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Trypanosoma cruzi strains cause different myocarditis patterns in infected mice

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Aims: Chagas disease pathology is dependent on the infecting *T. cruzi* strain. However, the relationship between the extent and type of myocarditis caused by different *T. cruzi* strains in the acute and chronic phases of infection has not been studied in detail. To address this, we infected mice with three genetically distant *T. cruzi* strains as well as infected in vitro different cell types.

Methods and Results: Parasitemia was detected in mice infected with the Y and VFRA strains, but not with the Sc43 strain; however, only the Y strain was lethal. When infected with VFRA, mice showed higher inflammation and parasitism in the heart than with Sc43 strain. Y and VFRA caused homogeneous pancarditis with inflammatory infiltrates along the epicardium, whereas Sc43 caused inflammation preferentially in the auricles in association with intracellular parasite localization. We observed intramyocardic perivasculitis in mice infected with the VFRA and Y strains, but not with Sc43, during the acute phase, which suggests that endothelial cells may be involved in heart colonization by these more virulent strains. In in vitro infection assays, the Y strain had the highest parasite-cell ratio in epithelial, macrophage and endothelial cell lines, but Y and VFRA strains were higher than Sc43 in cardiomyocytes.

Conclusions: This study supports parasite variability as a cause for the diverse cardiac outcomes observed in Chagas disease, and suggests that endothelial cells could be involved in heart infection during the acute phase.

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Gut and integrated pathophysiology of immune response: Observations from experiments in oral tolerance in mice and the response associated with a model of metabolic syndrome surgery

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The gut mucosa is the place that most contact with foreign antigenic proteins occurs and forms with the immune system an integrated, dynamic and adaptive complex that has evolved to provide effective digestion and defense. The whole intestinal area is 100-fold larger than the skin, presents the largest amount of lymphoid tissue of the body and the more number of activated lymphocytes. The Peyer's patches and the lamina propria of the gut present a very large number of T cells. Immunoglobulin production, especially IgA, is the only antibody secreted by mucosal, that offers the first protection to neonates. For the experiment with oral tolerance, a protocol on adult Swiss mice by oral administration of a recombinant dermonecrotic toxin of brown spider *Loxosceles intermedia* (LiRecDT1) and its mutated form (LiRecDT1H12A) for three weeks was proposed. Our results demonstrated evidences of tolerance induction through decrease in IgG anti-dermonecrotic toxin levels, paw edema reduction and increased survival in 24 h after challenge. All statistical analysis was performed using ANOVA following Bonferroni's post hoc test. Related to bowel surgery readjustment we observed that the removal of the greater omentum decreases the secretion of cytokines, particularly IL-6, regressing other diseases associated with obesity such as bronchitis. In conclusion, the intestine can be considered the main immune organ of the body and this association between immunity and digestion begin prior to birth and mediate allergic responses and/or tolerance throughout the life of the individual.

Biography

Giovani Marino Favero is an Adjunct Professor at the State University of Ponta Grossa. He guides Master's and Doctoral students of Pharmaceutical Sciences and Evolutionary Biology programs. He is currently Head of the Department of General Biology, Coordinator of the Ethics Committee on Animal Use, Editor-in-Chief of the magazine Publication UEPG Biological and Health Sciences. He works with associated gut immunology, drug development and cancer.

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