

Impact of angiotensinogen gene (AGT M235T) polymorphisms on long-term outcomes after acute myocardial infarction

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Background

Angiotensinogen (AGT) is one of the most significant enzymes of the renin-angiotensin-aldosterone system – its genetic polymorphisms are related to various diseases (1). *AGT M235T* polymorphism plays an important role in the pathogenesis of myocardial infarction (MI) (2). However, there is still lack of data on long-term outcomes after MI related to these polymorphisms.

Aim

To evaluate the impact of different *AGT M235T* polymorphisms on recurrent events after MI.

Methods

A retrospective study, including 86 patients, who experienced first onset MI between years 2007-2011. Patients DNR was extracted from blood samples, taken at the time of MI. Single nucleotide genotyping of *AGT* (M235T, rs699) gene was performed. Patients were divided into groups based on the *AGT M235T* genotype (*MM* or *TM* or *TT*; *MM* or *TM+TT*). Data about long-term recurrent events (after 15-19 years) was conducted from hospital's system. Parametrical data is presented as mean with standard deviation, compared using Student's T-test. Categorical variables are presented as absolute numbers, compared using the χ^2 test.

Results

22 women and 64 men were included. Age at the time of the event was 55.14 (SD 10.14) in men and 64.95 (SD 8.63) in women ($p<0.001$). Patients were divided in groups based by *AGT M235T* genotype (19 patients in *MM* group, 49 in *TM* group, 18 in *TT* group). Differences between different *AGT M235T* polymorphisms are presented in table 1. Differences between patients with *MM* (19 patients) and *TM+TT* (67 patients) genotype are presented in table 2.

Genotype / Event	MM (n=19)	TM (n=49)	TT (n=18)	p-value
Recurrent ACS	8 (42.10%)	19 (38.78%)	6 (33.33%)	p=0.860
Recurrent PCI	17 (89.47%)	21 (43.75%)	12 (66.67%)	p=0.002

CABG during follow-up	3 (15.79%)	9 (18.37%)	4 (22.22%)	p=0.879
Mortality rate	6 (31.58%)	19 (38.78%)	4 (22.22%)	p=0.469

Table 1. Differences between groups with MM vs TM vs TT polymorphisms. ACS – acute coronary syndrome, CABG – coronary artery bypass grafting, PCI – percutaneous coronary intervention.

Genotype / Event	MM (n=19)	TM + TT (n=67)	p-value
Recurrent ACS	8 (42.11%)	25 (37.31%)	p=0.791
Recurrent PCI	17 (89.47%)	33 (49.25%)	p=0.002
CABG during follow-up	3 (15.79%)	13 (19.4%)	p=1.000
Mortality rate	6 (31.58%)	23 (34.33%)	p=1.000

Table 2. Differences between groups with MM vs TM + TT polymorphisms. ACS – acute coronary syndrome, CABG – coronary artery bypass grafting, PCI – percutaneous coronary intervention.

Conclusions

MM variant of gene *AGT M235T* gene was related to recurrent PCI in patients after MI during long-term follow-up.

Literature

1. Shahid M, Rehman K, Akash MSH, Suhail S, Kamal S, Imran M, et al. Genetic polymorphism in angiotensinogen and its association with cardiometabolic diseases. *Metabolites*. **2022**;12(12):1291
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