LETTER

Prevalence of paraoxonase-1 polymorphisms in diabetes mellitus type 2 Greek patients

Dear Editor,

Paraoxonase-1 (PON-1) is an antioxidant enzyme, linked to high-density lipoprotein, and plays an atheroprotective role. PON-1 activity is diminished in patients with diabetes mellitus type 2 (DM2)[1]. Two main gene polymorphisms have been identified: Q192R and M55L. R and L alleles have been linked to increased cardiovascular risk and diabetic complications[2]. The present study aimed in the investigation of the two PON-1 polymorphisms prevalence in a Greek population, including patients with DM2.

In total, 79 subjects, 30-88 years old, were divided into three groups; 27 patients with DM and dyslipidemia (Group 1), 24 patients with dyslipidemia alone (Group 2) and 28 healthy controls (Group 3). The diagnosis of DM was made according to the American Diabetes Association (ADA) criteria of 2011. DNA was extracted and PON-1 polymorphisms were investigated using standard Restriction Fragment Length Polymorphism (RFLP) method and electrophoresis. Statistical analysis was performed by using IBM Statistical Package for Social Sciences (SPSS) Statistics 20 (SPSS, IBM, Armonk, NY, USA). The level of statistical significance was set at $p = 0.05$.

The importance of this study is related to the fact that knowing the worldwide distribution of risk alleles of PON-1 and their relation to DM2, might help in the application of more aggressive therapeutic strategies to diabetic patients at risk. To our knowledge, this is the first time that PON-1 polymorphisms are investigated in relation to DM2 in a Greek population.

Frequencies of PON-1 polymorphisms are presented in Table 1. The frequencies of the clinically significant alleles were for R 45.09 % in patients (Group 1 and 2) and 53.5 % in controls and for L were 72.55 % and 89.3 %, respectively, without any significant statistical difference. Between diabetic patients (Group 1) and controls, R frequencies were 51.8 % and 53.5 %, respectively ($x^2 = 0.0163$, $p = 0.898$) and L frequencies were 77.7 % and 89.3 %, respectively ($x^2 = 1.33$, $p = 0.249$).

In conclusion, frequencies of genotypes of PON-1 polymorphisms do not significantly differ between patients and controls. Differences in frequencies of the risk alleles were not statistically significant, in contrast to the study of Flekac et al[3]. Therefore, testing PON-1 polymorphism might not help clinicians in choosing the appropriate treatment for DM2. Nevertheless, larger studies need to confirm the results of this study, in order to extract safe conclusions on the necessity of testing PON-1 polymorphism in diabetic patients.

Table 1: Allelic and genotype frequencies of Q192R and M55L Paraoxonase-1 polymorphisms in the three groups of the study. Group 1: 27 patients with diabetes mellitus and dyslipidemia, Group 2: 24 patients with dyslipidemia alone and Group 3: 28 healthy controls.

Q192R	Group 1 n=27	Group 2 n=24	Group 3 n=28
QQ	13 (48.1)	15 (62.5)	13 (46.4)
QR	12 (44.4)	8 (33.3)	13 (46.4)
RR	2 (7.4)	1 (4.2)	2 (7.1)
R		$x^2 = 0.519$ ($p = 0.470$)	
M55L			
MM	6 (22.2)	8 (33.3)	3 (10.7)
ML	13 (48.1)	5 (20.8)	15 (53.6)
LL	8 (29.6)	11 (45.8)	10 (35.7)
L		$x^2 = 2.998$ ($p = 0.084$)	

n: number, values represent number of patients and percentage in brackets (%).

Conflict of interest

Authors declare no conflict of interest.

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