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Evaluation of “quality of life” in patients with myocardial infarction during the complex medical rehabilitation

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Abstract

The evaluation of quality of life (QOL) in patients with myocardial infarction (MI) in the complex medical rehabilitation using drugs Preductal and Dirotin. The lowest level of total QOL helpful in patients with MI is related to the comparison group. Application in the complex medical rehabilitation for patients with MI lisinopril (Dirotin) and trimetazidine (Preductal) improves their QOL as well as their combination allows multiple to improve the QOL of patients, mainly due to the improvement of a congestive heart failure. However, a slight improvement in the QOL by using medicinal drugs forces one to consider the application of cardiac therapies in patients with severe manifestations of cardiac and coronary insufficiency.

Keywords: Myocardial infarction; quality of life; treatment of myocardial infarction; cardiovascular disease.

Introduction

According to statistics, 2,028,516 people have died in the Russian Federation in 2010, 56.8% of them from the circulatory system diseases. The proportion of death from the circulatory system diseases at working age is amounted to 31.7% (176,739 people) of all deaths at this age. For the 2006-2010 period the total disease incidence among the adult population increased by an average of 8.4%, in children – by 17.0% [1].

Under forecasts of World Health Organization's (WHO's) experts, by 2020, the significant changes in the structure of morbidity and mortality will occur. It is expected that the first and second place as a cause of disability and death among the population will occupy, respectively, the ischemic heart disease (IHD) and depression. The increasing number of depressive disorders and their negative cross-coupling effect with the cardiac pathology [2] requires the active involvement of cardiologists in addressing the problem of depressive disorders (DD). It should be noted that currently there is no definite concept of diagnosis and treatment of those disorders in patients with somatic, including cardiac, profile. Based on the results of a large epidemiological study INTERHEART, it was shown that depression/stress is the third most important risk factor (FR) leading for the MI

for both men and women. The above-mentioned defines the importance of developing the primary and secondary prevention of psycho-emotional disorders and their inclusion into a single, commonly understood concept of cardiovascular risk [3]. Taking into account the high prevalence of depressive spectrum disorders (DSD) in women compared to men, according to the data of such epidemiological studies as NHANES III (2004), COMPAS (2004), COORDINATA (2004), it is not excluded that one of the causes of unfavorable prognosis in MI is the deviations in the psycho-emotional sphere.

The Republic of Dagestan (RD) is one of the subjects of the Russian Federation, where the natural population increase keeps positive and as in 2012 amounts to +13.4, when an average rate across Russia is 0.1. In the structure of causes of death the circulatory system diseases occupy the first place – 6.978 cases, it is 42.3%.

In 2009 alone, the economic costs of the acute coronary syndrome was amounted to 74.5 billion rubles, 28% of them – direct loss, i.e., the treatment expense, and the balance – indirect costs due to premature mortality at the working age, and temporary disability [4].

The Chief Physician of the RD Ministry of Healthcare, M. R. Abdullaev, drew an attention to the statistical data in his speech: “The circulatory system diseases are one of the major problems

for the Republic. Over 2013, the incidence of circulatory system diseases was within the range of 9.3% in the Republic. In the structure of mortality the circulatory system diseases were accounted to 42% of the total mortality rate, of which the mortality at the working age occurred in 17%. While the periodic health examination, it was first time, when about 6000 patients with cardiac angina, 7097 people with IHD, 21,000 people with arterial hypertension were revealed. The number of people with risk factors (overweight, improper feeding, increase in arterial pressure, underactivity, tobacco, and alcohol consumption), was amounted at about 165,000 people, or 36.9% of the total population covered in periodic health examination; 31.2% of the population has two or more risk factors [5-7].

This is due to the fact that people have no time to adapt to the increased rhythm of life, and rapidly changing conditions of civilization, and therefore every second citizen of our country after age 30 has an elevated blood pressure [8]. The personality profile of people, who are prone to the cardiovascular diseases, known as "Type A" (men predominate among them), is characterized by high extraversion, great ambition and an explosive temper, restless-strenuous activities, and an increased sense of responsibility, but at the same time it is noted the existence of different variants of somatized depressions and anxiety and phobic disorders in them. That is typical for the population of the Republic of Dagestan in view of the current social situation. The patients with the heart and vascular diseases are characterized by increased fatigability with the phenomena of hyper aesthetic weakness (both at emotional and physical activities), short-term disorders of sleep and exacerbation of abnormal bodily sensations, more often in the occipital region of head, spine, and chest. In turn, the awareness of their low physical stress tolerance by patients may contribute to the disturbing, depressive and hypochondriac reactions [9].

By the prevalence, severity, moral and material damage caused to the society, the cardiovascular diseases are a major medical and social problems of humankind. The mortality rate of population in our country from this group of diseases is one of the highest in the world. Each year it is a cause of death of more than 1 million people, about 100,000 of which are leaving the life at the working age. That is why the fight against the given pathology is a problem that can be effectively solved only at the state level.

Taking that into account, the preventive trend became one of the priority trends of the National Project "Zdorovje" (Health). The carrying out of the mass periodic health examination of inhabitants of the Republic of Dagestan has allowed revealing a large number of diseases, including in the cardiovascular system, at an early stage. That in turn contributes to reduce the temporary disability incidences [3].

Most often the MI is diagnosed among the cardio vascular diseases. It is observed in men older than 50 yrs old, but there are some cases of its development in persons under 30 yrs old. In women under 60 yrs old, it is observed almost 3 times less than in men, but that difference decreases after age of 60 [10]. The most common cause of MI is the stopping of blood flow to a portion of the myocardium in the sharply changed coronary artery by the atherosclerosis. The coronary embolism can be met extremely rare – mainly in patients with the subacute bacterial endocarditis, at pathological processes, which lead to the blood clots formation in the heart cavities, and during the cardiac surgery. The rare causes of coronary artery occlusion are also a massive hemorrhage at the base of the atherosclerotic plaque and the blood clot formation in an artery, not changed due to arteriosclerosis, but as a result of inflammatory lesions (thromboangitis, rheumatic coronaritis, and the like) or trauma (e.g., after the selective coronary angiography) [11].

The main cause of disease is a atherosclerosis, as well as hereditary background (IHD, heart attack, and cerebral stroke, at least in one of the relatives in direct descent, especially if the disease happened in them until 55 yrs old); high blood cholesterol (more than 5 mmol/l or more than 200 mg/dl); smoking (one of the most essential risk factors); overweight and sedentary lifestyle; increase in arterial pressure (more than 140/90 mm Hg at any age); diabetes mellitus [12].

From the point of view of determining the volume of necessary drug therapy and the evaluating the prognosis three classifications are of our interest. By the depth of lesion (based on the data of electrocardiographic examination), you can distinguish a transmural and large-focal infarction ("Q-MI" with ST-segment elevation during the first hours of the disease and the Q wave formation in the future) and a fine-focal infarction ("non-Q-MI", which is not accompanied by the Q wave formation, and manifested by the negative T wave); by the clinical progression – a noncomplicated and

complicated MI; by localization – a left ventricular MI (anterior, anteroposterior or inferior, septal) and a right ventricular MI [9].

Purpose of the study is to evaluate the QOL in patients with MI during the complex medical rehabilitation.

Materials and Methods

The QOL evaluation was conducted among 144 male patients with acute MI (average age is 57.6 ± 2.2 yrs old) using the Minnesota questionnaire (Minnesota Living with Heart Failure Questionnaire – MLWHFQ) and the medical and sociological questionnaire, developed at the Institute of Clinical Cardiology named after A.L. Myasnikov (All-Russia Research Center for Cardiology – RRCC), after 3 and 6 months of follow with respect to subgroups depending on the conducted therapy:

Group I (comparison group, $n = 36$) – Standard baseline therapy, which includes the application of analgesics, antianginal, and vaso-pressor drugs, as well as drugs affecting the blood clotting system.

Group II ($n = 35$) – Standard baseline therapy including angiotensin converting enzyme (ACE) inhibitors of lisinopril (Diroton, “Gedeon Richter,” Hungary) 2.5-10 mg/day.

Group III ($n = 34$) – Standard baseline therapy + trimetazidine (Preductal, “Servier”, France) 20 mg 3 times per day.

Group IV ($n = 37$) – Baseline + combination of Diroton and Preductal, starting from the 3rd day from the beginning of your stay in the hospital during 6 months.

Results and Discussion

The results obtained are shown in Table 1.

As you can see from Table 1, a firm decrease of the QOL in patients of group IV,

who received along with the baseline therapy the Diroton and Preductal, was revealed in 3 months after the treatment initiation. In other groups the firm changes were fixed in 6 months after the treatment initiation.

When determining the total indicator of QOL by the method of RRCC named after A.L. Myasnikov, the data, showing a decrease in the QOL in patients with MI were obtained. The lowest level of total indicator of QOL had the patients with MI, related to the comparison group. A comparative analysis of the causes-of-QOL decrease structure according to the data of the medical and sociological questionnaire shows that the main differences in the frequency of individual causes of the QOL decrease between the subgroups, depending on the conducted therapy, fall to the causes related to the level of physical activity. Thus, the limitation of physical activity in the comparison group was specified in 75.3% of respondents, whereas against the application of Diroton – 53.1%, Preductal – 50.0%, their combination – 45.2%. The work limitation was stated in the of cause-of-QOL decrease structure, respectively, in 54.6%, 41.3%, 29.6%, and 31.4% of surveyed people, leisure activities limitations – 62.3%, 41.4%, 39.0%, and 17.4%, reduction in activities of daily living – 83.0%, 41.4%, 50.0%, and 33.1%, respectively.

According to the State Report on the state of health of the population in the Russian Federation in 2002 more than 164 thousands of patients with acute MI and more than 24000 – with a repeated MI were registered. Therefore, in the present conditions the importance of rehabilitation of patients with MI has acquired not only medical but also the social importance [13,14], at that process not the last role is assigned to the improvement of QOL of patients [15].

Despite this, in most studies on this problem the particular aspects have been studied, such as, for example, the health-related effect of those or other drugs on the QOL. To date the question of the effect of concomitant

Table 1: The effect of applied therapy on the QOL of patients with MI.

Indicators	Group I	Group II	Group III	Group IV
QOL before treatment	42.1 ± 1.5	41.9 ± 1.6	42.0 ± 1.4	41.7 ± 1.6
QOL in 3 months after treatment initiation	41.6 ± 1.4	40.5 ± 1.4	41.4 ± 1.3	$36.7 \pm 1.5^*$
QOL in 6 months after treatment initiation	41.2 ± 1.4	$39.1 \pm 1.5^*$	$37.9 \pm 1.4^*$	$33.5 \pm 1.7^*$

* $p < 0.001$

diseases on the QOL indicators of patients with MI is not still resolved. The issues of organization of the QOL monitoring for that category of patients are not developed, making its insertion into the clinical practice difficult. The main directions of treatment and rehabilitation measures, aimed at the QOL improving of patients with MI are not defined [16,17].

The psychical emotional strain, chronic stress, and depression are the risk factors for the cardiovascular diseases and to a great extent determine the current level of mortality from this nosology. In this regard, the problem of diagnosis and treatment of affective disorders in case of cardiovascular diseases becomes increasingly important [3].

Among the key strategies against such medical and social problem, as the MI, both the development of new highly effective antiatherogenic treatment technologies and the development of new and effective ways to prevent this disease are rightly viewed. Here the question of the earliest possible beginning of preventive measures immediately arises and, consequently, of individual criteria for the increased risk of developing, which leads to the MI of atherosclerotic lesions of the coronary vessels.

To date, the so-called traditional factors of risk for the atherosclerosis development are specified and the evaluation of their prognostic significance is conducted. Such significant factors include: smoking, hypertension, diabetes, hyperlipidemia, male sex, old age, and overweight. In this case, smoking increases the risk of coronary events by 1.6 times, hypertension (systolic blood pressure is 195 mm Hg) – by 3 times, hypercholesterolemia (8.5 mmol/l, 330 mg/dl, or more) – by 4 times, and the combination of all three listed risk factors – by 16 times [13].

After revealing those risk factors the significant work on the exclusion of their human exposure was carried out. It gave us the tangible results, which were reflected in a tangible reduction of morbidity and mortality from the clinical manifestations of atherosclerosis in the form of coronary disasters and cerebral strokes.

The large-scale epidemiological studies have shown that depression is one of the most common diseases. Currently, the depression takes the fourth place among all causes leading to the temporary disability of population; however, according to existing estimates it may move to the second position after the IHD by 2020 [18].

Lisopril (Diroton) is an ACE inhibitor and reduces the formation of angiotensin II from angiotensin I, leading to the direct decrease in the aldosterone release, the decrease in the bradykinin degradation and the increase in the prostaglandins synthesis. The said drug reduces the total peripheral vascular resistance, blood pressure (BP), preload, pulmonary capillary pressure, causes an increase in minute blood volume and increases the myocardium tolerance to loads in patients with chronic cardiac failure. It expands arteries to a greater extent than veins. At long application the hypertrophy of the myocardium and walls of the resistive arteries is reduced, well as the blood flow of the ischemic myocardium improves [19].

In patients with chronic cardiac failure after the MI without clinical signs of cardiac failure, the left ventricular dysfunction delay is observed. The antihypertensive effect starts in about 6 h and is kept for 24 h. The duration of effect is also dependent on the dose. Drug effect starts in 1 h. The maximal effect is determined in 6-7 h. In case of arterial hypertension the effect is observed during the first days after the treatment initiation, the stable action develops in 1-2 months. Also the decrease in albuminuria occurs. In patients with hyperglycemia the normalization of function of the damaged glomerular endothelium is observed [20].

In turn, trimetazidine (Preductal) prevents the decrease in the intracellular content of adenosine triphosphate (ATP) by the preservation of energy metabolism of cells in hypoxic. Thus, the drug ensures the normal functioning of membrane ion channels, transmembrane ions transfer of potassium and sodium and the preservation of cellular homeostasis [9].

Trimetazidine slows down the oxidation of fatty acids due to the selective inhibition of the long-chain 3-ketoacyl-CoA thiolase, leading to an increase in glucose oxidation and the restoration of interface between the glycolysis and the oxidative decarboxylation and causes the myocardial protection against ischemia. Switching of the oxidation of fatty acids on the glucose oxidation underlies the anti-anginal action of trimetazidine [21].

Trimetazidine has the following properties: maintains the energy metabolism of heart and neurosensory organs during periods of ischemic episodes; reduces the amount of intracellular acidosis and extent of changes in the transmembrane ion flux, arising during ischemia; reduces the level of migration and infiltration

of polynuclear neutrophils in the ischemic and reperfusion cardiac tissues, reduces the size of myocardial injury. The given effects of trimetazidine are observed in the absence of any direct hemodynamic effect [22,23].

In patients suffering from cardiac angina trimetazidine increases the coronary flow reserve, thereby slowing down the development of exercise-induced ischemia, starting from the 15th day of therapy; limits the sharp fluctuations in BP without any significant changes in heart rate; significantly reduces the frequency of angina attacks, greatly reduces the need for nitroglycerin taking, improves the contractile function of the left ventricle in patients with ischemic dysfunction.

Thus the application of ACE inhibitors lisinopril (Diroton) and myocardial cytoprotector trimetazidine (Preductal) as part of a complex medical rehabilitation of patients with MI ensures an improvement of their QOL, well as their combination allows for multiple improve the condition of QOL for patients, preferably by reducing the manifestation of chronic cardiac failure. At the same time, the minor improvement of the QOL, when using the medicament drugs forces us to consider the question of the application cardiosurgical methods of treatment in patients with severe manifestations of cardiac and coronary failure.

The QOL Questionnaire and the psychometric scales can be used as screening methods. The individual monitoring of the QOL of patients in the practical medical activities contributes to the rapid obtaining of important information about the patient's condition and the pathological process direction, all that allow us to conduct the dynamic correction of treatment and rehabilitation measures.

References

1. Resolution of the RAMS Presidium. The Development of Scientific Studies and Scientific Infrastructure Within the Objectives of the Platform "Cardiovascular Diseases".
2. Ivanov SV (2002) The results of applying coaxil during the therapy of 414 patients with a depressive episode in the clinical practice settings (open multicenter monitoring). *Psychiatry and Psychopharmacotherapy* 1: 18-22.
3. Oganov RG (2000). The cardiovascular diseases problems in the Russian Federation and the possibilities of their solution. *Russian Journal of Cardiology* 4: 7-11.
4. Ismailova OS (2013) On the main problems and forecasting of Healthcare Development in the Republic of Dagestan. *Izvestiya of the Dagestan State Pedagogical University. Social and Humanitarian Sciences* 1(22): 20-24.
5. Abdulkabatova LG (2010) The problems of the health infrastructure development in the Republic of Dagestan. *Abdulkabatova LG Regional Problems of Economic Transformation* 4: 447-456.
6. Alieva ZM (2012) Indicators and causes of mortality in Russia and Dagestan. *Izvestiya of the Dagestan State Pedagogical University. Social and Humanitarian Sciences* 3(20): 28-36.
7. Magomedova SA (2012) The perfection of the organization of high-tech medical care for the circulatory system diseases in the Republic of Dagestan. *Modern Studies of Social Problems (Electronic Scientific Journal)* 12: 75.
8. Kaskaeva DS (2009) The psychological profile of patients with arterial hypertension with a high cardiovascular risk on the antihypertensive treatment with ACE inhibitors. *Siberian Medical Journal (Tomsk)* 24(4-2): 21-24.
9. Karaskova EA (2006) The role of anxiety disorders in the genesis of cardiac rhythm disturbances in patients of Arrhythmia profile. *Pathology of Blood Circulation and Cardiac Surgery* 4: 79-87.
10. Gafarov VV (2005) Myocardial infarction (predicting of outcomes on the basis of WHO programs "Registry of Acute Myocardial Infarction", Moscow Regional Research and Clinical Institute). *Cardiology* 45(9): 80-81.
11. Potylitsina NM (2009) A comprehensive program of rehabilitation of patients after myocardial infarction and the myocardial revascularization surgeries. *Sibirskoe Meditsinskoe Obozrenie* 55(1): 113-114.
12. Zadionchenko VS (2005) The prognostic role of electrical instability of myocardium, thrombogenic blood properties, hemodynamic and metabolic factors in the outcome of myocardial infarction. *Russian Journal of Cardiology* 6: 11-15.
13. Aronov DM (2002) Primary and secondary prevention of cardiovascular diseases interpolation on the Russia. *Heart* 1(3): 109-112.

14. Gogin EE (2003) The basic trends of improving the diagnosis and the increasing importance of invasive study methods. *TER Archives* 75(4): 5-8.
15. Libis RA (1998) The evaluation of the quality of life in patients with arrhythmias. *Cardiology* 38(3): 49-51.
16. Kots Yal (1993) The quality of life in patients with cardiovascular diseases. *Cardiology* 33(5): 66-71.
17. Pomerantsev VP (1996) The quality of life in patients with myocardial infarction. *Cardiology* 36(3): 70-73.
18. Galyautdinova VR (2012) Depression in patients with ischemic heart disease and the therapeutic correction. *Cardiology and Cardiovascular Surgery* 5(4): 25-30.
19. Kudaev MT (2012) The estimation of influence of angiotensin converting enzyme inhibitors Diron on the indicators of cardiovascular risk in the coastal city. *Physician* 7: 012-016.
20. Abdullaev AA (2010) The comparative efficacy of treatment with two different drugs of lisinopril as a monotherapy and in combination with hydrochlorothiazide in patients with arterial hypotension. *Systemic Hypertension* 3: 46-50.
21. Romashchenko OV (2013) Pleiotropic effects of trimetazidine. *Russian Journal of Cardiology* 4(102): 83-87.
22. Salivonchik DP (2012) The advantages of Preductal MR in treating patients with IHD: Contemporary realities. *Medical News* 6: 59a-65.
23. Mikova NV (2006) The antianginal and anti-ischemic effects of the drug Preductal MB as part of complex therapy in patients with ischemic heart disease in conjunction with type 2 diabetes. *Pathology of Blood Circulation and Cardiac Surgery* 2: 85-88.

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