Chronic Chagasic Cardiopathy in Amazon Region: An Etiology to Remember

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Summary

This study assessed the frequency of chronic chagasic cardiopathy (CCC) in 37 autochthonus patients from Amazon region with left ventricular systolic dysfunction of undefined etiology. Three cases were diagnosed in the studied sample, with an 8.1% frequency.

Introduction

The Amazon region has been considered a low-risk area for Chagas Disease (CD) for many years. Recently, the diagnosis of acute as much as chronic cases has been frequent in the region[1]. However, there are reports of only five chronic cases with dilated cardiomyopathy of chagasic etiology in autochthonus people from Amazon region[2,3].

There are no studies that evaluate the CD frequency in patients with dilated cardiomyopathy in Amazon region region. In other areas, CD responds for a significant portion of the cases. However, this etiology is rarely remembered among autochthonus patients from Amazon region, thus not being performed the serology for *Trypanosoma cruzi*, which may underestimate the disease diagnosis.

The objective of this study was to assess the frequency of chronic chagasic cardiopathy (CCC) in autochthonus patients from Amazon region with dilated cardiomyopathy and left ventricular systolic dysfunction of undefined etiology.

Methods

Prospective and transversal study that assessed 37 patients submitted to transthoracic echocardiogram in the period between 2007 July and December at Francisca Mendes university hospital from Amazonas, Brazil.

Key Words

Frequency, Chagas Cardiomyopathy, Amazon region.

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The Francisca Mendes hospital was chosen because it is the only high complexity reference center for cardiology registered in the Brazilian public health system (SUS, acronym in Portuguese) of Amazonas State. This service admits patients from the whole State of Amazonas and from other States of the occidental Amazon region.

Patients from both genders, older than 12 years old and with ejection fraction ≤ 45% in transthoracic echocardiogram were included in the study, as all of them were autochthonus from Amazon region.

All patients natural from Brazilian Amazonian region without having previously travelled to other regions were considered as autochthonus.

Patients with evidence for coronariopathy, arterial hypertension, valvular heart disease or congenital cardiopathies were excluded from the study.

The study was approved by the Ethics Committees of Universidade Federal do Amazonas and Fundação de Medicina Tropical do Amazonas. Patients signed the informed consent.

Serology for CD was carried out with immunoglobulin G (IgG) research by Indirect Immunofluorescence and ELISA techniques at Fundação de Medicina Tropical do Amazonas.

The Indirect Immunofluorescence was performed by means of a kit produced by Bio-Manguinhos (Fundação Oswaldo Cruz)[4] and the ELISA technique, with recombining antigen (Pathozyme Chagas®)[5].

Patients with one or two reagent methods underwent Western-Blot (TESA-BLOT)[6], and patients that presented two reagent methods were considered carriers of chagasic cardiopathy.

Results

During the study period, 2,039 transthoracic echocardiograms were carried out, and 196 patients presented ejection fraction of left ventricle (LV) ≤ 45%.

After the assessment of inclusion and exclusion criteria, 37 patients were included in the study (mean age of 62.9 years old, 81% males). Mean ejection fraction of LV was 29.4%.

Patients' naturalness was: 43.2% from the Amazonas countryside; 35.1% from Manaus municipality (AM); 13.5% from Pará; 5.4% from Maranhão and 2.7% from Acre.

Table 1 – **Data from patients with positive Chagas Disease**

Patient	Sex	Age	IIF	ELISA	TESA-BLOT	ECG	Echocardiogram
1	Masculine	69 years old	1:160	Reagent	Reagent	LVH	LVEF=28% Inferior wall akinesis Apical aneurysm
2	Masculine	49 years old	1:160	Non-reagent	Reagent	LBBB	LVEF=30% Diffuse hypokinesis
3	Masculine	61 years old	1:160	Reagent	Reagent	LVH	LVEF=30% Inferior wall akinesis

IIF - Indirect Immunofluorescence; LVH - left ventricular hypertrophy; LBBB - left bundle branch block; LVEF - left ventricular ejection fraction.

The indirect immunofluorescence was reagent in eight cases (21.6%), ELISA in two cases (5.4%) and Western-Blot in three cases (8.1%).

Three patients were diagnosed with CCC, with a frequency 8.1% in the whole studied sample.

Data from positive CCC patients are described in Table 1.

Discussion

Amazon region is considered a hypoendemic area for CD. Acute cases have been occurring in an isolate way or in outbreaks, with approximately 440 reported cases in the region. With regard to chronic cases, seropositivity rate ranges from 1 to 3%, with higher risk in certain subregions[1].

One of these subregions is Barcelos municipality, placed at the Rio Negro microregion. In this area, transmission related to piassaba fibers extraction was reported. Three investigations carried out between 1991 and 1997 and comprising 2,254 individuals from Barcelos have showed a 2.8 to 5% prevalence of confirmed positive serology by means of recombining ELISA and Western Blot[7,8].

With regard to the etiologic agent, the *T. cruzi* from zimodem 1, zimodem 3 or hybrid Z1/Z3 groups has been described. These strains are different from those found in Brazilian endemic zones, where zimodem 2 is predominant[1]. The pathogenicity of Amazon region strains are not totally known; however, it is believed that they cause a low morbidity, probably lower than the morbidity found in endemic areas[1,2].

Despite that, two fatal cases of dilated cardiomyopathy and three cases that presented echocardiographic alterations typical of CD in patients with chronic chagasic infection reported in Barcelos[2,3].

The importance of CD as a cause for dilated cardiomyopathy in Amazon region is not completely understood yet. In endemic areas, the frequency is variable, but significant. The present study, with a frequency of 8.1% among patients without defined etiology, demonstrates that the chagasic cardiopathy is an important cause for heart failure in the Amazon region.

The epidemiological history of two patients was compatible with CD. The first patient worked for three years with piassaba extraction in Barcelos municipality. The second patient lives in the Tarumã-Mirim settlement, in Manaus, and worked for 12 years at a rubber plantation in Rio Purus (Figure 1). In these three localizations, the presence of infected vectors, sylvan reservoirs and human infection cases was reported[7-10]. The third patient was from Iranduba, where there is no register of studies related to CD. It is important to emphasize that the three mentioned patients were from municipalities of the Amazonas countryside.

Conclusion

The present study suggests that CD is a significant etiology of dilated cardiomyopathy in the Amazon region, and its investigation in autochthonus patients is important. However, studies with bigger samples are necessary, as to know better the importance of CD as etiology of cardiopathies in Amazon region.

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Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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Study Association

This study is not associated with any post-graduation program.

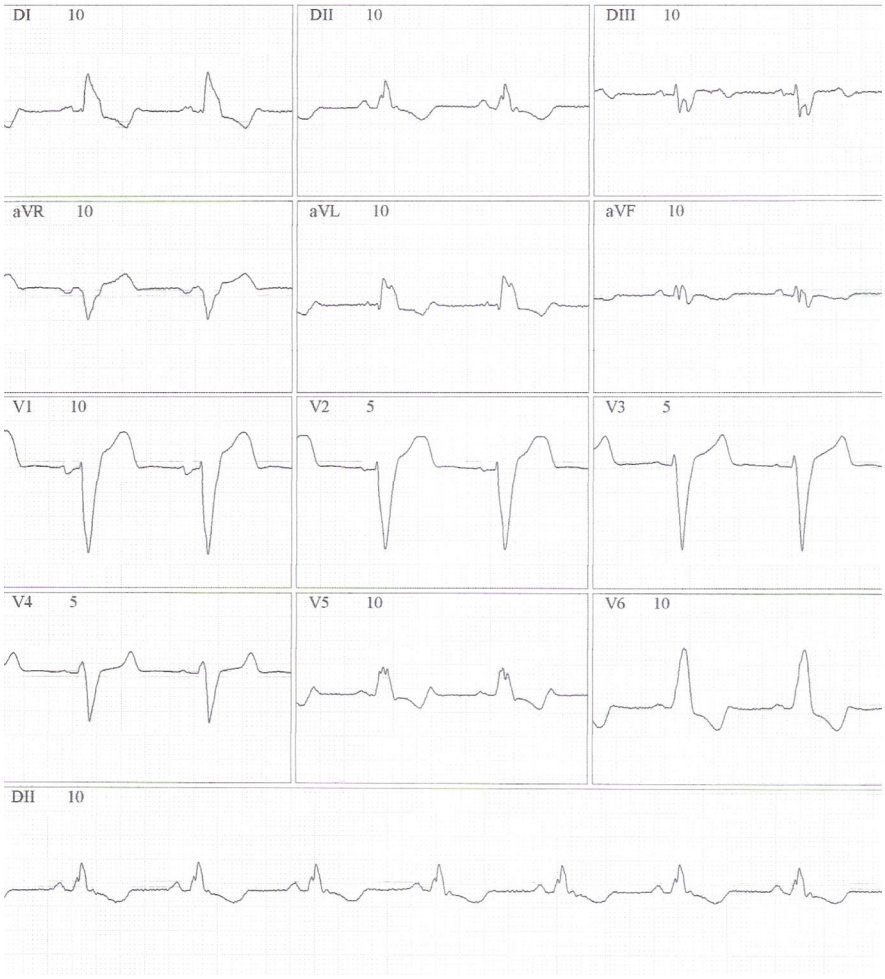

Figure 1 – Electrocardiogram of Patient 2 showing left bundle branch block pattern.

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