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PARAOXONASE-1 GENE Q192R AND L55M POLYMORPHISMS AND RISK OF CARDIOVASCULAR DISEASE IN EGYPTIAN PATIENTS WITH TYPE 2 DIABETES MELLITUS

Dalia Adel Abdulhalim Hassan

National Research Centre, Egypt

Biography

Dalia Adel Abdulhalim Hassan is an associate professor of clinical and chemical pathology, medical division, National Research Centre, Cairo, Egypt. She completed M.B., B.Ch., MSc., MD. Clinical & Chemical Pathology, and also Faculty of Medicine in Cairo University. Her subspecialty in fields of diabetes, obesity, hematology, molecular biology and stem cell transplantation. And her clinical activities in 20 years of clinical and laboratory experiences. Worked in peripheral blood stem cell transplantation and B.M.T. unit in Manial specialized hospital, faculty of medicine, Cairo University from 1997-2004. Routine laboratory and molecular work in the clinical and chemical pathology department of medical division, National Research Centre from 2004- till now. Involved in a lot of Research Activities and projects in fields of Diabetes, Obesity, osteoporosis, oncology, stem cells and renal diseases.

oodaliaadel@yahoo.com

Background: Diabetes mellitus (DM) is a chronic life-threatening disease; people with type 2 diabetes mellitus (T2DM) are more likely to develop cardiovascular disease (CVD) than people without diabetes. Increased oxidative stress or an impaired antioxidant defense mechanism may play a crucial role in the onset and progression of atherosclerosis. Recently, Paraoxonase−1 (PON1) which accounts for most of the antioxidant effect of high density lipoprotein (HDL) cholesterol has been presented as a potential therapeutic agent against atherosclerosis development. Allele frequencies for PON1 gene that influence enzyme concentration as well as activity differs greatly among ethnic groups and data from several studies showed ethnic variations in the interpretation of CVD associated with PON1 polymorphisms. In this work, we investigated PON1 Q192R and L55M polymorphisms in Egyptian patients with type 2 diabetes mellitus and its association with CVD.

Methods: The study included 184 subjects classified into 3 groups; T2DM, T2DM + CVD, and healthy controls. PON1 polymorphisms were genotyped by real-time PCR and PON1 concentration was assayed in serum by ELISA (enzyme linked immune-sorbent assay).

Results: Genotype and allele frequencies of Q192R were significantly different between controls and diabetic patients. Frequency of QQ genotype was significantly higher in healthy controls, while QR and RR genotypes were significantly higher in diabetic patients (p=0.02). Frequency of 55LL and LM genotypes were significantly higher in patients than in controls (p=0.009). Q192R polymorphism associated with CVD in our diabetic patients (p=0.01) and with low serum PON1 concentration (p=0.04). Multiple logistic regression analysis revealed significant correlations between 192R and other independent CVD risk factors.

Conclusion: Our findings support that PON1 192R and 55 L alleles are associated with T2DM. Q192R polymorphism is associated with CVD and lower serum enzyme concentration and might represents a novel risk factor for CVD in Egyptian patients with T2DM.

Note: