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Associations of Vitamin D Receptor Polymorphisms with Coronary Artery Diseases

Authors : Elham Sharif, Nasser Rizk, Sirin Abu Aqel, Ofelia Masoud

Abstract : Background: Previous studies have investigated the association of rs1544410, rs7975232 and rs731236 polymorphisms in vitamin D receptor gene and its impact on diseases such as cancer, diabetes and hypertension in different ethnic backgrounds. Aim: The aim of this study is to investigate the association between VDR polymorphisms using three SNP's (rs1544410, rs7975232 and rs731236) and the severity of the significant lesion in coronary arteries among angiographically diagnosed CAD. Methods: A prospective-retrospective study was conducted on 192 CAD patients enrolled from the cardiology department-Heart Hospital HMC, grouped in 96 subjects with significant stenosis and 96 with non-significant stenosis with a mean age between 30 and 75 years old. Genotyping was performed for the following SNPs rs1544410, rs7975232 and rs731236 using TaqMan assay by the Real Time PCR, ABI 7500 in Health Sciences Labs at Qatar University Biomedical Research Center. Results: The results showed that both groups have matched age and gender distribution but patients with the significant stenosis have significantly higher; BMI (p=0.047); smoking status (p=0.039); FBS (p= 0.031); CK-MB (p=0.025) and Troponin (p=0.002) than the patients with non–significant lesion. Among the traditional risk factors, smoking increases the odds of the severe stenotic lesion in CAD patients by 1.984, with 95% CI between 1.024 – 7.063, with p= 0.042.HWE showed deviations of the rs1544410 and rs731236 among the study subjects. The most frequent genotype in distribution of rs7975232 is the AA among the significant stenosis patients, while the heterozygous AC was the frequent genotype in distribution among the non-significant stenosis group. The carriers of CC genotype in rs7975232 increased the risk of having significant coronary arteries stenotic lesion by 1.83 with 95% CI (1.020 – 3.280), p=0.043. No association was found between the rs7975232 with vitamin D and VDBP. Conclusion: There is a significant association between rs7975232 and the severity of CAD lesion. The carrier of CC genotype in rs7975232 increased the risk of having significant coronary arteries atherosclerotic lesion especially in patients with smoking history independent of vitamin D.

Keywords : vitamin D, vitamin D receptor, polymorphism, coronary harat disease
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