

Oral melatonin administration and sexual hormones influences during the experimental chagas' disease

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Introduction: Chagas' disease is the clinical manifestation of the infection produced by the parasite *Trypanosoma cruzi*. It's a zoonosis and the major cause of mortality and morbidity affecting the cardiovascular system for which presently available therapies are largely inadequate. Melatonin is an indoleamine synthesized in the pineal gland and its physiological properties are not limited to neuroendocrine system in controlling circadian rhythms, several other actions have been discovered as increase innate and acquired immunity, however, very little is known about its influence on protozoan infections. Gender affects the different steps of an immune response. Exposure to various types of antigens, access to health promotion programs and health care, as well as prioritization of health needs and household resource allocation all affect the different response of females and males to immunologic challenges and it is necessary understand the influences of immunological mechanisms in health and disease. **Objective:** To explore the effects of orchietomy and melatonin therapy on the course of *Trypanosoma cruzi* infection in male rats, focusing our analyses on its influences on histopathological alterations and parasite burden in heart tissue parasitaemia, TGF- β 1 and IL-6 production. **Methods:** Male Wistar rats weighing 100-120g were divided into the following groups: Infected (I), Infected Sham surgery (SH), Infected Orchietomized (OR), Infected Melatonin treated (M), Infected Melatonin treated Sham surgery (MSH), and Infected Melatonin treated Orchietomized (MOR). After 4 weeks post orchietomy, all rats were i.p. infected with 1×10^5 blood trypomastigotes (Y strain) of *T.cruzi*. Studies were performed 7, 14 and 21 days after infection. Animals from all treated groups received, daily and orally, melatonin at a dose of 5 mg/kg/body weight, once a day at the same time and during the course of the experiment. Parasitism was estimated in sections separated at 70 μ m intervals to avoid recounting amastigotes nests and for each tissue fragment, 50 microscopic fields were analysed at a magnification of 400X and all amastigote nests were counted in each field. Concentrations of TGF- β 1 and IL-6 were measured by specific two-site enzyme-linked immunosorbent assay (ELISA). **Results:** Histopathological observations of heart tissue revealed that orchietomized and treated rats resulted in fewer and smaller amastigote burdens as compared to all other groups. On all experimental days, treated animals (M, MSH, MOR) displayed decreased concentrations of TGF- β 1 when compared to control (I), sham (SH) and orchietomized (OR) counterparts. Untreated orchietomized animals (OR) displayed enhanced concentrations of IL-6 when compared to control (I) and sham (SH) counterparts. With melatonin treatment, orchietomized animals (MOR) displayed the highest concentrations of IL-6 when compared to untreated orchietomized counterparts (OR) and also compared to treated non-orchietomized counterparts (M and MSH). **Conclusion:** The results of this work point in the direction of a synergic role exerted by orchietomy and melatonin therapy in immune response against the parasite.

Keywords: Chagas' disease, Melatonin, IL-6, Heart, TGF- β 1, Gender.

Financial support: CAPES and FAPESP.