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SHORT COMMUNICATION

Presence of antibodies against *Leishmania chagasi* in haemodialysed patients

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Asymptomatic infection;
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Summary In the last decades there has been an increase in cases of visceral leishmaniasis complicating the post-transplant phase, mainly following kidney transplantation. The aim of this study was to evaluate the reactivity of haemodialysed patients using IFAT. Blood samples of 310 individuals from Natal, RN, Brazil, were collected and analysed. Data regarding blood transfusion, cause of end-stage renal disease and duration of haemodialysis were also analysed. In total, 69 patients (22.3%) were positive by IFAT. This study suggests that antibody detection should be performed in this group of patients since they are possible candidates for kidney transplantation.

1. Introduction

A great number of visceral leishmaniasis (VL) cases occur in immunocompromised hosts due to various causes, including renal transplantation, AIDS, haematological malignancies and corticosteroid therapy.[1] In this investigation, antibody prevalence in haemodialysed individuals was studied by IFAT, as patients undergoing haemodialysis are possible renal transplant candidates.

2. Patients and methods

2.1. Population studied

From December 2006 to March 2007, data and sera from 310 individuals were collected. The population comprised individuals diagnosed with end-stage renal disease (ESRD)

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Table 1 Reactivity in IFAT by gender, blood transfusion, cause of end-stage renal disease (ESRD) and duration of haemodialysis

	IFAT-positive [*n* (%)]	IFAT-negative [*n* (%)]	*P*-value
Gender			
Male	37 (22.6)	127 (77.4)	0.892
Female	32 (21.9)	114 (78.1)	
Blood transfusion			
Yes	17 (21.0)	64 (79.0)	0.749
No	52 (22.7)	177 (77.3)	
Cause of ESRD			
Diabetes	16 (24.2)	50 (75.8)	0.443
HN	28 (24.6)	86 (75.4)	
CG	10 (14.7)	58 (85.3)	
TIN	6 (31.6)	13 (68.4)	
Miscellaneous	9 (20.9)	34 (79.1)	
Duration of haemodialysis			
<1 year	14 (23.3)	46 (76.7)	0.118
1—5 years	25 (17.4)	119 (82.6)	
>5 years	30 (28.3)	76 (71.7)	

HN: hypertensive nephrosclerosis; CG: chronic glomerulonephritis; TIN: tubulointerstitial nephritis.

undergoing haemodialysis in the Nefron Clínica, located in Natal, Rio Grande do Norte, northeastern Brazil, an area endemic for VL. The participants were all residents in this state. Individuals with a past history of malaria, cutaneous leishmaniasis, Chagas disease or VL were excluded from the study. All participants gave informed consent before entering the study.

2.2. Serological method

IFAT was the laboratory test available and was performed with a commercial kit (FIOCRUZ/Bio-Manguinhos, Rio de Janeiro, Brazil) using promastigotes as antigens. Titres equal to 1:40 were considered positive. All samples were also tested by ELISA for Chagas disease owing to the possibility of cross-reaction.

2.3. Statistical analysis

The independent variables analysed were age, gender, blood transfusion, duration of haemodialysis and cause of ESRD.

The Mann-Whitney *U*-test was used to assess differences between the variables age and anti-*Leishmania* serological results. The χ^2 test was used to assess the association of categorical variables with the positive anti-*Leishmania* serological status. Results were considered to be statistically significant at $P < 0.05$. All analyses were done using SPSS software (SPSS Inc., Chicago, IL, USA).

3. Results

From the 310 individuals tested, 69 (22.3%) were IFAT-positive. Only 1 (0.3%) was positive by ELISA for Chagas disease, however he was not positive by IFAT. No association was observed. These results are shown in Table 1.

4. Discussion

In adulthood, VL is more prevalent in men and this pattern was confirmed in this study, although the difference was small (1.1:1.0) and was not statistically significant. However, the physician should be aware that in the post-transplant phase the male population is more affected by VL.[1]

In the present study, blood transfusion was not shown to be associated with reactivity in IFAT, although Luz et al.[2] demonstrated a reactivity of 37% to VL in haemodialysed polytransfused patients from the same region during a burden of VL. The presence of antibodies against *Leishmania* and its DNA in blood donors has also been found,[2] indicating that these individuals are asymptomatic reservoirs. Thus, blood transfusion might be a risk factor for VL and possibly influences reactivity in IFAT or another serological test. A possible explanation for the non-association may be the use of erythropoietin to treat the anaemia of ESRD in haemodialysed patients, markedly decreasing the number of blood transfusions in this population.[3]

Although VL is known to cause interstitial nephritis, glomerulonephritis or both, in general acute and mild,[4] we hypothesised that there could be a chronic immune complex deposition in reactive patients, provoking ESRD, however the cause of ESRD was not associated with reactivity in IFAT.

We also hypothesised that the prevalence of reactivity might be underestimated due to the state of chronic uraemia, which causes dysfunction of the immune system.[5] There is greater susceptibility to infections, hyporesponsiveness to vaccination and impairment of cellular and humoral immunities.[5]

Although IFAT does not discriminate between past and current infections and presents cross-reactions with others diseases, such as malaria, cutaneous leishmaniasis and Chagas disease, these influences could be attenuated because none of the subjects had a past history of them, the first two

diseases are not present in the study region and the ELISA for Chagas disease was reactive in only one patient.

In conclusion, this study reveals a high prevalence of positive serology in haemodialysed individuals, meaning that they were already infected by *Leishmania*, thus in the future it may become a problem during an immunosuppressive state. The authors recommend that routine serology for VL in haemodialysed patients should be performed, at least in endemic areas, because VL presents a high mortality rate in the post-transplant phase owing to immunosuppression,[1] and reactive serology might lead to a prompt diagnosis. We also have the same opinion as other authors, thus we recommend the investigation of VL in individuals who live in an endemic area or have previously visited them and present with persistent fever during the haemodialysis course or post-transplant phase.

Authors' contributions: KGL designed and co-ordinated the study; RMS, IBMDO and VCSP were responsible for data collection; KCL and KGL analysed the data; KGL, KCL, RMS, IBMDO and VCSP interpreted the data; RPS analysed and interpreted the data on haemodialysis; RMS, IBMDO, VCSP, KGL, KCL, RPS and JBA contributed to the preparation of the manuscript. All authors read and approved the final manuscript. KGL is guarantor of the paper.

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Conflicts of interest: None declared.

Ethical approval: This project was approved by the Ethical Review Board of Universidade Federal do Rio Grande do Norte, Natal, Brazil. The study was conducted in agreement with the principles of the Helsinki Declaration and Resolution 196/96 of the National Health Council of the Ministry of Health, which regulates research involving human subjects in Brazil.

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