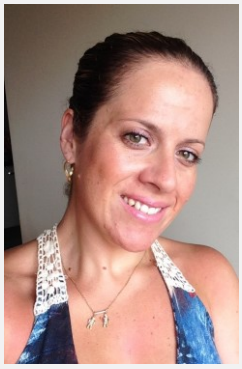
GESINAS - ImmunoTools Award 2015



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Cytokine Profiles in Chronic Chagas Disease Patients infected with different genotipes of *Trypanosoma cruzi*

Chagas disease (CD) is a complex zoonosis caused by *Trypanosoma cruzi*. This vector-borne disease yield great socioeconomic impact infecting more than 8 million people in Latin America and remains as an important public health problem. Although most individuals infected by *T. cruzi* remain asymptomatic in the indeterminate form, after 10-20 years they may progress to one of the symptomatic forms of the disease, developing chronic chagasic cardiomyopathy (CCC), digestive megasyndromes, or both [1].

Two main hypothesis regarding the persistence and clinical progression of Chagas disease have been proposed. One based on parasite genetic variability, and a second hypothesis based on immune and genetic factors of human host [2]. Currently, *T. cruzi* is genetically classified into six discrete typing units (DTUs) based on the recently proposed nomenclature (TcI, TcII, TcIII, TcIV, TcV and TcVI) which is useful in studies of molecular epidemiology of CD [3].

Studies on the specific role of cytokines in the immune response against T. cruzi have been recently reported and demonstrated that Th1 pro-inflammatory cytokines such as Interferon Gamma (IFN- γ), Tumor Necrosis Factor Alpha (TNF-α) are related to cardiac disease [4]. It is also known that these cytokines are regulated by anti-inflammatory cytokines in low concentrations such as interleukin 10 (IL-10) [5]. Altogether, these data suggest a link between parasite infection, immune response polarization, and specific organ damage.

The aim of this study is to compare the differences in the quantification of cytokines and the genetic variability of *T. cruzi* in patients with different clinical form of chronic CD (cardiac, digestive, and indeterminate forms) and control individuals.

This study will be conducted with two groups: one group of 128 chronic CD patients attending at the Chagas Disease Ambulatory of the Clinical Hospital, Federal University of Paraná (HC- UFPR); and other group of 48 unrelated Southern Brazilians with negative serology (for T. cruzi) and without clinical complaints will be used as controls. All patients are followed annually by clinical and laboratorial evaluations including: electrocardiogram (ECG), echocardiogram (EKG), and blood biochemical analysis.

This project was approved by the ethics committee of Federal University of Paraná, Clinical Hospital (HC-UFPR) (n. 360.918/2013-08).

All patients with chronic CD enrolled in this study were previously been diagnosed by *T. cruzi* serology and tested for the presence of *T. cruzi* using a PCR target to kDNA [6]. Genetic diversity will be assessed by a PCR triple-assay for typing DTU assignment [7].

The profiles of cytokines for these two groups will be assessed by ELISA: for human IL-6, for human IL-10, for human IL-12p40 differential, for human TNF-α, for human IFN-γ, and for human sCD147 (sEMMPRIN) according to the manufacturer's instructions.

With this cytokine profile in chronic CD patients infected with different *T. cruzi* DTUs we expect that the DTUs-differential and specific recognition by the host immune system and host receptors may lead to differential responses as reported by Poveda et al.[8]. These data may contribute for the identification of prognostic markers and help to assess the progression of the disease in chronic CD.

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For the GESINAS-Award

Me and our research group support financially and spend our time helping all people included in this institution that is maintained by our Principal Investigator and her husband (Prof. Iara and Patrick Reason).

Charity Association Encontro com Deus http://encontrocomdeus.org/old-site/

Encontro com Deus offers a preventative solution to the destruction of families, securing the future of the children of Brazil away from the streets, child-prostitution, gangs, violence and drug trafficking. By housing children together with their young mums in foster-homes they are removed from immediate risk without separation. As the child remains with the mum, the risk of the child no longer being accepted by the extended family is reduced practically to zero. Our foster-homes offer housing to large families of brothers and sisters, who are extremely unlikely ever to be able to be adopted. The mum receives care, all the basic necessities for her and her children, training, and preparation to get a job. "Preventing a new generation of street children in Brazil".

GESINAS - ImmunoTools AWARD for

Thaisa Lucas Sandri includes 25 reagents

FITC - conjugated anti-human CD35, CD55

PE - conjugated anti-human CD59

APC - conjugated anti-human CD46

ELISA-set for 96 wells: human IL-6, IL-10, IL-12p40, TNF alpha, IFN gamma (each 3 reagents),

recombinant human cytokines: - rh Galectin-1, rh Galectin-3, rh Leptin, rh Resistin, rh IL-28A, rh MCP-2 / CCL8

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