Association of Cys311Ser Polymorphism of Paraoxonase-2 Gene with Myocardial Infarction in the Tunisian Male Population

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ABSTRACT

Introduction
Paraoxonase 2 (PON2) has antioxidant properties similar to Paraoxonase-1 and Paraoxonase-3. However, in contrast to Paraoxonase-1 and Paraoxonase-3, Paraoxonase-2 is not associated with high-density lipoproteins and may only exert its antioxidant function at the cellular level. PON2 may also play a role in the pathogenesis of arterial thrombosis and atherosclerosis.

The purpose of the present study was to assess the relationship between PON2-311 polymorphisms, and their interaction with myocardial infarction.

Materials and methods
A total of 311 genetically unrelated Tunisian subjects including 180 healthy controls and 181 patients who had survived a first MI were prospectively recruited. The patients had been admitted to the reference coronary care unit in the study area.

Genomic DNA was extracted from peripheral blood leukocytes according to standard methods. PON2 genotypes were determined by polymerase chain reaction followed by restriction analysis with DdeI endonuclease. Digested products were separated on 3% agarose gel with ethidium bromide staining.

Results
A significant difference in genotype distribution and allele frequencies was observed between patients and controls. Patients with MI had a frequency of 520.2% for SS genotype, 25.6% for the CS genotype and 22.2% for the CC genotype. The controls had a frequency of only 38.9% for the SS genotype, 13.7% for the CS genotype and 47.3% for the CC genotype. The MI patient group showed a significantly higher frequency of the S allele compared to the controls (65% vs 45.75%; $\chi^2 = 22.587; p<0.000$). In multivariate analysis, C311S polymorphism was independently associated to MI (p<0.000).

Conclusion
Our results showed a significant and independent association between the PON2 C311S polymorphism (presence of S allele) and MI in the Tunisian population.