Abstract

Coronary artery disease (CAD) is the most common cardiovascular disease and is a major cause of mortality and morbidity in different countries, including Iran. Oxidative modification of low density lipoprotein (LDL) in blood vessel wall is the main cause of atherosclerosis. One of the mechanisms which have been shown to be associated with prevention of LDL oxidation is high-density lipoprotein (HDL). In this process, some enzymes such as paraoxonase (PON1) that is associated with HDL function, seems to play a key role in preventing LDL oxidation. It has been reported that the rs662 polymorphism of paraoxonase gene which is from a substitution (R) Arg with (Q) Gln at position 192 could affect enzyme activity.

The aim of current study was to explore the role of a polymorphism, rs662, in paraoxonase gene in 150 CAD patients and 100 healthy controls. DNA from blood was extracted using Extraction kit (Genet Bio). Genotyping was carried out using Real Time PCR based TaqMan probe and data was analyzed using SPSS software. Demographic characteristics and biochemical tests, including blood sugar, blood pressure, blood fat etc. were evaluated in all the subjects.

The results showed that QR and RR genotypes in rs662 polymorphism, had a higher frequency in our population and R allele in the patients group and Q allele in the control group had a higher frequency ($p<0.05$). The results of comparing the biochemical parameters between controls and patients showed that the level of fasting blood glucose and HsCRP were significantly increased in the patient group, compared to the control group. Moreover, our analysis suggested that RR genotype in patients group had an increased CAD risk, after adjustment, compared to the wild type genotype. furthermore, we observed that CAD patients with RR genotype had a significantly higher FBS and hs-CRP, compared to the QQ genotype.

Keywords: Coronary Artery Disease, Angiography, Paraxonase, Real Time PCR, SNP

University of Zabol

Faculty of Science

Department of Biology

Biology – Genetics

Title:

Study of PON1 rs662 polymorphism in patients with coronary artery disease (CAD) attended in hospitals of Mashhad University of Medical Sciences

Supervisors:
Dr. S. Esmaeilzadeh
Dr. M. Ghayur Mobarhan

Advisors:
Dr. A. Pasdar
Dr. A. Avan

By:
S. M. Amini Mohammadieh

Oct 2015