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Letter to the Editor

# Biomarkers for Chagas Disease

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**Sir**

...Very important goal for researches about Chagas disease are reliable tools indicative of infection, before detectable pathology process [1-4]. We read the manuscript of Pinho and Antas entitled Biomarkers for neglected Chagas disease where the eminent authors briefly, but clearly, highlighted the role of these necessary tools for diagnostic and therapeutic purposes [1]. They also properly commented about major hurdles and challenges involving the routine utilization of biomarkers to assess the risk of disease among the more commonly affected individuals, who live in low-income areas of Latin American countries [1,4]. Interestingly, they presented a new classification of biomarker candidates - plasmatic, antigenic, genetic, and management related; in addition, the major practical advantages and eventual weaknesses of each categorized biomarker were focused [1]. Worthy of note are the parasite antigens detected by a correlated ELISA test, and involving highly specific ligands – aptamers. These circulating biomarkers can be found during the acute and the chronic phases of human and experimental infections [1,2]. We would like to address additional comments based on some other recent publications and our previous experimental studies.

...Keating et al, evaluated 22 biomarkers related to cardiomyopathy, with the aim to distinguish Chagas disease clinically active from asymptomatic infections, and high titers of IFN-y, IL-6, IL-10, TNF-α, CK-MB, troponin, myoglobin, and VCAM were found in advanced heart disease. However, NTproBNP and *T. cruzi* PCR status were considered most predictive of disease; therefore, they would be good additional tools to clinical and imaging procedures for disease staging in the routine practice [2].

...Pinazo et al. emphasized the insufficiency of data to validate early biomarkers for responses to therapy in chronic Chagas disease; although some of them have been useful to evaluation of benznidazole and nifurtimox during the course of disease [3]. Moreover, the authors categorized the commented tools into two groups – parasite and host response/damage biomarkers [3]. They concluded that aptamers could be utilized for evaluation of therapy responses and parasitological cures in human trials; more so, nucleic acid amplification techniques have been effective in experiments to assess therapeutic failures or success [3].

...Porrás et al. published their very well embased viewpoints about the target product profile for Chagas disease point-of-care diagnosis and assessment of response of treatment. The authors emphasized the consensual opinion that American trypanosomiasis is the most neglected

of all the neglected diseases, in special with respect to early diagnosis and treatment [4]. Their excellent comments highlighted the current challenges related to vector transmission in periurban and rural areas; the inapparent acute phase that evolves to infective and disabling chronic phase; late reactivations due to immunosuppression; lack of access to early diagnosis and prompt treatment for infected people; lack of prevention for congenital transmission; diagnostic protocols requiring tests of more complexity, restricted to large urban centers; medical centers far from infected populations [4]. They also proposed a consensus for three different scenarios plus eleven critical attributes for respective diagnostic methods; the challenges and main concerns related to implementation of newer procedures in routine daily practice were commented [4].

…Despite of the current classification of Chagas disease as neglected condition, a high number of researches about clinical, functional, microbiological, histopathological, morphometrical, and ultrastructural features of chagasic infection have been done. Dos Santos VM et al. described pancreatic functional and pathologic changes in human and experimental chagasic infections; and they utilized male hamsters (Maesocricetus auratus) as animal model for infections and reinfections with *T. cruzi* [5-7]. Worthy of note, the infected hamsters reproduced both the acute and chronic phases of chagasic infection, similarly to humans; therefore, this rodent might be utilized as an alternative useful model to evaluate some of the diverse candidate biomarkers. Accordingly to the authors of the manuscripts herein commented, we strongly believe that future studies should be performed with the purpose of establishing the practical usefulness of biomarkers that can be available for most of the infected populations.

## Conflict of Interest

There is no conflict of interest to disclaim.

## References

1. Pinho RT, Antas RZ. Biomarkers for the neglected Chagas disease: how remarkable! J J Biomark. 2015, 1(1): 006.

2. Keating SM, Deng X, Fernandes F, Cunha-Neto E, Ribeiro AL et al. Inflammatory and cardiac biomarkers are differentially expressed in clinical stages of Chagas disease. Int J Cardiol. 2015, 199: 451-459.

3. Pinazo MJ, Thomas MC, Bustamante J, Almeida IC, Lopez MC et al. Biomarkers of therapeutic responses in chronic Chagas disease: state of the art and future perspectives. Mem Inst Oswaldo Cruz. 2015, 110(3): 422-432.

4. Porrás AI, Yadon ZE, Altcheh J, Britto C, Chaves GC et al. Target product profile (TTP) for Chagas disease point-of-care diagnosis and assessment of response to treatment. PLOS Negl Trop Dis. 2015, 9(6): e0003697.

5. dos Santos VM, de Lima MA, Cabrine-Santos M, de Stefani Marquez D, de Araujo Pereira G et al. Functional and histopathological study of the pancreas in hamsters (Mesocricetus auratus) infected and reinfected with Trypanosoma Cruzi. Parasitol Res. 2004, 94(2): 125-133.

6. dos Santos VM, de Lima MA, Cabrine-Santos M, Marquez Dde S, Reis Md, Pereira Gde A et al. Pancreatic hepatocytes in hamsters (Mesocricetus auratus) infected with Trypanosoma Cruzi. Exp Parasitol. 2002, 100(2):103-111.

7. dos Santos VM, Teixeira Vde P, da Cunha DF, da Cunha SF, Monteiro JP et al. [Pancreatic anatomopathologic changes in chronic chagasic woman. Preliminary data]. Arq Gastroenterol. 1999, 36(3): 127-132.