

ABSTRACT

of the dissertation work of Tulepbergenov Gani Kunanbaevich on the topic: "Optimization of the organization of arrhythmological care for patients with atrial fibrillation", submitted for the degree of Doctor of Philosophy (PhD) in the specialty 8D10101 – "Public health"

Relevance of the research topic.

One of the leading etiological factors of stroke is atrial fibrillation (AF) [10-14]. Atrial fibrillation is the most common heart rhythm disorder. The frequency of AF is 1-2% of the total population, with a tendency to increase at least twice over the next 50 years, which is associated with the general aging of the population and an increase in the prevalence of chronic cardiovascular diseases.

Atrial fibrillation (AF) is the most common type of arrhythmias in clinical practice. AF is diagnosed in approximately 0.4% of the population, and its frequency increases with age: less than 1% in patients under the age of 60 years and more than 6% in patients over 80 years [27].

AF belongs to a group of chronic diseases that require constant long-term supervision by a doctor and effective self-control on the part of the patient. Despite certain achievements in the treatment of AF, disease control remains at an insufficient level. The literature indicates a number of factors that determine the effectiveness of treatment of patients with AF:

- the nature and severity of the underlying disease;
- severity and clinical features of arrhythmia;
- the phenomenon of arrhythmia "slipping" out of control of antiarrhythmics;
- medical resistance;
- features of drug metabolism;
- insufficient implementation by doctors of existing recommendations for the treatment of AF;
- low adherence to therapy.

AF does not pose an immediate threat to the patient's life [28, 51]. Nevertheless, subjective manifestations and hemodynamic disorders caused by AF are often the cause of hospitalizations and medical treatment. AF has the largest share in the structure of rhythm disorders in the outpatient unit, accounting for 73% of emergency medical care requests and 70% of all cases of hospitalization in a cardiological hospital for this pathology [64].

In the countries of the European Union, AF affects more than 6 million people [15-18]. Patients with AF have a five-fold increased risk of developing strokes, while the course of strokes is associated with high mortality and profound disability [19]. Most often, AF manifests in the form of a paroxysmal form and often remains undiagnosed for a long time, about a third of patients have AF latent. There is an opinion that with AF, the frequency of cognitive disorders, including dementia, associated with embolization of the microcirculatory bed of the brain increases [20].

The primary task of a practitioner in the management of a patient with AF is to ensure effective prevention of thromboembolic complications. The drugs of choice in this case are oral anticoagulants (OAC) [21-24].

Currently, there are four anticoagulant drugs in Kazakhstan - warfarin, rivaroxaban, dabigatran and apixaban, which have proven their effectiveness and safety in a number of large randomized trials (BAFTA, WASPO, RE-LY, ROCKET-AF, ARISTOTLE) [25-30].

Despite the fact that the appointment of anticoagulants for the prevention of thromboembolic complications is mandatory, in practice the problem of unjustified refusal to use UAC remains [31-33].

The use of warfarin requires strict laboratory control of the international normalized ratio (INR), since the drug has a narrow therapeutic window (INR – 2-3). At the same time, the effectiveness of the drug has not been proven with an INR of less than 1.6, and with an indicator value of more than 3.0, the risk of bleeding significantly increases.

Despite careful laboratory control, it is possible to maintain the level of INR in these repartitions, even in multicenter studies, in 50-70% of cases, while in routine medical practice less than 40% [22, p.34].

The therapeutic dose of warfarin is influenced by the nature of nutrition, medication intake, concomitant diseases, the functional state of the liver and kidneys. These factors are changeable and may vary throughout life, so constant dose adjustment of the drug is necessary.

The need for constant laboratory monitoring, dose adjustment of the drug, and an increased risk of bleeding cause low adherence of patients to warfarin therapy. On the contrary, new oral anticoagulants (PLA), which include rivaroxaban, dabigatran and apixaban, have fixed therapeutic doses, do not require laboratory control, while not inferior in efficacy and safety to warfarin, but are expensive. It was estimated that with the help of effective measures to correct only harmful lifestyle factors, about half of all strokes can be prevented. This assessment does not include issues of stroke prevention in arterial hypertension and AF [39]. However, even with the use of oral anticoagulants in clinical practice, the main problem also remains low adherence.

In order to monitor the condition and adherence of patients, mobile applications are becoming more popular due to their accessibility and simplicity of functionality.

Insufficient control of AF is a huge public health problem, given its high prevalence and potential complications.

Currently, it is recognized in the world medical practice that one of the progressive approaches to solving problems related to the treatment of chronic diseases and increasing adherence to drug therapy is the system of patient education.

From a scientific point of view, mobile healthcare tools are intensively studied as an auxiliary tool for optimizing the decision-making process.

Previous studies have shown that mobile healthcare tools have some potential to improve adherence to the treatment of chronic diseases, but the

evidence supporting their current effectiveness is still ambiguous and vague. There are a number of reports on the effectiveness and non-optimal adherence to the treatment regimen in patients with AF (moderate to low). Nevertheless, the assessment of the adherence of patients with AF in Kazakhstan has not yet been carried out.

The purpose of the study:

To improve the effectiveness of providing specialized arrhythmological medical care to patients with atrial fibrillation.

Research objectives:

1. To study epidemiological features, as well as modern measures to prevent strokes in patients with diagnosed atrial fibrillation
2. To assess the degree of adherence to treatment in patients with atrial fibrillation on the basis of the City Cardiology Center of Almaty.
3. To evaluate the possibilities of using the mobile application "My Therapy" and its impact on adherence to therapy in patients with diagnosed atrial fibrillation directed to outpatient treatment.
4. To develop a program and methodology of the organizational and functional model of the atrial fibrillation school on the basis of the Almaty City Cardiology Center and evaluate its effectiveness.
5. Develop measures to improve the organization of arrhythmological care for patients with atrial fibrillation, taking into account the effectiveness of innovative programs.

Scientific novelty:

The main factors influencing the adherence to the treatment of patients with AF have been identified, which are reduced to expanding knowledge on etiopathogenesis, on the treatment of AF, strengthening self-control based on constant reminders, as well as joining groups with common interests, which leads to an increase in clinical, economic and medico-social effectiveness.

The main provisions submitted for protection:

1. Based on the epidemiological features and risk factors for the development of atrial fibrillation, a set of measures for the organization of stroke prevention assistance has been formulated.
2. Organizational and methodological program in patients with atrial fibrillation aimed at increasing awareness and adherence to therapy of patients, compliance with the clinical protocol of diagnosis and treatment by doctors of the district service, reduces the risk of strokes.
3. Adherence to the therapy taking into account the medical, social and clinical aspects of the organization of care in patients with atrial fibrillation improves the effectiveness of preventive anticoagulant therapy.
4. Constant self-monitoring using a mobile application improves the quality of life of patients with AF and reduces the number of paroxysms in dynamics.

Practical significance:

1. To conduct therapeutic training of patients, it is recommended to use the developed program "Schools for patients with atrial fibrillation".
2. When conducting dynamic monitoring of patients with atrial fibrillation, it is recommended to assess the awareness of patients about the disease and their adherence to drug therapy in addition to the generally accepted clinical parameters.
3. To assess the effectiveness of training for patients with atrial fibrillation, it is recommended to use the developed criteria, including a decrease in the frequency or absence of paroxysms in patients with paroxysmal and persistent forms; achievement of the frequency of ventricular contractions of 60-80 at rest and 90-115 during physical exertion in patients with constant form; increased awareness, adherence to therapy, as well as quality of life.
4. The use of the atrial fibrillation school for patients and the mobile application "My Therapy" allows to achieve clinical, economic and medico-social efficiency

Publications on the topic of the dissertation

9 scientific papers have been published on the topic of the dissertation, including 2 methodological recommendations, 3 in publications recommended by CQASE of MS and HE of the RK, 1 in an international publication indexed in the Scopus database. 5 scientific papers have been published in collections and materials of international scientific and practical conferences. Received 3 copyright certificates, 4 acts of implementation.

Approbation

The results and main provisions of the scientific work are presented at the XLIV International Scientific and Practical Conference "Natural Sciences and Medicine: theory and practice" 03.2022

- In the international book publishing house "Bobek", Diploma "Zhas Galym", 1st degree, Nur-Sultan, 2021.

Scope and structure of the dissertation

The dissertation work is presented on 170 pages. The structure is represented by the following elements: normative references, definitions, a list of abbreviations and designations, an introduction, a literary review, research materials and methods, sections of own research, conclusions. The dissertation is illustrated with 22 figures and 21 tables. The list of references includes 203 sources.

Conclusions

1. The reduction of mortality rates to 64.6 per 100 thousand of the population of the Republic of Kazakhstan is associated with improved prevention of strokes. However, difficulties in predicting the consequences of AF and its treatment methods, as well as the limitations of modern treatment methods, make it mandatory to study and improve preventive and therapeutic strategies.

2. Among patients with atrial fibrillation in 47.5% of cases, low adherence to continuous drug treatment was revealed, the reason for which in 72.9% of cases is the lack of knowledge about the medications taken
3. The developed program and methodology of the organizational and functional model of the school "atrial fibrillation" contributes to improving the quality of life of patients by affecting both its physical and mental components; the achieved effect persists for at least 6 months after training. The proportion of patients with high awareness of the disease increases tenfold (from 3.4 to 44.1%), the proportion of patients with sufficient self-control skills of the disease is doubled (from 49.5 to 91.6%).
4. The use of the mobile application "My Therapy" in this study showed that, within 12 months after discharge, there was a relatively low frequency of repeated hospitalizations in the intervention group compared with the control group ($p = 0.024$), which is associated with an improvement in the adherence of patients with AF due to condition monitoring using a mobile application.
5. The proven clinical effectiveness of the mobile application and the model of the atrial fibrillation training school allowed to reduce the proportion of patients with frequent paroxysms (from 13.7 ± 2.2 to 7.3 ± 1.9) and reduce low adherence from 47.5% to 6.3%, as well as to reduce the need for medical care.

Recommendations:

1. We recommend introducing a School for patients with atrial fibrillation to enhance the medical and social effectiveness of treatment at the level of Health Management
2. Implement the application of the mobile application "My Therapy" at the PHC level
2. To include the School of AF in the educational program of Medical Universities within the framework of the educational program of public health
3. Creation of offices of the School of AF in polyclinics and cardiology departments in the hospital (integration into existing health schools), to allocate a responsible cardiologist