## Association between vitamin D receptor gene polymorphisms and myocardial infarction

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**Background:** The vitamin D receptor (VDR) is a nuclear receptor responsible for the transcription of many vitamin D-dependent genes. Recently vitamin D low serum level have been recognized as a risk factor for cardiovascular disease. Since vitamin D achieves its biological function through the vitamin D receptor, it can be assumed that polymorphisms of the VDR gene that affect its functionality may be associated with an increased risk for cardiovascular diseases. The aim of this research is to investigate the possible association of three known VDR polymorphisms - FokI (rs2228570), BsmI (rs1544410) and Taq1 (rs731236) with acute myocardial infarction. Also, to determine the vitamin D serum level and its association with acute myocardial infarction in the population of the northern Adriatic.

**Methods:** This cross-sectional study included 155 subjects with acute myocardial infarction and 105 healthy subjects in the control group. Serum vitamin D level was determined using liquid chromatography tandem mass spectrometry (LC-MS/MS). Allele frequencies at polymorphic sites rs2228570, rs1544410 and rs731236 of the VDR gene were determined using real time polymerase chain reaction (RT-PCR).

**Results:** No significant difference was found in the serum level of vitamin D between the studied groups. There was no association between the Fok1 (rs2228570) VDR polymorphism and acute myocardial infarction. A significant association between the T/T genotype of the BsmI (rs1544410) and the G/G genotype of the Taq1 (rs731236) VDR polymorphism and acute myocardial infarction was found.

**Conclusion:** The results of this study suggest a potential association of BsmI (rs1544410) and Taq1 (rs731236) VDR polymorphisms with acute myocardial infarction. Since no difference was found in the vitamin D serum level between the studied groups, it could be concluded that the investigated VDR polymorphisms are associated with acute myocardial infarction independently of the vitamin D serum level.

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