

AUTOCHTHONOUS ACUTE CHAGAS' DISEASE IN SÃO PAULO STATE, BRAZIL: EPIDEMIOLOGICAL ASPECTS

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SUMMARY

Since the beginning of the seventies the natural transmission of Chagas' infection has been considered to be under control in the State of São Paulo and not even a case of American Trypanosomiasis, transmitted by triatomine bugs, has been detected by the epidemiological surveillance system. This situation justifies the report of a case of acute Chagas' disease that occurred in a forest area considered free of domiciliary triatomines along the Southern seacoast of São Paulo State.

In May, 1995 the presence of trypomastigote forms of *Trypanosoma cruzi* had been diagnosed in a retired 57 year-old male patient, born and living in Santos (São Paulo State), complaining of fever, fatigue and malaise. The patient reported that 40 days before he had participated with 17 friends in a 7-day excursion in a forest area of the municipalities of Itanhaém and Peruíbe. During this period the group had been lodged in three houses located within the forest. Eight days after the end of the excursion the patient began to have fever, malaise and fatigue. During the next 31 days he had received medical care both as an inpatient and an outpatient, without any significant improvement. After the detection of *T. cruzi* trypomastigotes in his blood stream the patient began to be treated with benzonidazole in a hospital but died 8 days after the beginning of treatment.

The epidemiological investigation carried out showed no signs of the presence of triatomine bugs in the three houses where the group had been lodged, or any indication of Chagas' infection in other excursionists.

KEYWORDS: American Trypanosomiasis; *Trypanosoma cruzi*; Epidemiology; Acute Chagas' disease.

INTRODUCTION

During the early fifties, when efforts to control Chagas' disease were started in the State of São Paulo, intradomiciliary triatomine bugs (principally *Triatoma infestans*) were found in 62.6% of the municipalities¹. On that occasion, a serological survey carried out in 65 São Paulo municipalities in order to determine the prevalence of Chagas' infection showed a rate of 20%⁶. Ten years later a wider survey detected a prevalence of 9.3%².

In spite of improved control, 223 municipalities in São Paulo State were still infested with intradomiciliary triatomines in 1968. However, in 1976, only 25 municipalities showed the presence of *T. infestans* in their dwellings, with a marked and significant decrease in the density rate of intradomiciliary infestation^{3,4}.

Serological surveys for Chagas' infection carried out among elementary schoolchildren of rural and periurban schools in São

Paulo State from 1973 to 1983 showed the absence of positive results in this group. At the same time, entomologic surveys revealed a total absence of *T. infestans* infestation in São Paulo State, indicating the interruption of Chagas' disease transmission through triatomines⁴.

Since then not even one acute case of Chagas' infection, originated by triatomine transmission, was detected by the epidemiological surveillance system in the State of São Paulo. Only some cases originated by blood transfusion had been reported during the 1980 decade, when the control of hemotherapy was not yet improved in the State of São Paulo^{5,8,9,10}. Thus, it seems worthwhile to report a case of acute Chagas' infection, with lethal evolution, that occurred in the Southern seacoast forest of São Paulo State, in the region of the municipalities of Itanhaém and Peruíbe.

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CASE REPORT

A 57-year-old male retired patient born and living in Santos (São Paulo State) reported the occurrence of fever, malaise and fatigue beginning 8 days after an excursion (from April 4 to April 10, 1995) in a forest area along the Southern litoral of São Paulo State, comprising the municipalities of Itanhaém (Jardim Gaivotas) and Peruíbe (São Francisco and Barra do Una). During the excursion the patient and 17 friends had been lodged in three houses, usually abandoned, located within rural area. The patient and his friends admitted to be adepts of ecological trips and wanderings.

The patient looked for medical care 2 and 5 days after the symptoms had begun and antibiotics were prescribed on both occasions. Nine days after the onset of the disease, since no improvement had been obtained, the patient was hospitalized for 10 days. On that occasion the patient was pyretic, dehydrated, toxemic and showed liver and spleen enlargement. After a chest X-ray and a thoracic CT, a tentative diagnosis of pneumonia and pleurisy was made.

The patient was treated with antipyretics and antibiotics. A slight improvement was obtained and, after 10 days, the patient was discharged from hospital. During hospitalization the patient was submitted to culture of the feces and to blood examination for hemoparasites, with negative results in both cases.

Three days after discharge from the hospital, since the patient was still feverish and toxemic, another physician was sent for. Among several other tests (Widal, mononucleosis and cryoagglutinins tests, besides LE cells search) a blood search for hemoparasites carried out in the laboratory of São Vicente Regional Service of the Superintendência de Controle de Endemias (SUCEN) was found to be positive to *T. cruzi* trypomastigote forms. On that occasion anti IgM-*T. cruzi* antibody test (immunofluorescence test) performed by the Immunoepidemiology Laboratory of SUCEN yielded positive results at the 1:128 dilution.

A *T. cruzi* strain was isolated using LLC-MK2 cells and named BS-IMT. For strain isolation the patient was bled and his blood with an anticoagulant was centrifuged at 2,500 rpm for 10 minutes at 4° C. The leucocyte cream obtained was then inoculated into LLC-MK2 cells maintained in RPMI-1640 culture medium enriched with 2% fetal calf serum in a 5% CO₂ atmosphere at 37° C. The culture medium was changed weekly and, after 30 days, trypomastigote forms of *T. cruzi* were detected in the supernatant. The isolate trypomastigote forms have been maintained by cryopreservation at the IMT laboratory. In SUCEN's Laboratory of Flagellate Protozoans the isolated *T. cruzi* strain was inoculated in mice resulting in highly pathogenic effects (personnal communication of Dr. Vera Lúcia Rodrigues).

After the diagnosis of acute American Trypanosomiasis the patient was hospitalized again and submitted to treatment with benzonidazole. However, he died 8 days later.

The patient and his friends denied hunting activities or handling wild animals during their forest excursion, as well as, the finding of triatomine-like insects in the houses where they had been lodged. The patient was registered as a blood donor and had shown a negative blood test for HIV and Chagas' infection on the occasion of his last donation in March 1994. From that time to the onset of symptoms the patient denied having been submitted to either surgical interventions or blood transfusions.

None of the patient's excursion companions had any clinical symptoms and their blood tests for *T. cruzi* infection (search for hemoparasites and for IgM and IgG antibodies by immunofluorescence) were negative.

The three houses utilized as lodging during the excursion were brick buildings but had some small fissures and broken windows and doors. Although located in rural areas the houses had electrical installations. Neither domestic nor synantropic animals were noticed in the peridomestic space of the houses. Entomologic surveys carried out by the SUCEN staff in the houses yielded negative results for the presence of triatomines, both in the internal and external domiciliary space. The same results were obtained in the forest surrounding the houses.

COMMENTS

In the rural and forest areas of the municipalities located along the Northern and Southern seacoast of São Paulo State, as well as the Ribeira river valley and the region known as Baixada Santista, several species of wild mammals can be found often naturally infected with *T. cruzi*. In these areas there are also wild triatomine species responsible for the maintenance of the sylvatic *T. cruzi* cycle.

Domiciliary invasion by adult wild triatomines is occasionally observed in these areas, especially in houses located in the neighbourhood or inside the forest and some of these triatomines could be infected with *T. cruzi*. However, there were no signs of actual domiciliation by triatomines in the several entomological surveys during which invasive wild triatomines had been captured⁷.

Since the beginning of the 1980 decade the regions of Ribeira river valley and the Baixada Santista had been included in the epidemiological surveillance area for Chagas' disease in the State of São Paulo. The main strategy adopted in these regions was set in the improvement of a system for triatomine notification enrolling the local community, rural school teachers and students and the staff of local health units, besides SUCEN's technicians. Each triatomine notification has to be investigated by SUCEN's technicians by means of domiciliary entomological survey for detecting the possible presence of intra-domiciliary triatomines. All people living in houses where *T. cruzi* infected triatomines have been found are mandatorily submitted to serological tests for Chagas' infection⁷.

In 1994, 218 specimens of triatomines had been captured by dwellers, inside and outside their homes, in the municipalities located in the Ribeira river valley and Baixada Santista and had

TABLE I

Specimens of triatomines examined for *Trypanosoma cruzi* infection in the municipalities of Itanhaém and Peruíbe, São Paulo State, from 1985 to 1995 *

Municipalities	<i>P. megistus</i>		<i>T. tibiamaculata</i>		<i>R. domesticus</i>	
	Exam.	Infected	Exam.	Infected	Exam.	Infected
Itanhaém	-	-	3	1	-	-
Peruíbe	15	1	33	7	1	-
TOTAL	15	1	36	8	1	-

Source: SUCEN

* Last evaluation performed in March 18, 1995.

been sent to SUCEN laboratories for identification. Twenty-seven (12.38%) of them showed natural infection by *T. cruzi*. During the period from January 1985 to March 1995 (Table I) 57 specimens for triatomines were captured in the municipalities of Itanhaém and Peruíbe; 52 were examined and 9 (17.31%) showed *T. cruzi* infection. Among the settlements visited by the patient and his friends the presence of triatomines was recorded, in this period, only in those belonging to the municipality of Peruíbe. So, in Barra do Una 5 specimens of *Triatoma tibiamaculata*, without infection by *T. cruzi*, and 1 specimen of *Panstrongylus megistus*, arboring *T. cruzi* trypomastigote forms were recorded. Entomological surveys carried out by SUCEN to investigate domiciliary triatomine invasion and colonization yielded negative results.

In the houses where adult triatomines were found entomological surveys were carried out and all dwellers were tested for anti-*T. cruzi* antibodies. All blood tests were negative except one involving a migrant who had recently arrived from an endemic area for Chagas' disease in Minas Gerais State.

The occurrence of an acute episode of Chagas' infection in São Paulo State, where the presence of domiciliated triatomines had already been controlled, indicates the need for continued alert on the part of the epidemiologic surveillance system and is a reminder that Chagas' infection should be automatically suspected in cases of patients presenting fever of unknown origin who have had contact with sylvatic ecosystems.

RESUMO

Doença de Chagas aguda no Estado de São Paulo: aspectos epidemiológicos

Desde o início da década de 70 a transmissão natural da infecção chagásica é considerada sob controle e as ações de vigilância epidemiológica desde então desenvolvidas não têm detectado ocorrência de novos casos de tripanosomíase americana, transmitidos por triatomíneos, no Estado de São Paulo. Este fato justifica o relato de ocorrência de caso agudo de doença de Chagas, em área típica de Mata Atlântica, considerada indene de triatomíneos domiciliados.

Em maio de 1995 foi diagnosticada a presença de formas tripomastigotas de *Trypanosoma cruzi* em paciente com 57

anos, sexo masculino, aposentado, residente e natural do município de Santos, na vigência de quadro clínico caracterizado por febre, mal estar e fadiga. O paciente relatou que cerca de 40 dias antes participara de passeio, com outros 17 companheiros, por área silvestre dos municípios de Itanhaém e Peruíbe, com duração de 7 dias. Durante esse período pernitoou em três diferentes habitações de ocupação temporária. Oito dias após o término do passeio passou a apresentar febre, mal estar e fadiga. Permaneceu 31 dias após o início dos sintomas sendo orientado sob várias hipóteses diagnósticas, com atendimento ambulatorial e hospitalar. Após confirmação diagnóstica de infecção chagásica foi novamente internado, vindo a falecer no oitavo dia após a introdução de tratamento com benzonidazol.

A investigação epidemiológica efetuada não revelou a presença de triatomíneos domiciliados nas três residências utilizadas pelo grupo de excursionistas nem a presença de anticorpos anti-*T. cruzi* ou de formas tripomastigotas nos demais participantes do passeio.

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Recebido para publicação em 20/06/1996
Aceito para publicação em 11/06/1997