Is the TCF21 gene protection or risk for coronary artery disease?

M. Santos[1], M.I. Mendonca[1], M. Temtem[1], J.A. Sousa[1], F. Mendonca[1], J. Monteiro[1], A.C. Sousa[1], S. Freitas[1], E. Henriques[1], G. Guerra[1], A. Drumond[2], R. Palma Dos Reis[3]

[1]Funchal Hospital, Research Unit, Funchal, Portugal; [2]Hospital Dr. Nelio Mendonca, Funchal, Portugal; [3]Nova Medical School, Lisbon, Portugal

On behalf of GENEMACOR study

Funding Acknowledgement: Type of funding sources: None.

Introduction: TCF21 is expressed in cells that migrate into the developing plaque facilitating the repair of the vessel wall. However, the rs12190287 risk allele (C) of TCF21 can lead to reduced TCF21 expression being a risk factor for CAD.

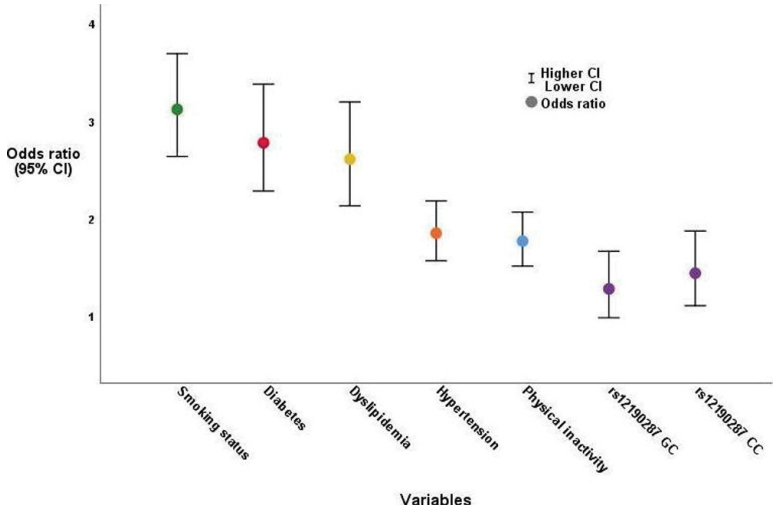
Purpose: Investigate whether the variant rs12190287 G>C of TCF21 gene represents a risk factor for CAD in a Southern European population.

Methods: Case-control with 3139 individuals, 1723 CAD patients and 1416 controls, adjusted for age and gender. Genotyping of TCF21 rs12190287 G>C was performed by TaqMan Real-Time PCR. CAD association of each genetic model was evaluated.

Multivariate logistic regression analysis adjusted for confound variables: smoking status, dyslipidemia, diabetes, physical inactivity, and hypertension, was made.

Results: TCF21 rs12190287 G>C has shown significant genotypic differences between cases and controls: GG 9.5% vs 11.9%; GC 43.2% vs 46.5% and CC 47.3% vs 41.6%. CAD risk was significant in all models: dominant (OR 1.28; 95% CI: 1.02–1.61; p=0.033); recessive (OR 1.26; 95% CI: 1.09–1.45; p=0.001); additive (OR 1.20; 95% CI: 1.08–1.34; p=0.001). After multivariate analysis, TCF21 variant was independently associated with CAD.

Conclusion: TCF21 variant rs12190287 G>C may be a risk factor for CAD. It is plausible that TCF21 loci exert its protective effect by promoting infiltration of fibromyocytes in the coronary wall lesion and fibrous layer and loss of TCF21 expression can result in fewer fibromyocytes to fibrous cap increasing vulnerability of the plaque.



Variables associated with CAD risk