INFLAMMATION, OXIDATIVE STRESS AND GENE EXPRESSION IN PATIENTS WITH CHAGASIC CARDIOMYOPATHY

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Background

The pathogenesis of chronic chagasic cardiomyopathy (CCM) is controversial, there aren't definitive proofs of which are the necessary factors to reach the determinate stage. Each host genetic factors could actively participate in the evolution of Chagas disease. Whereas the variability of phenotypic expression of the CCM could be because of genetic components of the patient, we decided to do a descriptive study of genotype frequencies (GF) of SOD-Mn Ala-9-Val, the enzyme activities of superoxide dismutase (SOD), glutathione peroxidase (GPx) and catalase (CAT), and as marker of inflammation factor tumor necrosis (TNFalpha) in chagasic patients with cardiomyopathy (G1) and without cardiomyopathy (G2) compared with healthy controls (CN).

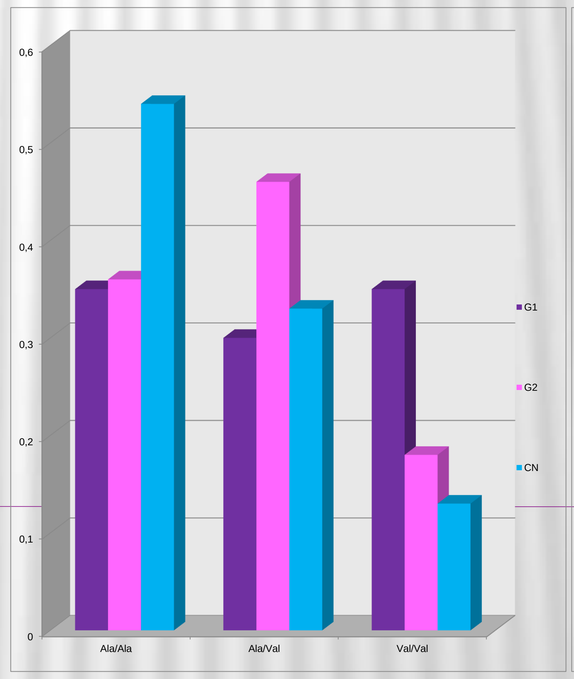
Methods

The molecular characterization was performed by PCR-RFLP. Enzyme activities were determined by spectrophotometric techniques and the tumor necrosis factor alpha (TNFalpha) by immuno method (ELISA - BD OptEIA TNF HU). The hypothesis test under normal theory proportions and Kruskal Wallis test were carried out.

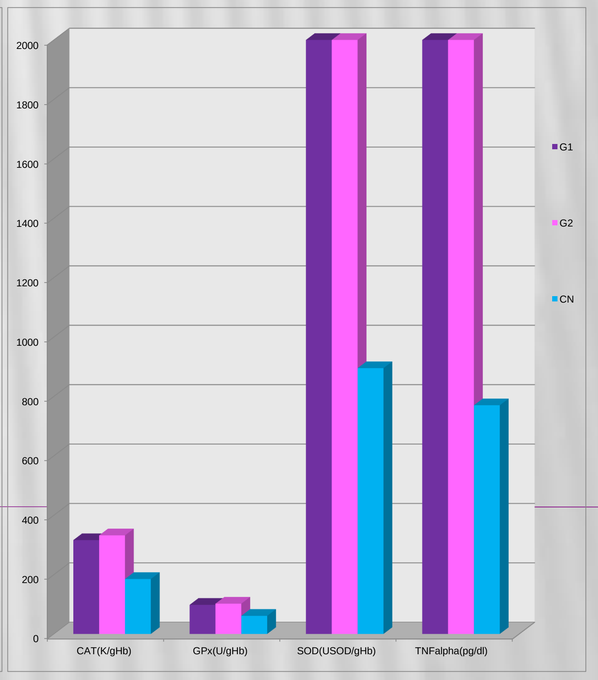
Results

		G1	G2	CN
SOD-Mn FG (IC 95%)	Ala/Ala	0.35 (0.14-0.56)	0.36 (0.07-0.64)	0.54 (0.40-0.67)
	Ala/Val	0.30 (0.10-0.50)	0.46 (0.16-0.75)	0.33 (0.20-0.45)
	Val/Val	0.35 (0.14-0.56)	0.18 (0.00-0.40)	0.13 (0.04-0.21)
CAT(K/gHb)		316±68	332±41	185±28
GPx(U/gHb)		98±17	102±20	61±11
SOD(USOD/gHb)		3270±833	2590±188	895±314
TNFalpha(pg/ml)		33.3±7.2	26.1±6.8	7.7±2.4

Table I. The study of SOD-Mn GF of chagasic patients and CN showed significant differences ($p < 0.01$) between them. The activities of CAT, SOD, GPx and TNFalpha showed significant differences ($p < 0.01$) between chagasic patients and CN.



Graph I. SOD-Mn Ala9Val FG.



Graph II. CAT,GPX and SOD enzymatic activity and TNFalpha in G1, G2 and CN.

Conclusions

The data suggest that polymorphisms and inflamation involved in oxidative stress may have implications in the pathogenesis of CCM, modifying individual risk in the development of cardiomyopathies. These biomarkers are potentially useful in the design of predictive models to identify chagasic patients at risk of developing clinical complications.