

Trypanosoma cruzi prevalence and clinical forms in blood donor candidates in Brazil

Prevalência e formas clínicas de *Trypanosoma cruzi* em candidatos a doadores de sangue no Brasil

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Keywords

Blood donors. *Trypanosoma cruzi*. Chagas disease, diagnosis. Prevalence. Serological tests.

Descritores

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Abstract

The prevalence and clinical forms of *Trypanosoma cruzi* were evaluated among blood donor candidates attended at a general hospital in Rio de Janeiro, Brazil, from January 1997 to April 1999. The investigation was done by means of the indirect hemagglutination test and was confirmed via ELISA. Data were collected from clinical examinations, conventional electrocardiogram, chest radiography and echocardiography. The results showed that despite *Trypanosoma cruzi* prevalence of 1.17% (128 patients), mainly in males aged 40 years or over, 70.8% of these patients, mainly males aged 19 to 39 years, demonstrated abnormalities that allowed the diagnosis of cardiopathy and/or esophagopathy. This once again corroborates the importance of *Trypanosoma cruzi* infection in urban centers.

Resumo

A prevalência e a manifestação das formas clínicas de *Trypanosoma cruzi* foram avaliadas em candidatos a doadores de sangue atendidos em um hospital geral de Nova Iguaçu, Rio de Janeiro, Brasil, no período de janeiro de 1997 a abril de 1999. A pesquisa sorológica foi realizada por meio do teste de hemaglutinação indireta e confirmada pelo ELISA. Os dados foram coletados considerando os exames clínicos, eletrocardiograma convencional, radiografia de tórax e ecocardiografia. Os resultados demonstraram que, apesar da prevalência ser de 1,17% (128 pacientes), principalmente entre homens com idade igual ou superior a 40 anos, 70,8%, principalmente de homens entre 19 e 39 anos, demonstraram alterações que permitiram o diagnóstico de cardiopatias e/ou esofagopatias, ratificando mais uma vez sua importância nos centros urbanos.

INTRODUCTION

Chagas disease is a tissue and hematological infection caused by *Trypanosoma cruzi* and transmitted by a hematophagous insect of the Triatominae subfamily. It was traditionally considered to be a rural problem, but it is today undergoing epidemio-

logical modification due to the intense rural exodus that has been taking place. An urban problem is thus arising because of the possibility of parenteral transmission. The clinical-pathological evolution of the disease is divided into two phases: an acute but usually benign phase of short evolution, with parasites in the tissues and blood; and the chronic prob-

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lem (undetermined form), with the presence of a few parasites and, usually, long evolution. Diagnosis of the clinical form, by means of the evaluation of clinical and complementary examinations, allows the risk of complications and need for specific treatment to be stratified.

There is little information on the different aspects of Chagas disease in the region of the lowlands of the State of Rio de Janeiro (the *Baixada Fluminense*). The objective of the present study was therefore to investigate the prevalence of this disease so that preventive measures may be developed.

METHODS

The survey was carried out in a general hospital located in Nova Iguaçu, Rio de Janeiro, Brazil. The patients for the study were selected from among 10,890 blood donor registered between May 1999 and February 2000. Their diagnoses of *Trypanosoma cruzi* infection were made using indirect hemagglutination and soon afterwards were confirmed via ELISA. The data were collected by the first author (cardiologist physician) by means of clinical examinations based on anamnesis and physical examinations and diagnostic tests. Conventional electrocardiogram was performed using the 12 standard derivations, with the patients resting.^{1,*} Chest radiography (posterior-anterior and left profile) was done with a differentiated esophagus, using 80 to 120 ml of Celobar. The identification of cardiomegaly was done by means of the cardiothoracic index (>0.5) and esophagopathy by means of the interpretation and classification criteria indicated by Rezende et al⁶). Unidimensional and bidimensional echocardiography were performed using Doppler and flow color mapping^{2,**} and a multi-frequency transducer (2.5–3.5 MHz), with special attention to the detailed evaluation of the dynamic contractile of the different myocardial segments.⁵ The statistical analysis was

done by means of the chi-squared test ($p < 0.05$) using the BioEstat 2.0 software.¹

RESULTS

The results demonstrated *Trypanosoma cruzi* prevalence of 1.2%, thus indicating that 128 of the examined patients were seropositive for the parasite. However, only 48 of these individuals participated in the study (41 men and 7 women). On the basis of this sample, the highest frequency of cases was observed among male patients aged 40 years or over. 70.8% of the participating patients presented abnormalities in the heart and esophagus: these were mainly male individuals aged 19 to 39 years ($p < 0.05$) (Table). The results also showed that the symptoms and abnormalities observed in the physical examination and the clinical forms were more frequent among older patients.

DISCUSSION

The prevalence results found suggest that the factors that have drawn the attention of researchers and shown the need for investigations in relation to blood banks are still present. The samples evaluated and the tests used were able to bring out divergent results. The results also show that there is potential for underestimating the number of cases. According to Dias,⁴ this is a situation that can be observed in the southeastern region of Brazil because of the high convergence of families coming from the endemic areas for Chagas disease. The 70.8% of cases that demonstrated abnormalities in the heart and esophagus indicates a higher frequency than what has been found in the southern region.^{2,3} The manifestation of these forms indicates the chronic evolution of the problem, suggesting that it is more common among older individuals. This therefore once again corroborates its importance with regard to the possibility of infection and losses in labor production in the urban centers.

Table - Profile of the individuals who were blood donor candidates and seropositive for *Trypanosoma cruzi*, attended at the Nova Iguaçu General Hospital, Rio de Janeiro, Brazil, from May 1999 to February 2000.

Age Ranges	Symptoms and abnormalities in the physical examination							Clinical forms (%)			
	Frequency of cases (positive/evaluated)	Sex*	Symptom (%)	Physical examination (%)	ECG (%)	ECHO (%)	X-ray (%)	Frequency of abnormalities	Heart	Esophagus	Mixed
19-39	79/22	19M/3F	18	18	13	8	4	24	4	1	0
40-61	49/26	22M/4F	29	21	21	24	10	24	8	4	3

*Significant difference (chi-squared test; $p < 0.05$)

*ECG 5 model, FUMBEC.

**Challenger 7000 model, ESAOTE BIOMÉDICA.

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