POLYMORPHISMS IN CATALASE GENE (CAT) AND PEROXIDASE GLUTATIONE 1 (GPX1) IN PROGRESSION OF HEPATIC FIBROSIS AND HEPATOCELULAR CARCINOME IN PATIENTS INFECTED WITH HCV

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Introduction: Liver injury caused by hepatitis C virus (HCV) infection involves the host immune response and viral regulatory factors. The catalase (CAT) and glutathione peroxidase 1 (GPX1) are antioxidant enzymes located in peroxisomes and mitochondria, respectively; and are responsible for the control of intracellular hydrogen peroxide levels. The C262T polymorphism in the CAT gene in the promoter region regulates both levels, as well as the activity of this enzyme. Otherwise, the GPX1 Pro198Leu polymorphism regulates only the activity of the encoded enzyme. This study aimed to investigate the association of genetic polymorphisms of CAT (rs1001179) and GPX1 (rs1050450) with different stages of fibrosis and development of hepatocellular carcinoma (HCC) in HCV infected patients. Methods: This study included 407 patients with chronic hepatitis C; 144 with mild fibrosis (F0-F1), 160 with severe fibrosis (F3-F4) and 103 patients with HCC attended in the Pernambuco Liver Institute and University Hospital Oswaldo Cruz – University of Pernambuco. Local ethnic’s committee approved the study. The genotyping of SNPs was determined by real-time PCR using Taqman probes. Results: Both the T allele and the TT genotype of CAT were associated with the development of HCC (p=0.04, OR 1.51; OR 1.57). The heterozygous genotype GPX1 (CT) showed a significant association as a protective factor in the progression of liver fibrosis (p=0.007, OR 0.54), on the other hand, CC genotype was associated to development of HCC (p=0.02 OR 1.78). However, in the multivariate analysis model, the CT genotype was observed only involved in protection for severe fibrosis or cirrhosis (F3-F4) (p=0.022 OR 0.58). Conclusion: CAT and GPX1 polymorphisms could be involved in the development of HCC in patients with HCV, although only GPX1 CT genotype seem to have a greater influence on the progression of liver fibrosis in a patient with HCV.

Key words: HCV, HCC, CAT, GPX1, fibrogenesis, oxidative stress.