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MET235THR POLYMORPHISM IN THE AGT GENE IN THE DEVELOPMENT OF CARDIOVASCULAR COMPLICATIONS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS WHO HAVE HAD COVID-19 IN THE UZBEK POPULATION

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Relevance

During the COVID-19 pandemic, many large studies have confirmed a direct relationship between the severity of the infectious disease and a history of diabetes mellitus. According to the observations of Chinese scientists, the majority of deaths were observed among patients with comorbid pathologies, including hypertension (53.8%), diabetes (42.3%), heart disease (19.2%) and strokes (15.4%). In Italy, the sickest patients requiring treatment in the intensive care unit often had hypertension (49%), other cardiovascular diseases (21%) and diabetes (17%). The severe course of Covid-19 in patients with diabetes mellitus against the background of cardiovascular pathology is associated with the development of endothelial dysfunction, which prompted us to begin our own research in this area.

Purpose of the study

Studying the role of the Met235Thr polymorphism in the AGT gene in the development of cardiovascular complications in patients with type 2 diabetes mellitus who have survived covid-19.

Methods and materials

The object of the study was DNA isolated from the venous blood of 105 patients, of which 75 patients with type 2 diabetes with CVD who had survived covid-19, 30 patients with type 2 diabetes without CVD who had not survived Covid-19 and 104 healthy donors who made up the control group. Molecular genetic methods included four stages: 1st stage - collection of biological material from the patient; 2nd stage - isolation of lymphocyte DNA; The 3rd stage is carrying out standard polymerase chain reaction (PCR) and the 4th stage is carrying out electrophoresis and visualization of the results of standard PCR. The selection of the nucleotide sequence for detecting Met235Thr polymorphisms in the AGT gene is carried out using a special program "Oligo v.6.31" (USA). Primers for PCR are synthesized by pre-order at a specialized enterprise and synthesized at NPF Litech LLC (Moscow). The



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primer system is adapted using a PCR analyzer (rotor-Gene 6000 (Corbett research, Australia).

Results and discussion

When considering the frequency distribution of genotypes, it was revealed that in the group of patients with type 2 diabetes with CVD who suffered from covid-19, the heterozygous genotype C/T was determined in 42.67% (n-32) of patients, and in the group of patients with type 2 diabetes without CVD those who did not survive Covid-19 in 56.67% (n-17). Analysis of the frequency distribution of Met235Thr genotypes in the AGT gene showed that the mutant T/T genotype was more common in the group with patients with type 2 diabetes with SSP who had Covid-19 in 37.3% (n-28) of patients compared to the group with type 2 diabetes without SSP of those who did not survive Covid-19 in 23.3% (n-7) of patients.

Conclusions:

1. A significant association of unfavorable genotypes for the development of endothelial dysfunction in patients with type 2 diabetes with cardiovascular pathology leads to an increase in severe course and adverse outcomes in patients infected with covid-19. 2. Diabetes is often associated with other risk factors including hypertension and other cardiovascular diseases, obesity and old age, it becomes clear that such patients require special approaches in determining the prognosis and choosing therapy.

Literature:

1. Angelidi A.M., Belanger M.J., Mantzoros C.S. COVID-19 and diabetes mellitus: what we know, how our patients should be treated now, and what should happen next. *Metabolism* 2020; 107: 154245, <https://doi.org/10.1016/> 2. Deng S.Q., Peng H.J. Characteristics of and public health responses to the coronavirus disease 2019 outbreak in China. *J Clin Med* 2020; 9(2): 575, <https://doi.org/10.3390/jcm9020575>. 3. Diaz J.H. Hypothesis: angiotensin-converting enzyme inhibitors and angiotensin receptor blockers may increase the risk of severe COVID-19. *J Trav Med* 2020; 27(3): taaa041, <https://doi.org/10.1093/jtm/taaa041>.

