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Case Report of Cardiac Tamponade Due to Acute Chagas Disease after Misdiagnosis of Visceral Leishmaniasis Based on Serology

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Abstract

Protozoan diseases such as Visceral Leishmaniasis (VL) have re-emerged in Northern Brazil and cases of Chagas Disease also occur. This VL increase leads to early therapy for the public. Confirmatory parasitological diagnoses in VL are performed by bone marrow or spleen aspiration, but ELISA, IFA or immunochromatographic tests for antibody detection are easily performed and can be used in the presence of clinical signs as confirmatory for specific therapy. This approach is successful in providing therapy and prevention of death in VL, but there is a chance of confusion with the emerging disease, Chagas Disease (CD), due to cross-reacting and similar clinical pictures, as in this case. Both VL and CD presented many asymptomatic or oligosymptomatic cases, complicating the picture. Our case report emphasizes these aspects. Positive serology, with an IIF titer of 1/160, and epidemiological correlation, suggests the diagnosis of VL and imposes antimony therapy. Despite the unfavorable evolution and signs of cardiac involvement, the presence of pericarditis and cardiac tamponade confirmed by the echocardiogram suggests CD. We reassessed the profiles of a suggested CD serology, the diagnosis was corrected and treatment with CD specific benznidazole. The good evolution started with benznidazole corroborates the diagnosis of CD and discards the hypothesis of double infection.

Keywords

Heart, Cardiac Tamponade, Trypanosomiasis Acute, Serology

1. Introduction

Chagas Disease (CD) and Visceral Leishmaniasis (VL) are caused by protozoan parasites of closely related genera [1], with similar antigens. Epidemiology of those diseases in the Brazilian Amazon has undergone significant changes in the last 30 years [2], and exists in areas with occurrence both [3].

Despite adequate control and vectorial CD transmission elimination [4], both are reemerging in Northern Brazil; CD due to alternative forms of transmission, such as oral transmission [5] and VL due to spread of the VL reservoir and vector control problems [6].

The early stages of both diseases presented similar involvement of reticuloendothelial organs, such as spleen and liver, presenting similar inconclusive or absent symptoms in most patients. The clinical picture of these acute diseases is similar, but cardiac involvement is rare in VL [7]. In the acute phase, there is prolonged fever, accompanied by systemic manifestations, such as hepatosplenomegaly, and diffuse myocarditis and acute serous pericarditis may occur, evolving in 48% of patients with pericardial effusion, but cardiac tamponade (CT) is a medical emergency, not frequent and can lead to shock and death [8]. Diagnosis must be the finding of the agents: in blood for CD or in organs aspirates in VL. Those assays demand trained observers.

In our case, the patient was diagnosed with leishmaniasis by serology, with presented cardiac toxicity and demands surveillance with cardiac tests. During those tests, it was detected pericardial effusion and cardiac tamponade. The tamponade was treated adequately by pericardiocentesis with inflammatory pattern.

We emphasize the importance of the differential diagnosis of acute CD in patients suspected of VL in Northern Brazil, endemic areas of leishmaniasis and CD. This warning must be included in VL diagnosis algorithm, reinforcing the diagnosis of other important regional pathologies.

2. Case Report

A 32-year-old man from Santa Tereza—TO, after contact with insect secretions on the ocular mucosa, presented periorbital edema, with fever, lasting approximately 18 days, concomitant with diarrhea and palpitation, being treated with antipyretic and analgesics. Epidemiology was not valued at the time. After approximately 40 days, he developed diffuse adenomegaly, hepatosplenomegaly, lower limb edema and dyspnea, being hospitalized for investigation of the febrile syndrome, with different serologies being performed. Parasitological exams (malaria and CD thick blood smear) and serology for CD (IHA, IIF) and several serologies were performed, with only indirect immunofluorescence for VL being positive (**Table 1**). Treatment with glucan time was started for eight days, at a dose of 20 mg/kg/day.

During hospitalization, he evolved with signs suggestive of cardiac tamponade (CT), confirmed by the echocardiogram that showed CT (**Figure 1**). Transferred

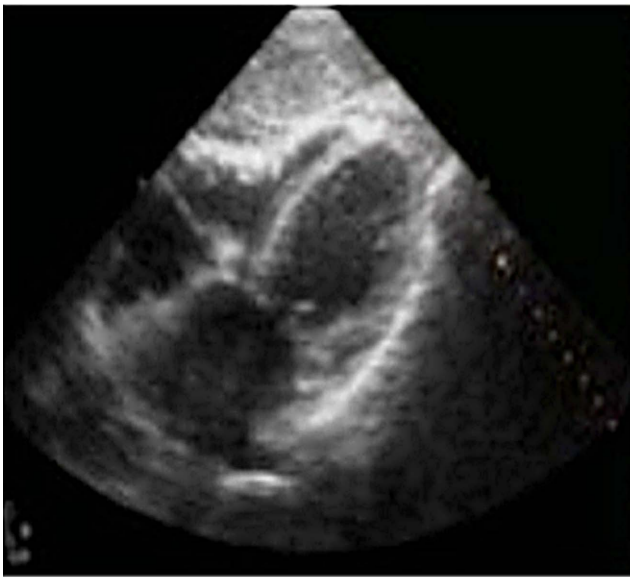

Figure 1. Echocardiogram performed that showed cardiac tamponade.

Table 1. Table of serologies performed in September 2016.

DATE	SEROLOGY	RESULT
2016/09/01	Leishmaniasis	IIF 1/160
	Thick drop Chagas	Negative
	Thick drop Malaria	Negative
	Brucellosis	Negative
	AFB	Negative
	Chagas disease (IHA, IIF)	Negative
	AFB	Negative
	Chagas disease (IHA, IIF)	Negative
2016/09/07	HIV	Negative
2016/09/12	Leishmaniasis rapid test	Negative
	Leishmaniasis	IIF 1/160
2016/09/16	Chagas disease	IIF 1/160 Positive

Note: AFB: Acid-Fast Bacillus; IHA: Indirect Hemagglutination; IIF: Indirect Immunofluorescence; HIV: Human Immunodeficiency Virus.

to the referral hospital, where serologies were repeated, and seroconversion to Chagas Disease (IFI) was evidenced, and the history of contact with triatomine secretion was obtained as patient reports having killed an insect and having contact with the secretion with his eye, without other ocular signs after this. Chest radiography showed an increase in cardiac silhouette (**Figure 2**). The electrocardiogram showed low-voltage QRS complexes, the presence of electrical alternation (**Figure 3**).

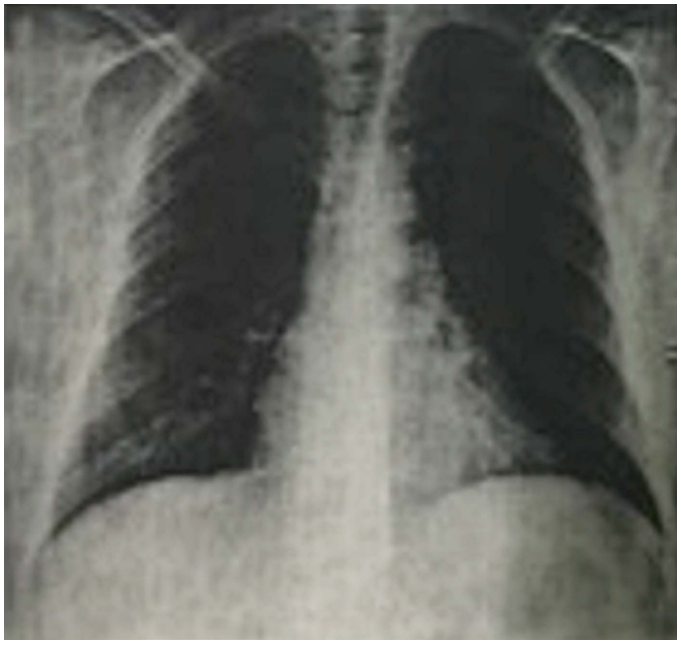

Figure 2. Chest radiography showed an increase in cardiac silhouette.

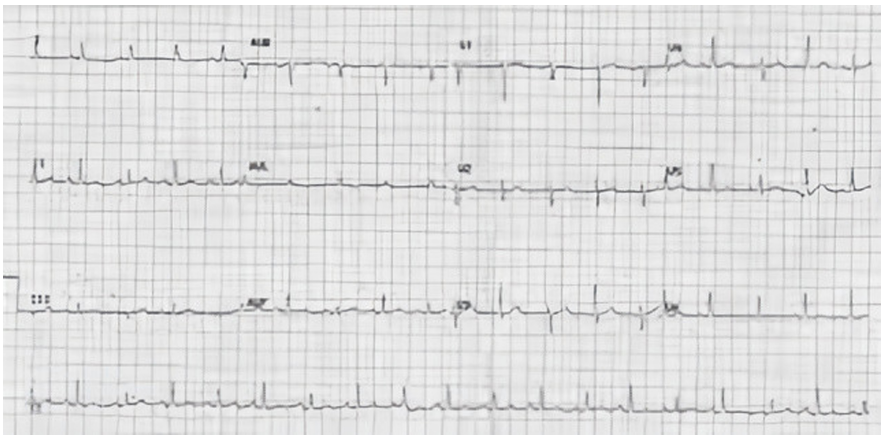

Figure 3. Electrocardiogram performed at suspicion of CD. Note the low amplitude voltage presented in most leads, including signs of electric alternate at the longer D2 lead at lower EKG string.

Relief pericardiocentesis was performed and pericardial fluid analysis show low level lymphocytosis, and absence of microorganisms in a perfusate profile. He started using benznidazole 100 mg orally 3× a day, 09/17/16, as recommended by the Chagas Disease Consensus 2015 6 until completing 60 days, according to the Chagas Disease guidelines. The serological follow-up showed negative serology in six months and the echocardiogram evolved with normalization patterns (**Table 2**).

Patient evolved asymptomatic, being referred to specific treatment at an outpatient level at the end of benznidazole therapy. Serological and echocardiographic follow-up showed negative serology in six months and the echocardiogram evolved with normalization patterns.

Table 2. Echocardiographic evolution of the heart of the patient in a descriptive table, showing also most of the measures taken for each cardiac area. There is no additional pericardial effusion after benznidazole therapy.

Date	2016/09/15	2016/09/17	2016/11/22
Interventricular septum	13	15	11
Posterior wall	13	14	10
Aortic diameter	36	35	32
Left atrial diameter	45	41	43
Left ventricular diastolic diameter	52	44	55
Left ventricular systolic diameter	34	28	26
Ejection fraction	63	66	83
Obs	Mitral flow with high variability suggesting cardiac tamponade diastolic restriction; Right ventricular collapse	No pericardial effusion	No pericardial effusion
Conclusion	Moderate left ventricular hyper-trophy cardiac tamponade	Moderate left ventricular hypertrophy	Normal

3. Discussion

Protozoan diseases such as VL have reemerged in Northern Brazil and sporadic cluster of CD also occurs. This upsurge of VL cases led to the therapy algorithms by public authorities to facilitate the diagnosis and promote early therapy.

Parasitological diagnoses in VL are performed by bone marrow or risky spleen aspiration. ELISA, IFA or immunochromatographic tests for antibody detection are easily performed and could be used in the presence of clinical signs as confirmatory tests for specific therapy. This approach is successful in providing early therapy and death prevention in VL [9], but there is a chance that another emergent disease, Chagas Disease past sporadic cases remains undiscovered, due to similar serology and clinical pictures [10]. Both VL and DC presented many asymptomatic or oligo symptomatic patients complicating the picture [4]. Meglumine antimoniate is the available therapy for VL nut those antimoniate also could cause cardiotoxicity in a heart already affected by an intense inflammatory process induced by CD, leading to the stormy clinical course.

The recommendation of the Ministry of Health regarding immediate therapy after isolated serology is a problem in areas where Chagas disease and leishmaniasis co-exist. The regional algorithm for febrile syndromes should be expanded, avoiding delays in starting treatment and putting the patient at risk.

The presence of discreet pericardial effusion is frequent in the initial phase of VL (78%), but there is no report of tamponade [11].

Pericardial effusion and tamponade have already been described in CD [7], but not due to diagnostic confusion, where the use of antimony may have corroborated the cardiac damage, complicating its evolution.

Our case report emphasizes those aspects. The positive serology for VL, with an IFA titer of 1/160, and signs and clinical and epidemiological correlation, suggests the diagnosis of VL and imposes antimony therapy. Despite an unfavorable evolution and signs of cardiac involvement, the epidemiology, the presence of pericarditis and cardiac tamponade and seroconversion to Chagas Disease (IIF) suggest CD. We rechecked serology and the antibody profiles now suggested CD, the diagnosis was corrected and treatment with benznidazole 100 mg orally 3× day was started [4]. A satisfactory evolution with benznidazole corroborated the diagnosis of CD and discarded the hypothesis of double infection.

4. Conclusions

The study aims to alert the medical community to the early suspicion of differential diagnoses. The high frequency of febrile syndrome in ACD reinforces the importance of a correct differential diagnosis with other endemic diseases prevalent in the region, which are often neglected due to lack of clinical suspicion, generating an underestimation of the patient's epidemiology and symptoms. delaying diagnosis and specific treatment, which can lead to complications such as in this case.

The clinical case presented was interesting due to the evolution of ACD to tamponade, in a patient who had contact with the secretion of a contaminated triatomine, evolving with CT and considering that no reference was found in the literature consulted to another similar case and was treated with antimony due to false positive for visceral leishmaniasis in their serology.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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