



International Journal for Innovative Engineering and Management Research

A Peer Reviewed Open Access International Journal

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IJIEMR Transactions, online available on 26th Jan 2021. Link

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DOI: 10.48047/IJIEMR/V10/I01/45

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Volume 10, Issue 01, Pages: 233-236.

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CLINICAL AND FUNCTIONAL PREDICTORS OF THE DEVELOPMENT OF ACUTE ISCHEMIC STROKE IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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Abstract. New therapeutic and diagnostic achievements of modern medicine, the introduction of highly effective pharmacological agents into practice and the development of cardiovascular surgery still do not solve the problem of high mortality and disability in the development of myocardial infarction and acute cerebrovascular accident.

Keywords. pathogenetic heterogeneity, cardioneurology, cerebrovascular, decompensation.

Introduction. In the last decade, much attention of researchers has been drawn to the study of problems at the junction of two areas of knowledge, an example of this is cardioneurology, which studies the relationship between the work of the heart and the brain in health and disease, in particular in such socially significant diseases as cerebral stroke and myocardial infarction (MI). The problem of stroke is very acute due to the significant frequency of its development, a high percentage of disability and mortality (6). Every year 6 million people worldwide have a stroke (7). According to the concept of pathogenetic heterogeneity of ischemic stroke (IS), cardiac pathology occupies one of the leading places among the causes of the development of acute disorders of cerebral circulation (ACVA) (2). With the help of modern methods of examining blood vessels and the heart, in more than 70% of patients, various cardiac changes were revealed, which not only act as a cause of stroke, but also affect its course (5).

Cases of a combination of myocardial infarction and stroke are

especially dangerous, prognostically unfavorable. According to domestic scientists, the frequency of stroke in MI ranges from 1.3% to 12.8%, more often it is observed in the acute period of the disease, in the first 2 weeks. There is evidence that IS itself of a certain localization can cause the development of cardiac complications (9). From 2% to 6% of patients die from a cardiac cause in the first 3 months after IS (7).

According to the literature, over the past 10 years, the overall incidence of coronary heart disease has increased by $13.25 \pm 0.11\%$, with the maximum rise in 2011 (6 357.4 per 100 thousand adults) and a slight decrease in the indicator by 2013 by 1, 73% [2]. There is a high level of hospital mortality from myocardial infarction (13-15%), in particular - on the first day after admission to the hospital up to 40.4% [8]. In 2014, according to Rosstat, 64,548 people died from complications of cardiovascular diseases in Russia.

Every year in our country, more than 450 thousand people suffer acute cerebrovascular accident and up to 80% of

the survivors remain disabled of varying severity. Mortality from stroke in Russia remains one of the highest in the world (374 per 100 thousand population) [1]. It is known that the mortality rate in acute cerebrovascular accident in the early stages (30 days) is 32–42%, and during the year it increases to 48–63% [6]. Currently, the understanding of the close relationship between cardiac and cerebral pathology, which occurs against the background of various diseases of the cardiovascular system, has been significantly expanded and deepened. The combination of myocardial infarction and acute cerebrovascular accident is especially dangerous and prognostically unfavorable. According to the literature, the frequency of the combination of myocardial infarction and cerebral stroke ranges from 1.3% to 12.8%, more often it is observed in the first 2 weeks of the disease [3].

There are common pathogenetic mechanisms and risk factors that cause the simultaneous development of myocardial infarction and ischemic stroke, due to the decompensation of the systemic or regional circulation. One of the main risk factors for the development of myocardial infarction and ischemic stroke is arterial hypertension. Clinical studies have repeatedly proven a direct correlation between the risk of developing myocardial infarction, coupled with acute cerebrovascular accident and the level of blood pressure. It is known that an increase in diastolic pressure by 7 mm Hg. Art. associated with an increase in the risk of myocardial infarction by 27%, stroke - by 42% [3]. At the same time, not only high, but also low blood pressure figures (below 110/70 mm Hg) observed in acute myocardial infarction contribute to the development of ischemic stroke.

Multifocal atherosclerosis is a common pathogenetic factor in the development of myocardial infarction and ischemic stroke with concomitant damage to the coronary and carotid arteries. According to various authors, in patients with hemodynamically significant atherosclerosis of the coronary arteries, carotid lesions reach 30%, which significantly worsens the prognosis in patients with coronary artery disease in the general population (the survival rate within 5 years does not exceed 50%) [5]. In patients with acute ischemic cerebrovascular accident, atherosclerosis of the coronary arteries is diagnosed in 30-60% of patients [9]. The generally recognized factors for the progression of atherosclerosis include hyperlipidemia, arterial hypertension, smoking, impaired carbohydrate metabolism, overweight and other factors, the correction of which can significantly reduce the risk of death from cardiovascular diseases and prevent the development of myocardial infarction and acute cerebrovascular accident [4] ...

Numerous molecular genetic studies around the world have proven the genetic predisposition of patients to the onset and more severe course of myocardial infarction. It is known that myocardial infarction and ischemic stroke are multifactorial polygenic diseases, the susceptibility to which is determined by allelic variants of genes that determine the risk of developing the disease when interacting with certain external factors [10]. In particular, in the group of patients with myocardial infarction and ischemic stroke, the analysis of genetic associations with genes of the renin-angiotensin system, genes of NO-synthases, genes encoding lipid metabolism, thrombus formation, and genes of programmed cell death was carried out. The results obtained

on the contribution of various allelic variants of these genes to the development of vascular catastrophes remain controversial [11].

Conclusions:

1. The leading risk factors for the combined development of myocardial infarction and ischemic stroke is the male gender, age over 70, previous history acute disorders of cerebral circulation, postinfarction cardiosclerosis, the first day of Q-forming myocardial infarction of the anterior wall of the left ventricle of the heart.

2. Given the high mortality rate (72.2%) of patients with a combination of two vascular catastrophes, further study of the etiology and pathogenesis of myocardial infarction and acute disorders of cerebral circulation with the development of individual algorithms preclinical forecasting.

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