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THE ROLE OF THE IL-1B 3953 C/T GENE IN THE DEVELOPMENT OF UNSTABLE ANGINA VARIANTS IN YOUNG AGE MEN IN THE CONDITIONS OF EMERGENCY MEDICAL CARE

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Annotation
In this study, the role of the genetic polymorphism of the IL-1β 3953 C/T gene in the development of unstable angina pectoris (UAS) in men at a young age in emergency medical care was studied. The objects of the study were 70 patients with UAS hospitalized in the departments of somatic resuscitation, emergency therapy No. 1 and 2 of the Samarkand branch of the Republican Scientific Center for Emergency Medical Care in the period 2018-2020. Depending on age, the patients were divided into 2 groups. According to the results of this study, it was found that in patients with NVS at a young age with heterogeneous C/T and with homozygous T/T genotypes of the IL-1β 3953 C/T (rs1143634) gene, the levels of pro-inflammatory IL-1β were higher compared to patients with homozygous C/C genotype.

Keywords: IHD, UAS, cytokine, IL-1β C / T 3953 gene, genotype.

Introduction

Coronary heart disease (CHD), despite significant progress in solving the issues of prognosis, therapy and prevention of this disease, is still one of the urgent problems of modern cardiology. In the practice of cardiologists, unstable variants of angina pectoris (UAS) in men at a young age were quite rare, but in recent decades there has been a steady increase in the frequency of its occurrence, since this is an important socio-economic problem due to early disability and early mortality [2]. The wide prevalence and great social significance of coronary artery disease necessitates the

timely and most reliable diagnosis of this disease [1, 12]. Under the conditions of the observed rejuvenation of the age of onset of UAS in men, the main behavioral risk factors (smoking, malnutrition, physical inactivity, intense and harmful working conditions, stress) make a significant contribution, and more and more facts have recently accumulated indicating the importance of inflammatory processes in the vascular wall as a factor development and destabilization of the atherosclerotic process and the associated earlier and frequent development of cardiovascular diseases and their complications [4, 8, 10]. In the atherosclerotic process, cytokines are the main marker of inflammation, imbalance between them is manifested by an increase in the level of pro-inflammatory interleukins (interleukin 1β (IL-1β), IL-6, tumor necrosis factor-α (TNF-α)) and a decrease in the level of anti-inflammatory interleukins (IL4, IL-8 and IL-10) [5, 9, 15]. In particular, hyperproduction of pro-inflammatory cytokines IL-1β, IL-6, TNF-α contributes to the early progression of UAS and leads to the development of acute cardiovascular complications [3, 6, 13]. One of the important non-modifiable risk factors for the early development of UAS is hereditary predisposition. The relationship of non-modifiable genetic risk factors with predisposition to the development of UAS is found in certain groups of patients who are exposed to additional unfavorable external risk factors [3, 6, 14]. In this regard, an active preventive effect on diseases modified by risk factors in men at a young age prevents the implementation of the impact of unfavorable genetic risk factors [7, 11]. The study of the relationship between modifiable and non-modifiable, in particular, molecular genetic markers that affect the destabilization and progression of cardiovascular pathology in young men can make it possible to prevent the development of coronary artery disease in carriers genetically predisposed to the progression of UAS. Considering all of the above factors, it will be possible to prevent the disease and take measures for the early prevention of UAS, or at least postpone the timing of its occurrence, which in turn will improve the severity of the clinical course of the disease in men at a young age.

Purpose of the Study

To study the role of the IL-1B 3953 C/T genetic polymorphism in the development of unstable angina pectoris in men at a young age in emergency medical care.

Material and Methods

The object of the study were 70 patients with UAS hospitalized in the departments of somatic resuscitation, emergency therapy No. 1 and 2 of the Samarkand branch of the

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RRCEM in the period 2018-2020. The control group consisted of 45 healthy individuals.

Research Methods

The work used general clinical, instrumental, genetic and statistical studies.

Research Results

In our study, we assessed the genetic polymorphism of the IL-1β gene at position -3953 C/T (rs1143634) in patients with UAS to determine the predictors of the development of adverse outcomes. In this regard, we studied the distribution of the frequencies of alleles and genotypes of the polymorphic variant -3953 C/T (rs1143634) of the IL-1β gene in patients with UAS and healthy individuals of Uzbek nationality. Genotyping of the polymorphic locus of the IL-1β gene (-3953 C/T) rs1143634 was performed in 70 patients with UAS at a young age and 45 healthy individuals of Uzbek nationality. Among patients with UAS at a young age, the T allele is 24% more common than among healthy individuals. The C allele, in contrast to the T allele, is more common in persons in the control group and also accounts for 24% ($\chi2=14.13$; $p<0.0001$) (Table 1).

Table 1 Frequency distribution of alleles -3953 C/T (rs1143634) of the IL-1β gene in patients with UAS at a young age and healthy individuals

Polymorphism	alleles	Frequency (%)		χ2	p	OR (95%CI)	RR (95%CI)
		Patients with unstable angina pectoris at a young age (n=70)	Control group (n=45)				
IL-1β 3953 C/T rs1143634	C	80 (57,1%)	73 (81,1%)	14,13	0,0001	3,2206 (1,7238-6,017)	1,4903 (1,2293-1,8066)
	T	60 (42,9%)	17 (18,9%)				

Among patients with UAS at a young age, in relation to the control group, the homozygous T/T variant at position -3953 of the IL-1β gene was 19.9% more common ($\chi2=10.36$; $p=0.001$), the homozygous C/C variant was 19.9% more 28.1% less and heterozygous C/T variant 8.2% more ($\chi2=3.49$; $p=0.06$), (Table 2).

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Table 2 Frequency distribution of the polymorphic locus 3953 C/T (rs1143634) of the IL-1β gene in patients with UAS at a young age and healthy individuals

Polymorphism	genotype	Frequency (%)		χ2	p	OR (95%CI)	RR (95%CI)
		Patients with unstable angina pectoris at a young age (n=70)	Control group (n=45)				
IL-1β 3953 C/T rs1143634	C/C	27 (38,6%)	30 (66,7%)	3,49	0,06	2,2222 (0,9548-5,172)	1,5789 (0,9504-2,6231)
	C/T	26 (37,1%)	13 (28,9%)				
	T/T	17 (24,3%)	2 (4,4%)	10,36	0,001	9.44 (1,99-44,7)	5 (1,31-18,97)

When studying the relationship of some cytokines with the polymorphic locus -3953 C/T (rs1143634) of the IL-1β gene, it was found that patients who had heterozygous C/T and homozygous T/T genotypes of the IL-1β 3953 C/T (rs1143634) gene had 6 ,6 and 13 pg/ml higher concentrations of IL-1β compared with the homozygous C/C genotype (p1<0.0001*, p2<0.0001*). In patients with heterozygous C/T and homozygous T/T genotype of the IL-1β 3953 C/T (rs1143634) gene, the levels of the anti-inflammatory cytokine IL-10 were 1.5 and 1.9 pg/ml lower than those of the homozygous C/C genotype of the gene IL-1β 3953 C/T (rs1143634), (p1<0.0005*, p2<0.0001*) (Table 3).

Table 3. The level of concentration of some cytokines depending on the polymorphism of the locus -- 3953C>T (rs1143634) of the IL-1β gene in patients with UAS at a young age.

Cytokine concentration indicators	Genotype IL-1β T/C 3953			P-value
	C/C	C/T	T/T	
	1	2	3	
IL-1β pg/ml	63,4±5,86	70±6,2	76,4±7,2	1vs2: <0,0001*; 1vs3: <0,0001*
IL-10 pg/ml	13,7±1,6	12,2±1,39	11,8±1,29	1vs2: <0,0005*; 1vs3: <0,0001*

Thus, according to the data of our study, it was found that among patients with UAS at a young age, the T allele of the IL-1β -3953 C/T gene (rs1143634) is 24% more common than among the control group. When analyzing the association of patients with C/T and T/T genotypes of the IL-1β 3953 C/T (rs1143634) gene and pro-

inflammatory IL-1β, it was found that the rates of pro-inflammatory IL-1β were higher compared with patients with the C/C genotype. The levels of anti-inflammatory cytokine IL-10 in the same patients with C/T and T/T genotypes were statistically lower than in patients with C/C genotypes of the polymorphic locus -3953 C/T (rs1143634) of the IL-1β gene. This shows that patients with C/T and T/T genotypes are more prone to cytokine imbalance and atherosclerotic changes, which in turn worsens the clinical course of the underlying disease, which requires more careful monitoring and individualized selection of treatment for these patients for the rapid transformation of UAS into stable course and elimination of cardiovascular catastrophes.

References

1. Aleksandrovsky A.A., Usanova A.A., Kolpakov E.V. et al. Prevalence of variants of coronary heart disease in Mordovia // Russian Journal of Cardiology. - 2017. - No. 3 (89). - S. 66-72.
2. Andreenko E.Yu., Yavelov I.S., Lukyanov M.M., Vernokhaeva A.N., Drapkina O.M., Boitsov S.A. Ischemic heart disease in young people: prevalence and cardiovascular risk factors. Cardiology. 2018;58(10). Page 53-59.
3. Genetic polymorphisms, biochemical factors and conventional risk factors in young and elderly north indian patients with acute myocardial infarction / R. Kaur [et al.] // Clin Appl Thromb Hemost. – 2016. – Vol. 22 (2). – P. 178–83.
4. Infarction in the "Young": Risk Factors, Presentation, Management and Prognosis / N. Shah [et al.] // Heart Lang Circ. – 2016. – Vol. 25 (10). – P. 955–60.
5. Zakirova N.E. et al. Immunoinflammatory reactions in ischemic heart disease. Rational pharmacology in cardiology. No. 2. 2017 Page 16-20.
6. Karazhanova L.K. Molecular genetic bases for the diagnosis and treatment of coronary heart disease (literature review) / L.K. Karazhanova, Sh.T. Zhukusheva, A.A. Chinybaeva // Science and health care. - 2014. - No. 3. - P. 4-5.
7. Mardonov U.A. and other Factors that adversely affect the outcome of treatment of patients with acute coronary syndrome in young and old age // Problems of modern science and education. – 2019. – no. 11-1 (factors and thrombosis gene mutations associated with acute coronary syndrome in young patients. //Cardiology 2019;59(1S).
8. Prudnikov A.R., Shchupakova A.N. The role of cytokines in the diagnosis of atherosclerotic plaque instability. Bulletin of Vitebsk State Medical University, 2018. Volume 17, No. 5.

9. Serebrennikova S.N., Seminsky I.Zh., Semenov N.V., Guzovskaya E.V. Interleukin-1, interleukin-10 in the regulation of the inflammatory process. Siberian Medical Journal, 2016, No. 8. P. 5-7.
10. Tashkenbaeva E. N., Khasanjanova F. O., Abdullaev K. Z. Risk factors for the development of cardiovascular complications in patients with ST-segment elevation acute coronary syndrome // Science and society in the era of change. – 2018. – no. 1. - S. 15-19.
11. Tolpygina S.N. Factors that determine the medium-term and long-term prognosis of life in stable coronary heart disease. Moscow. 2016. P. 13-40.
12. Khasanjanova F. O., Rofeev M. Sh. Common risk factors for myocardial infarction in young men with different outcomes of the disease//Actual scientific research in the modern world. – 2019. – no. 10-7. - S. 87-90.
13. Khasanjanova F. O., Tashkenbaeva E. N., Boltakulova S. D. Risk factors influencing the course of unstable angina pectoris in young and elderly men with dyslipidemia // Journal of Cardiorespiratory Research. - 2021. - Vol. 2. - No. 2.
14. Shlyk I.F. The role of the immune system in the pathogenesis of coronary heart disease and clinical and immunological predictors of the effectiveness of myocardial revascularization. Abstract. Moscow 2020. P. 3-10.