BRIEF COMMUNICATION

CHARACTERIZATION OF A TRYPANOSOMA CRUZI STRAIN ISOLATED FROM A NON-ENDEMIC AREA IN NORTHEAST BRAZIL

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Chagas' disease presents a variety of epidemiological and clinical pictures in Latin America. In Brazil, the socioeconomic impact of the disease during the chronic stage is high. According to WHO 8, about 30% of the infected population (75,000 people) will develop severe cardiac and digestive lesions such as cardiac arrhythmia (45,000 cases) and megaesophagus and megasocolon (30,000 cases) every year, thus presenting a serious public health problem.

Differences detected in the clinical presentation of Chagas' disease in different endemic areas, as well as the enormous variability in response of different T. cruzi strains to chemotherapeutic drugs, have led to the hypothesis that parasite strains can be a factor accounting for such discrepancies 7. The adoption of standard methods for strain classification as well as the need for analytical epidemiological studies to determine associations between T. cruzi strains and clinical and geographical varieties of Chagas' disease, was agreed in an international meeting held in Panama City 9.

In Brazil, the classification of T. cruzi and their correlation with the clinical manifestations of the chagasic infection have been more detailed in the Recôncavo Baiano-Bahia State 14. In others areas of Northeast Brazil the incidence of domiciliated and infected vectors has been determined 5,9. However, the strains isolated in these regions were not fully characterized.

This work reports the characterization of a T. cruzi WSL (Wild São Lorenço) strain isolated from a naturally infected guinea pig from São Lorenço da Mata, rural area of the State of Pernambuco, in Northeast Brazil. Although this is considered a non-endemic area, some cases of chronic cardiac Chagas' disease have been found (MALTA, personal communication).

For this sixty Swiss albino mice were inoculated with $1 \times 10^6$ trypanosomes of the WSL strain by

Fig. 1 - Biological behaviour of WSL strain. A - Parasitemia of mice infected with $1 \times 10^6$ Trypanosoma cruzi trypanosomes. (---) WSL strain; (...) Y strain (control). B - Percentage distribution of trypanosome forms in mice infected with WSL strain. Y strain was used as control.

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intrapertoneal route. As a control the Type I Y strain was used. The morphological behaviour as well as the histopathological study were analyzed according to ANDRADE 1 and BRENER 2. The isoenzymic study was performed according to ANDRADE 3. In this approach the following enzymes were investigated: alanine aminotransferase (E.C.2.6.1.2 ALAT), phosphoglucomutase (E.C.2.7.5.1 PGM) and glucosephosphate isomerase (E.C.5.3.1.9. GPI). As a reference control, the prototypes of each of the three morphological patterns (Peruviana-Type I; 21SF-Type II and Colombiana-Type III) were included on each electrophoretic running.

The WSL strain presented slow multiplication and parasitemic peaks within 21 and 25 days postinfection (Fig. 1A). Cumulative mortality was 33% at the 31-40 days after infection. It was verified a predominance of broad forms of the parasite throughout the course, with the presence of slender forms in the earlier phase (Fig. 1B). Myotropic with predominant cardiac involvement was detected. The WSL strain was classified as Type II by its morphological characters. Data obtained for the Y strain shows the already described characteristics of Type I strains (rapid multiplication, predominance of slender forms, macrophagotropism and high virulence). The isoenzymic analysis showed the pattern ofzymodeme 2 (Z2) that has been shown to correspond to the biological Type II strains (Fig. 2). Thus, we conclude from the above data that the WSL strain has a very low virulence and pathogenicity. May be this could explain the difficulties in the clinical identification of Chagas' disease in São Lorenço da Mata. One could also speculate that the infection with low virulence and pathogenicity strains may protect against infection with more virulent strains.

The WSL strain was initially referred as W strain 4. However, to differentiate it from W or WBH strain isolated from a Brazilian patient in 1926 by Reichenow, the designation WSL is now being proposed.

RESUMO

Caracterização de uma cepa de Trypanosoma cruzi isolada de uma zona não endêmica no Nordeste do Brasil

A cepa WSL (Wild São Lorenço) de T. cruzi, isolada de um coelho proveniente de São Lorenço da Mata (Nordeste do Brasil) foi caracterizada através da
análise do seu comportamento morfobiológico e perfil isoenzimático. Para o estudo do comportamento morfobiológico, tripomastigotas sanguíneas (1 x 10⁷) da cepa WSL foram inoculados por via intraperitoneal em camundongos albinos Swiss. Como controle a cepa Y (Tipo I) foi usada. Durante o curso da infecção os seguintes parâmetros foram analisados: parasitemia, mortalidade, morfologia dos parasitas no sangue periférico e tropismo tissular. O perfil isoenzimático foi analisado em relação às enzimas ALAT, GAP e PGM usando como controle de referência as cepas Peruana (Tipo I), 21SF (Tipo II) e Colombiana (Tipo III). A cepa WSL apresentou as seguintes características biológicas: 1) multiplicação lenta e pico parasitêmico entre 21 - 25 dias pós-infecção; 2) mortalidade de 3,3% 40 dias pós-infecção; 3) predominância de formas larvas no sangue periférico e 4) mitropismo com predomínio envolvimento cardíaco. A análise isoenzimática mostrou um padrão de zimóide 2 (Z2) que corresponde às cepas biológicas Tipo II. Os resultados mostram que a cepa WSL apresenta baixa virulência e patogenicidade.

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