

ORIGINAL ARTICLE

MONITORING AND EVALUATION OF QUALITY OF MEDICAL AID IN A PATIENT WITH ACUTE MYOCARDIAL INFARCTION IN POLTAVA REGION

Iryna A. Holovanova, Grygori A. Oksak

UKRAINIAN MEDICAL STOMATOLOGICAL ACADEMY, POLTAVA, UKRAINE

Key words:

acute myocardial
infarction,
monitoring
and evaluation,
indicators.

Abstract

Introduction: Over the past 10 years, cardiovascular disease is the leading cause of mortality in the world, and they accumulate more than 30% of all cases of death and 45% – in group of noncommunicable diseases. In 2013 17 million persons died in result of CVD; among them there is 7,3 millions in result of ischemic heart disease and 6,2 millions – as a result of stroke.

The aim: Determine the main indicators for monitoring and evaluation of the quality of medical care for patients with acute myocardial infarction in the Poltava region.

Material and methods: To determine the indicators by the method of system analysis, a medical card of the discharged from hospital (o066) was used.

Results: In the Poltava region is living over 1.439 million people, and among them annually is registered 1800–1900 patients with acute myocardial infarction. To improve the organization of the system of assisting patients with AMI on the basis of common approaches and standards, and with the proper interaction of the emergency medicine and medical institutions at all levels of provision of medical care within the national register, the “Card of the patient with acute myocardial infarction of the interventional radiology department” was created. This map, using monitoring, is designed to evaluate the quality of the provision of medical care to these patients. Monitoring indicators of stages of diagnosis and treatment of patients with AMI: Percentage of patients with timely appeal for medical assistance; rate of diagnosis; percentage of patients who are hospitalized in the department of interventional radiology during a the standard time period; percentage of patients who have undergone percutaneous intervention in defined time intervals.

Conclusion: Thus, our proposed method of the monitoring and evaluation of the quality of medical care for patients with acute myocardial infarction in the Poltava region is able to provide dynamic observation of patients, analysis of statistical indicators characterizing the spread of the disease in the population under study, the efficiency of diagnosis and hospitalization of patients with ACS. Accurate account of the prevalence of AMI and its outcomes is important for health care system. The obtained data allow us to evaluate the effectiveness of the measures taken at all levels of medical care in the fight against coronary heart disease.

INTRODUCTION

Over the past 10 years, cardiovascular disease (CVD) is the leading cause of mortality in the world, and they accumulate more than 30% of all cases of death and 45% – in group of noncommunicable diseases. In 2013 17 million persons died in result of CVD; among them there is 7,3 millions in result of ischemic heart disease and 6,2 millions – as a result of stroke. According to the prognosis of World Health Organization (WHO) forecast by 2030, these losses will be about 25 million people. The most important socioeconomic value among cardiovascular diseases is coronary heart disease (CHD), stroke, arterial hypertension (hypertension) and heart failure, which accounts for 82% of deaths. Over the past 15 years, the level of mortality from CVD has increased by 20% – from 52.1% to 62.5% [1]. Traditionally, the maximum mortality rate in patients with CHD is due to coronary heart disease (CHD). This indicator among the

able-bodied population is invariably stay at the level of 54.3-54.4%. This means that more than half of the causes of deaths of working age people with CVD affects the coronary heart disease, so in the early 60's it was called the epidemic of the 20th century and the greatest medical and social burden in the developed countries of the world.

Since the second half of the twentieth century, cardiovascular disease remains one of the main problems of modern medicine. According to the WHO, coronary heart disease and stroke are the leading causes of death throughout the world. In 2011, as a result of the CVD, about 13.2 million deaths were registered [2, 3]. In the United States, heart disease still holds leading positions on the indicator of mortality, both among men and among women [4]. In developed countries (France, USA, Great Britain and Italy), mortality from CVD was much lower for 10-15 years ago, and it level was 120-180 people per 100 thousand

population. In recent years, there has been a favorable trend towards reducing mortality from cardiovascular diseases [5]. Myocardial infarction (MI) is one of the most common causes of mortality and disability of adult people. According to the National Registry of Myocardial Infarction of USA, there is in 30% of hospitalizations about acute coronary syndrome are diagnosed the myocardial infarction. Despite the widespread implementation of modern therapeutic and diagnostic technologies, mortality from MI still remains high [6].

The development of CHD and MI, in particular, is due to the complex influence of many risk factors, therefore, the analysis of the effects of some of them may not fully reflect their true importance in the etiology of CVD [6]. To resolve these tasks, special registries are created and successfully used. The most optimal for this purpose is the program "Register of acute myocardial infarction". This program was developed by the working group on the planning of activities of the WHO Regional Office for Europe in the field of combating CVD in 1968-1969, with the aim of studying the incidence of acute MI. As a classic example of a prospective, surveillance-population survey based on standard methodology, this program has opened a new stage in the epidemiology of MI and has become a tool for recording and analyzing the quality of providing medical care to patients with exacerbation of coronary artery disease, both at the pre-hospital and on the hospital stages [7].

At present, by authoritative international and national organizations who use the results from large randomized trials have developed guidelines for the treatment of patients with acute coronary syndrome. There are indications that compliance with these guidelines contributes to the improvement of the immediate and long-term consequences of coronary disasters. Thus, there are methods of treatment that are currently optimal, and the implementation of which can minimize the risk associated with the occurrence of acute coronary syndrome. The degree of use of modern optimal techniques in real clinical practice is difficult to assess by using of the available reporting of medical institutions. As a rule, standard reporting documentation contains only information about the final results of their activities, in particular, on lethality. This information does not give an idea of the causes of one or another end result.

To evaluate as the requirements for the treatment of acute coronary syndrome performed in routine practice, possible by using special epidemiological research programs-registries [8]. The essence of THE "Register of acute myocardial infarction" is the cen-

tralized collection of standardized information about suspected acute MI cases.

THE AIM OF THE STUDY

Determine the main indicators for monitoring and evaluation of the quality of medical care for patients with acute myocardial infarction in the Poltava region.

MATERIAL AND METHODS OF RESEARCH

To determine the indicators by the method of system analysis, a medical card of the discharged from hospital (o066) was used.

RESULTS

In the Poltava region is living over 1.439 million people, and among them annually is registered 1800-1900 patients with acute myocardial infarction. In 2013, the proportion of patients who were delivered to hospitals with AMI into first 6 hours from the moment of the start of disease (the time of the window of therapeutic possibilities for pharmacological revascularization) was 44.4%. Thrombolytic therapy was received by 19.2% (in 2012, 14.8% of patients). Such discrepancies are due to non-compliance with the standards of medical care for patients with AMI in a number of areas with a low percentage of treated cases of myocardial infarction with the use of thrombolytic therapy (Poltava city – 12.7%, Chornukhiv district – 5%, Kozelshchyna district – 5.7%, Zinkivsky district – 9.1%, Lubny district – 11.5%). These are areas with specialized cardiologic beds, staffed by a staff of cardiologists with a powerful ambulance station, an advisory and diagnostic center, and with the prospect of establishing an intensive care hospital. The rate of thrombolysis in Gadyatsky district worsened – in 2012 thrombolysis was performed in 18.6% of patients, in 2013 only 12.6%. In this area, it is necessary to study the reasons for the inadequate rate of hospitalization in the "therapeutic window" – only 26.1% at the regional level – 44.4%.

During the year about 300 cases of thrombolytic therapy (TLT) are conducted in the region.

In the region there are 3 centers that can carry out thrombolytic therapy with AMI:

- Department of Interventional Radiology, Poltava Regional Clinical Hospital;
- Department of Interventional Radiology, Poltava Regional Clinical Cardiology Dispensary;
- Clinic "Alfamedika" in Kremenchug city.

Emergency care for patients in the 24/7/365 mode (24 hours a day / 7 days a week / 365 days a year) is provided only by the Department of Interventional Radiology of the Poltava Regional Clinical Hospital. In

2016, 689 coronary angiograms (cardiac arterial examination), 404 coronary artery stenting (about 300 of which were performed on ACS) performed on the basis of the Department of Interventional Radiology Poltava Regional Clinical Hospital. On the basis of the Department of Interventional Radiology, Poltava Regional Clinical Cardiology Dispensary performed 187 coronary angiography, 15 coronary artery stenting (1 of which were performed on ACS). On the basis of the clinic “Alfamedika” in Kremenchuk, 53 coronary angiography, 12 stents (6 of which were performed on ACS) were performed. An order was issued by the Department of Health of the Poltava Regional State Administration “On introduction of medical-technological documents on the standardization of medical care for acute coronary syndrome with elevation of the ST segment”, where STEMI patients were divided into 2 territories: the near and far location to the regional center of cities and districts of the Poltava region for the hospitalization of patients with admission and hospital thrombolysis in acute coronary syndrome on delayed (up to 24 hours) percutaneous intervention in the Department of Interventional Radiology of the Poltava Regional Clinical Hospital includes the following districts: Kremenchuk, Komsomolsk, Lubny and Lubny district, Mirgorod and Mirgorod district, Hadyach and Hadyach district, Velikobagachansky district, Dykansky district, Globinsky district, Hrebinkivskyj district,

Zinkivsky district, Karlovsky district, Kobelyatsky district, Kozelshchytskyi district, Kotelivskyi district, Kremenchuk district, Lokhvytskyi district, Mashivsky district, Novosanzharsky district, Orzhytskyj district, Pyriatyn district, Semenivskyj district, Reshetylivskyj district, Khorolsky district, Chornukhinsky district, Chutovsky district, Shishatsky district.

As can be seen from Figure 1, the highest number of patients from the Poltava district was treated in the department of interventional radiology of Poltava Regional Clinical Hospital. Specialists in cardiologic intervention interventions have developed and implemented a local protocol to assist patients with STEMI, and thrombolytic drugs were painted between the healthcare facilities of the region. The World Bank included the Poltava region in the project “Improvement of health care in the service of people”, where the regional sub-project was “Implementation of an innovative model of the system of providing services to patients with arterial hypertension in the Poltava region”.

From 01.01.2016, the Poltava region is included in the pilot project of the Ministry of Health of Ukraine “Reperfusion network in action” which covers 8 regions.

To improve the organization of the system of assisting patients with AMI on the basis of common approaches and standards, and with the proper interaction

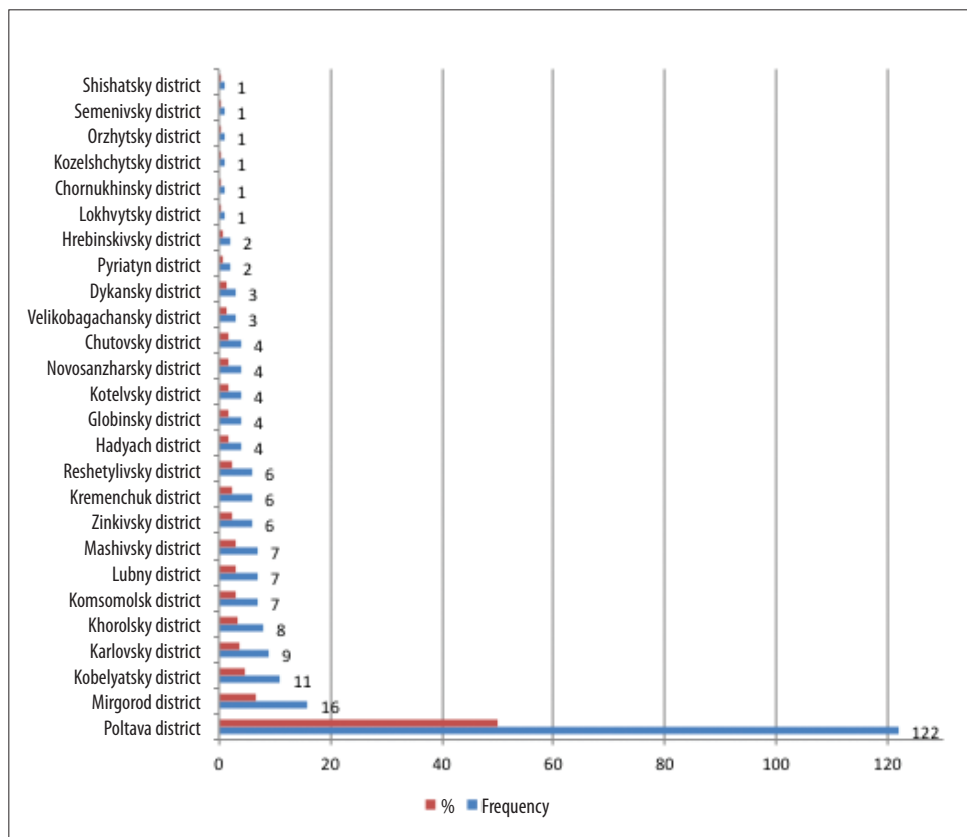


Fig. 1. Level of hospitalization of the patients with the ACS for the TLT to the Department of Interventional Radiology of Poltava Regional Clinical Hospital (in the districts of the Poltava region).

of the emergency medicine and medical institutions at all levels of provision of medical care within the national register, the “Card of the patient with acute myocardial infarction of the interventional radiology department” was created. This map, using monitoring, is designed to evaluate the quality of the provision of medical care to these patients (Fig. 2).

Monitoring indicators of stages of diagnosis and treatment of patients with AMI:

1. Percentage of patients with timely appeal for medical assistance: The number of patients who applied to the EMC in 30-60 minutes from the onset of symptoms * 100 / total number of hospitalized patients with AMI
2. Rate of diagnosis: (The number of patients who had taken an ECG in 10 minutes after the call of the EMD + the number of patients who had taken an ECG in 11-20 minutes after the call of the EMD) * 100 / total number of patients hospitalized in the department of interventional radiology through the EMC.
3. Percentage of patients who are hospitalized in the department of interventional radiology during a the standard time period: (The number of patients who arrived at the hospital admission office in period of 10 minutes after the making of the ECG + the number of patients who arrived at the hospital admission office in period of 10-20 minutes after the making of the ECG + the number of patients who arrived at the hospital admission office in period of 20-40 minutes after the making of the ECG) * 100 / total the number of hospitalized patients with AMI.
4. Percentage of patients who have undergone percutaneous intervention in defined time intervals: The number of patients who arrived at the hospital admission office in period of 60-120 minutes after the making of the ECG * 100 / total number of patients who have undergone percutaneous intervention.

DISCUSSION

In connection with the reform of the healthcare system of Ukraine, one of the main ideas is the coordination between different structural units and the introduction of indicators that characterize the outcome of treatment, the type of intervention procedure, the rate of diagnosis, determine the quality of the work of the reception department and ambulance and its algorithm. The map presented by us will allow:

- to receive feedback and to improve or to modify indicators that have already lost their relevance to more modern and necessary;
- to evaluate adherence to treatment with long-term follow-up of patients;

- objectively evaluate the quality of providing medical care to patients with AMI;
- is the basis for the development of treatment approaches and recommendations, the establishment of treatment standards; provide the basis for large randomized trials.

CONCLUSION

Thus, our proposed method of the monitoring and evaluation of the quality of medical care for patients with acute myocardial infarction in the Poltava region is able to provide dynamic observation of patients, analysis of statistical indicators characterizing the spread of the disease in the population under study, the efficiency of diagnosis and hospitalization of patients with ACS. Accurate account of the prevalence of AMI and its outcomes is important for health care system. The obtained data allow us to evaluate the effectiveness of the measures taken at all levels of medical care in the fight against coronary heart disease.

REFERENCES

1. Zhdan VM, Holovanova IA, Filatova VL et al. Medical evaluation of efficiency of optimized models for early detection and primary prevention of cardiovascular diseases. *Wiad Lek.* 2017;70(3 pt1):33-438.
2. Roger VL, Go AS, Lloyd-Jones DM. Heart disease and stroke statistics-2011 update: a report from the American Heart Association. *Circulation.* 2011;123:18-209.
3. World Health Organization Media Center (2011). The top 10 causes of death. Fact Sheet. 2011; 310. http://www.who.int/mediacentre/factsheets/fs310_2008.pdf
4. Hoyert DL, Xu Jiaquan. Deaths: Preliminary Data for 2011. *National Vital Statistics Reports.* 2011;61(1).6:1-7.
5. Aganbegyan AG. Dostizhenie vyisshego urovnya prodolzhitel'nosti zhizni v Rossii [Achieving the highest level of life expectancy in Russia]. *Rossiyskoye predprinimatel'stvo.* 2012;2(200):4-15.
6. Arabadzhyan VA, Kossovskiy MYa. Analiz bolnichnoy letalnosti pri infarkte miokarda [Analysis of hospital mortality in myocardial infarction]. *Klinicheskaya meditsina.* 1976;9:108-111.
7. Belenkov YuN. Disfunktsiya levogo zheludochka u bolnykh IBS: sovremennyye metody diagnostiki, medikamentoznoy i nemedikamentoznoy korektsii. [Left ventricular dysfunction in patients with ischemic heart disease: modern diagnostic methods, drug and non-pharmacologic correction.]. *Russkiy meditsinskiy zhurnal.* 2000;17:685-693.

8. Anisenkova AYu. Faktoryi riska i klinicheskie proyavleniya ishemicheskoy bolezni serdtsa u zhen-schin s razlichnoy stepenyu porazheniya koronarny-ih arteriy [Risk factors and clinical manifestations of coronary heart disease in women with varying de-grees of coronary artery disease]: Abstract of Can-didate of Medical Sciences: 14.00.06 Anisenkova Anna Yuryevna. Pb. 2006: 26.
-

Conflict of interest:

The Authors declare no conflict of interest.

Corresponding author:

Iryna Holovanova
Higher state educational establishment,
Ukrainian medical stomatological academy,
23 Shevchenko Str., Poltava 36004, Ukraine
tel: +0504041164
e-mail: yaryna.ua@gmail.com

Received: 07.05.2018

Accepted: 28.06.2018