

Abstract

Myocardial Infarction (MI) is the most common type of Coronary Heart Disease (CHD) characterized by the pain, nausea, sweating, weakness, shortness of breath, anxiety and abnormal heart beat. Therefore, the study was conducted to identify the susceptibility of *MMP-9* gene in MI patients of Pakistan population. For this purpose, a family clustering study was conducted based on 5 families heaving MI patients. Blood samples from patients with myocardial infraction and their families were taken from different Districts of Punjab, Pakistan. According to the WHO criteria all the patients were clinically diagnosed with myocardial infraction and assessed for clinical parameters. Patients were with mean BMI of ± 30.2 which indicate that obese were at high risk of disease development. Mean age of diagnosis of patients is ± 50 years, in which all patients have positive family history including 4 males and 2 females. Mostly patients were diabetic and have hypertension issues, most of them were smokers and their exposure to air pollution was higher. Genomic DNA was isolated from blood through manual extraction. Primers were optimized and genotyping was done by PCR which was followed by DNA sequencing and RFLP. As a result of polymorphism A into G and C into T conversions were identified on rs17576 and rs3918242 polymorphic sites on *MMP-9* gene. In conclusion smoking, hypertension, diabetes, exposure to air pollution and polymorphism of rs17576 and rs3918242 were significantly associated with onset of MI in Pakistan population and males are at higher risk of developing MI. Further studies should be conducted on large scale to evaluate the association of *MMP-9* polymorphism with MI.