Epidemiologic aspects of pregnant women with Chagas disease
ASPECTOS EPIDEMIOLÓGICOS DE GESTANTES CON ENFERMEDAD DE CHAGAS
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ABSTRACT
Objective: to characterize the epidemiological aspects of women with Chagas disease. Method: this is a descriptive, transversal, study conducted from March 2007 to April 2008, with the application of a form to 32 patients in Campo Grande, Mato Grosso do Sul, Brazil. Data were analyzed through descriptive statistics, under the form of table and figure, using the software Statistical Package for the Social Sciences (SPSS), version 13.0. The significance level was 0.05. The research was approved by the Ethics Committee of Universidade Federal de Mato Grosso do Sul (UFMS), under the Protocol 883/2007. Results: the incidence rate was 0.9 per 1,000 pregnant women; there was a predominance of low education, housewives, and white colored people. At birth, they lived in the countryside of Mato Grosso do Sul or in other towns in endemic states, at wooden houses. Conclusion: there was a correlation between low education and Chagas disease. Changes in the electrocardiogram, echocardiogram, and chest x-ray have a significant value in the initial assessment, even in asymptomatic patients. Descriptors: Chagas Disease; Women’s Health; Epidemiological Surveillance; Trypanosoma Cruzi; Prenatal Care.

RESUMO
Objetivo: caracterizar os aspectos epidemiológicos de mulheres com doença de Chagas. Método: trata-se de um estudo descritivo, transversal, realizado de março de 2007 a abril de 2008, com a aplicação de um formulário a 32 pacientes em Campo Grande-MS. Os dados foram analisados por meio da estatística descritiva, sob a forma de tabela e figura, com uso do programa Statistical Package for the Social Sciences (SPSS), versão 13.0. O nível de significância foi de 0,05. A pesquisa foi aprovada pelo Comitê de Ética da Universidade Federal de Mato Grosso do Sul (UFMS), sob o Protocolo n. 883/2007. Resultados: a taxa de incidência foi de 0,9 para cada 1.000 gestantes; houve predomínio de baixa escolaridade, de trabalhadoras do lar e de cor branca. Ao nascimento residiam no interior de Mato Grosso do Sul ou em outras cidades de estados endêmicos, em casas de madeira. Conclusão: houve correlação entre baixa escolaridade e doença de Chagas. Alterações do eletrocardiograma, ecocardiograma e radiografia de tórax têm valor significativo na avaliação inicial, mesmo em pacientes assintomáticas. Descriptors: Doença de Chagas; Saúde da Mulher; Vigilância Epidemiológica; Trypanosoma Cruzi; Cuidado Pré-Natal.

RESUMEN
Objetivo: caracterizar los aspectos epidemiológicos de mujeres con enfermedad de Chagas. Método: esto es un estudio descriptivo, transversal, realizado de marzo de 2007 a abril de 2008, con aplicación de un formulario a 32 pacientes en Campo Grande, Mato Grosso del Sul, Brasil. Los datos fueron analizados por medio de la estadística descriptiva, bajo la forma de tabla y figura, con utilización del programa Statistical Package for the Social Sciences (SPSS), versión 13.0. El nivel de significación fue de 0.05. La investigación fue aprobada por el Comité de Ética de la Universidad Federal de Mato Grosso del Sul (UFMS), bajo el Protocolo 883/2007. Resultados: la tasa de incidencia fue de 0,9 por cada 1.000 mujeres embarazadas; hubo predominio de bajo nivel de educación, de trabajadoras del hogar y del color blanco. Al nacer residían en el interior de Mato Grosso del Sul o en otras ciudades de estados endémicos, en casas de madera. Conclusión: hubo correlación entre baja educación y enfermedad de Chagas. Cambios en el electrocardiograma, ecocardiograma y radiografía de tórax tienen valor significativo en la evaluación inicial, incluso en pacientes asintomáticas. Descriptores: Enfermedad de Chagas; Salud de la Mujer; Vigilancia Epidemiológica; Trypanosoma Cruzi; Atención Prenatal.
INTRODUCTION

Chagas disease (CD) is one of the most severe parasitic diseases in Latin America, however, with social and economic impacts not as important as the combined effects of other parasitic diseases, such as malaria, leishmaniasis, and schistosomiasis. Serological data indicate that more than 16 million people are infected with the etiologic agent, Trypanosoma cruzi, with an additional of 100 million people regarded as being at risk.1,2

In order to expand the systematized knowledge on DC in Mato Grosso do Sul, a study evaluated the epidemiological, clinical, and parasitological aspects of chronic DC in 120 patients at the University Hospital of Universidade Federal de Mato Grosso do Sul (UFMS) and it found a predominance of allochthons with low education and reference to prior contact to triatomines among the chagasic patients. The group under study also indicated that Chagas disease presents clinical and parasitological features with regional peculiarities.3

Another study evaluated the frequency of syphilis infections, rubella, hepatitis B, hepatitis C, toxoplasmosis, DC, HTLV I/II, herpes simplex, HIV-1, and cytomegalovirus in pregnant women and it related the women’s age group to the frequency of infections in pregnant women screened in the protection program for pregnant women in the state of Mato Grosso do Sul.4

With tighter control of transmission by blood transfusion and vectorial transmission, transplacental transmission has taken a stronger position. Through a cross-sectional study which analyzed 95 medical records that matched the total number of patients with diagnosed Chagas disease treated at the University Hospital of Maringa (UHM) within the period from May 1998 to May 2003. Using a questionnaire, data were collected with regard to age, sex, birth, origin, family history of Chagas disease, type of care (outpatient or inpatient), and probable transmission mechanism. It obtained as a result the positive family history in 68.9% of medical records and 53.3% of them reported the presence of triatomines at home.5

In this context, due to the high rates of CD diagnosis in the state of Mato Grosso do Sul and specific features of this disease pointed out in previous studies, there’s a need to advance in researches on the subject, in order to clarify important points for the control and reduction of cases. Therefore, in face of the disease’s relevance, this study aims to characterize the epidemiological aspects of women with CD.

METHOD

Paper developed from the dissertation Clinical and epidemiological aspects of women with Chagas disease in Campo Grande, Mato Grosso do Sul, Brazil, presented to the Graduate Program in Health and Development in the Central-West Region of Dr. Hélio Mandetta School of Medicine of Universidade Federal de Mato Grosso do Sul. Campo Grande-MS, Brazil. 2008.

This is a quantitative, cross-sectional, study carried out within the period from March 2007 to April 2008, with a survey of female patients assisted at the outpatient ward of the Center of Infectious and Parasitic Diseases (CEDIP) of Campo Grande, Mato Grosso do Sul, Brazil, and with confirmed diagnosis of CD. One included in the research women with a diagnosis of Trypanosoma cruzi infection during the pre-natal care provided by the Pregnant Women Protection Program of Mato Grosso do Sul, who voluntarily agreed to participate in the research, after signing the free and informed consent term. One excluded those with negative diagnostic test for CD and those who didn’t want to participate in the research. The research protocol was approved with regard to its ethical and methodological aspects by the Research Ethics Committee of UFMS, under the Protocol 883/2007.

After accepted for participation in the study one applied the appropriate form, by interviewing women infected by Trypanosoma cruzi, whose serological identification had been already made. One investigated the following variables: birthplace, residence city (at birth, previous, and current), length of residence, education level, profession/occupation, age, endemic zone (at birth, previous, and current), color, history of blood transfusion, injection drug use, levels of knowledge on the triatomines and family history of CD.

The collected data were analyzed through descriptive statistics, under the form of tables and graphs, using the software Statistic Package for Social Sciences (SPSS), version 13.0. The significance level was 0.05.4

RESULTS

After evaluating the female patients cared for by the service under study one obtained a total of 32 female patients with positive serology for Chagas. The incidence rate of women with CD was 0.9 per 1,000 pregnant
women screened, within the period covered by the study. Figure 1 characterizes the final sample according to each age group.

![Figure 1. Age group intervals. Center of Infectious and Parasitic Diseases of Campo Grande, from March 2007 to April 2008 (n = 32).](image)

The results concerning color, education level, profession, and leisure are presented in Table 1.

Table 1. Characterization of pregnant women according to data identification, Center of Infectious and Parasitic Diseases of Campo Grande, from March 2007 to April 2008 (n = 32).

<table>
<thead>
<tr>
<th>Variable</th>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 25</td>
<td>21.9</td>
<td>7</td>
</tr>
<tr>
<td>25-40</td>
<td>40.6</td>
<td>13</td>
</tr>
<tr>
<td>41-55</td>
<td>31.3</td>
<td>10</td>
</tr>
<tr>
<td>&gt; 55</td>
<td>6.3</td>
<td>2</td>
</tr>
<tr>
<td>Color</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>87.5</td>
<td>28</td>
</tr>
<tr>
<td>Dusky</td>
<td>9.4</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>3.1</td>
<td>1</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No instruction</td>
<td>21.9</td>
<td>7</td>
</tr>
<tr>
<td>1-3 years</td>
<td>31.3</td>
<td>10</td>
</tr>
<tr>
<td>4-7 years</td>
<td>25.0</td>
<td>8</td>
</tr>
<tr>
<td>8-11 years</td>
<td>18.8</td>
<td>6</td>
</tr>
<tr>
<td>Higher Education (complete or incomplete)</td>
<td>3.1</td>
<td>1</td>
</tr>
<tr>
<td>Profession</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>62.5</td>
<td>20</td>
</tr>
<tr>
<td>General services</td>
<td>9.4</td>
<td>3</td>
</tr>
<tr>
<td>Hairdresser</td>
<td>6.3</td>
<td>2</td>
</tr>
<tr>
<td>Nursery servant</td>
<td>6.3</td>
<td>2</td>
</tr>
<tr>
<td>Others</td>
<td>15.6</td>
<td>5</td>
</tr>
</tbody>
</table>

Figure 2 presents the characteristics related to the birthplace of women participating in the study, since birth, throughout life, and at the current time of data collection, in order to highlight the origins and contacts to zones which are endemic or not.
The results concerning residence in endemic areas at birth, and the previous and current ones are presented in Figure 3.

Figure 4 presents the results related to housing in a rural or urban zone at birth and previously, in order to characterize the main concentration zones of the sample.
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Figure 5 presents the characterization of households over the life of women under study, according to the type of building used.

![Figure 5](image)

**Figure 5.** Relative frequency of women according to the type of housing at birth, and the current and previous ones. Center of Infectious and Parasitic Diseases of Campo Grande, from March 2007 to April 2008 (n = 32).

**DISCUSSION**

The incidence rate of women with CD was 0.9 per 1,000 pregnant women screened, within the period from March 2007 to April 2008. This result is based on a serological survey conducted between 1975 and 1980 by sampling in all towns except those in the state of Sao Paulo, which determines the seroprevalence at 4.2% of the rural population in the country.7

The results with regard to age, low education level, and profession found aren’t according to the study conducted with chagasic adults patients within the universe of 7,150 patients enrolled in the Family Health Program in Montes Claros, Minas Gerais, Brazil. In this research, the predominant age group was from 41 to 50 years and 51.1% of individuals worked with general services.8

Regarding color, 87.5% of chagasic women were white colored. One emphasizes that the state of Mato Grosso do Sul has among its resident population, by color or race, 1,135,811 (54.65%) white colored people without statement.9 In a study in Virgem da Lapa, Minas Gerais, there was a higher prevalence in various groups.10

Regarding birthplace, 81.2% of patients aren’t born in Campo Grande, and 56.2% are born in the countryside of this state, 18.8% in other endemic states in Brazil (Bahia, Minas Gerais, Pernambuco, and Parana) and 6.2% in another endemic country (Bolivia). Therefore, this result is in line with that identified by the Brazilian Consensus of Chagas Disease, which brings the information that the vectorial transmission of CD in the country is known since the late 1970s and it covers 18 states, including Mato Grosso do Sul.7 One studied a total of 120 chagasic patients and 120 control patients in Mato Grosso do Sul, with a predominance of allochthons.7

At birth, 56.3% of surveyed women lived in the rural zone, while the others lived in urban areas. Among these women who aren’t born in the countryside, most of them came to live in rural areas at some period of life, except one who, despite never having lived in the countryside, kept the habit of making frequent visits to friends in rural properties, converging with other studies.11

Regarding the type of building of households of women at birth, 25.8% lived in brick houses, wood, or mixed at some moment in their lives. A similar fact could be found in a study on the triatomine and wild reservoirs, which captured 154 specimens of *T. sordida* and 2 of *Panstrongylus megistus* in the state of Parana and it verified that the house with wooden wall was the most frequent one, which corresponded to 80% of households under investigation.12,13

At birth, 74.2% of the women under evaluation lived in an endemic area for CD. This information converges to the Brazilian Consensus of Chagas Disease which highlights 18 endemic states, including Mato Grosso do Sul.7

Regarding the current residence, 6.5% of women lived in the rural zone and 9.4% in an endemic area. This fact demonstrates a reversal in the results obtained at birth, i.e. most of them are born or lived for a certain time of their lives in the rural zone and/or endemic, currently lives in the urban zone and in a non-endemic zone. Barber infection predominantly takes place in rural areas with
low population density. However, the intensity of internal migration moves related to the economic dynamics, has transformed the rural endemic in the actual urban/rural endemic.14

Regarding the question with regard to knowledge on the triatomine, 53.1% of women under investigation had some knowledge of its existence and, concerning the knowledge on relatives with CD, 61.3% confirmed the existence of family members with the disease. In a similar study, one selected the sites Assentamento Nova Esperanca III (41 households and 122 inhabitants) and Fazenda Buritis (81 households and 245 inhabitants), belonging, respectively, to the towns of Euclides da Cunha Paulista and Paulicela, both located within the Administrative Health Region of Presidente Prudente, Sao Paulo, Brazil, in order to apply a form among families with CD. One verified that the knowledge with regard to the vector was 31.7%.15,16

CONCLUSION

Most of the women under study aren’t born in Campo Grande, they’re born, live or lived in some time of their lives in the rural zone in a wooden or wattle and daub house, and within endemic zones. Most of them lived in Campo Grande in brick houses, characterized as urban zone and within a non-endemic region. They showed a predominance of low education level, aged between 25 and 40 years and profession/occupation as housewives. All of them denied injection drug use and the minority of them underwent blood transfusion. Concerning the transmission form, it became evident that it was the traditional way, through vector. Most women said they had at least one relative with CD.

One concludes that due to the urbanization process there was a reversal in the epidemiological data obtained with regard to birth or to the housing history of these women, including an emphasis on severe health conditions generated by CD.

REFERENCES


