricular aneurysm — a pathognomonic lesion of Chagasic cardiomyopathy.

## 2. Case Presentation

A 67-year-old male patient was referred to the Death Verification Service (DVS) for clarification of the cause of death. For an autopsy to be performed in our facility, family authorization is mandatory, obtained through the signing of a consent form. This form includes a clause stating that, if the autopsy case is of scientific interest, the family authorizes publication, provided that the patient's identity is not revealed.

There were no records of a prior diagnosis of Chagas disease, heart disease, or any other relevant documented comorbidity. During necropsy, the heart was found to weigh 473 grams, with muscle walls of reduced thickness relative to what would be expected for the cardiac weight, evidencing a process of myocardial remodeling. The most significant finding was the presence of an apical aneurysm in the left ventricle (LV), without intracavitary thrombi.

Examination of the coronary arteries revealed no obstructive atherosclerosis or signs of acute myocardial infarction, excluding ischemic etiology as the primary cause of the aneurysm. No other relevant macroscopic or microscopic alterations were identified at necropsy. The totality of findings — apical LV aneurysm in the absence of significant coronary artery disease — in a patient originating from a historically CD-endemic region, was interpreted as strongly suggestive of chronic Chagasic cardiomyopathy as the cause of sudden cardiac death.

The authors state that every effort was made to follow all local and international ethical guidelines and laws that pertain to the use of human cadaveric donors in anatomical research. [13].

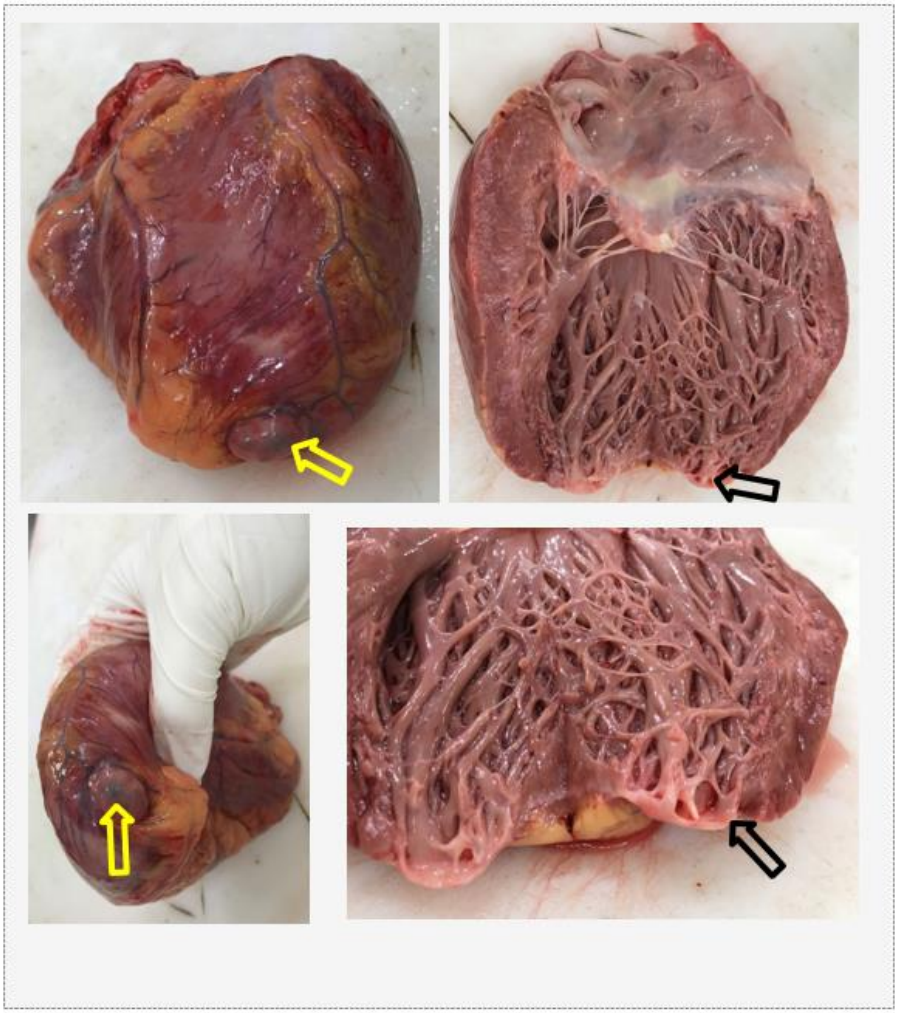

**Figure 1:** Dissected heart from autopsy, demonstrating apical left ventricular aneurysm (arrow). Note the absence of significant coronary artery disease and the thinning of the ventricular wall, characteristic of chronic Chagasic cardiomyopathy. Arrows indicate the left ventricle apex aneurysm.

## 3. Discussion

The case presented in this manuscript is emblematic of the most silent and fatal face of CD: a 67- year-old man who lived for decades with Chagasic infection without ever receiving a diagnosis, whose first and last recognized clinical manifestation was sudden cardiac death. The necropsy finding of an apical LV aneurysm in the absence of coronary artery disease is highly suggestive of CCC, reinforced by the patient's epidemiological profile.

This case is not an exception: it represents a pattern widely documented in the literature, in which Chagasic patients die from their cardiac complications without ever having received the correct diagnosis. [14,15] Sudden death as the first manifestation of CCC occurs in a non-negligible proportion of patients, especially in those who have never been investigated for CD. [14]

The apical LV aneurysm at necropsy is a lesion of cardinal diagnostic importance. Its presence, associated with the absence of significant coronary artery disease, should invariably prompt suspicion of CCC and retrospective serological investigation.[16,17] Frequently this step is not taken, resulting in reports that attribute death to 'cardiomyopathy of undetermined cause' or 'sudden cardiac death' without etiological identification — perpetuating the statistical and epidemiological invisibility of CD.[18]

The underdiagnosis of CD is structural and multifactorial: it pervades the insufficiency of health systems in endemic regions, the lack of professional training, social stigma, and the silent nature of the infection, which for decades gives no indication to either patient or physician.[12,15] To address this challenge, actions on multiple fronts are needed: expansion of access to serological diagnosis in primary care; training of professionals to include CD in the differential diagnoses of cardiomyopathies and sudden death; active screening protocols in risk populations; and strengthening of screening in blood banks and transplant programs.[19,20]

In the context of necropsy and forensic medicine, identification of an apical LV aneurysm should systematically motivate investigation of CD as cause of death, with adequate recording on death certificates. Correct etiological attribution is fundamental for the epidemiological surveillance of CD and for the real assessment of its impact on mortality.[18].

Chagas disease remains, more than 110 years after its discovery, one of the greatest challenges of tropical medicine and global public health. Its neglected nature — by governments, the pharmaceutical industry, and health systems — perpetuates a cycle of invisibility with lethal consequences for millions of people.

The case described here reflects this reality: an entire life lived with a diagnosable and partially treatable disease, ending in sudden death without the diagnosis ever having been established in life. The apical LV aneurysm found at necropsy — a characteristic and nearly pathognomonic lesion of CCC — should have been the key to diagnosis, but was only found postmortem.

## 4. Conclusion

Raising awareness of CD, investing in active and accessible diagnosis, training healthcare professionals, and strengthening epidemiological surveillance policies are urgent measures. Chagas disease can no longer continue to be a forgotten disease — by those who have it, by those who treat them, and by those who define public health priorities.

## Conflicts Of Interest

The authors declare no conflicts of interest.

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