Predictors of adherence to treatment in patients with atrial fibrillation

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In a prospective controlled research in patients with atrial fibrillation identified factors that may be considered as predictors of adherence to treatment. Universal predictors of inadequate adherence to treatment are male sex, age less than 65 years, a permanent form of atrial fibrillation, clinically significant congestive heart failure, medication three times a day or more, taking warfarin and digoxin. For men, predictors of inadequate adherence to treatment are clinically significant for atrial fibrillation, receiving seven or more medicines per day and the intake of amiodarone. Predictors of high adherence to treatment can be a paroxysmal form of atrial fibrillation, taking statins, cardiovascular disaster in past for women and receiving new oral anticoagulants in men. Predictors of inadequate adherence to treatment can be differentiated with regard to their modifiability. Non-modifiable predictors should be considered in treatment. Impact on modifiable predictors (primarily -changing drug therapy) can be one of the new elements of increase of efficiency of treatment of patients with atrial fibrillation.

Keywords:

Atrial fibrillation, adherence to treatment, prediction of adherence, predictors of commitment.

Introduction:

Improving adherence to treatment in patients with chronic diseases in cases where this is possible, or the account of the individual level of adherence, if you cannot correct it, can significantly improve the efficiency of medical care [1]. However, for this it is necessary to identify and study the predictors of low or on the contrary, high adherence. Especially important is their assessment in patients with atrial fibrillation, because the willingness of patients with this pathology to perform medical interventions, for term of life, is of key importance for achieving the treatment and prevention of complications [2]. Conventional for research in this area is to assess the patients' adherence to the reception of a specific drug or combination of funds, as well as a comparison of adherence to therapy before and after a specific event (eg, vascular accident). The comparative rarity of such studies in patients with atrial fibrillation was defined limited research tools capabilities. Solve the problem allowed the Russian questionnaire quantify adherence to designed in 2008 for the

treatment of patients with arterial hypertension and subsequently upgraded for universal application [3], which became the basis of this study.

Goal:

To identify predictors of adherence to treatment in patients with atrial fibrillation.

Material and Methods:

In an open, prospective, controlled, comparative cross-sectional study on clinical bases of the Omsk State Medical University, were included 137 patients with atrial fibrillation (68 men, 69 women) aged 35 to 85 years (mean age 66,4 ± 9,4 years). Adherence to treatment was investigated by NA Nikolaev (2015), measuring in standard percentages and selecting high (50-100%), satisfactory (25-50%) and unsatisfactory (0-25%). Given that patients with atrial fibrillation, even for minor violations of the conditions of antiarrhythmic and anticoagulation therapy have a higher risk of reducing the effectiveness of treatment and the development of complications, satisfactory and unsatisfactory regarded as an inadequate of commitment.

During the statistical processing of the data the level of significance was the probability α of less than 0.05. In all cases of the possibility of parametric studies, was used t-Student. If tasks cannot be solved by them, we have used a non-parametric analysis (Wald-Wolfowitz, Mann-Withney, Kolmogorov-Smirnov, Pirson), in each case giving preference to the most sensitive criterion. Statistic processing was performed in the certified software package Stat Soft Statistica 6.1 for Windows.

Results:

Adherence to treatment in men and women were evaluated taking into account the age, peculiarities of atrial fibrillation, comorbidity, medication.

Patients older than 65 years in all the studied parameters showed a higher level of commitment than younger patients, with differences according to the criterion of adherence to drug therapy achieved statistical significance (Wald-Wolfowitz, $p < 0.05$). Levels of adherence to treatment among women in all parameters were significantly higher than in males (t-Student, $p < 0,05$).

Asymptomatic (based on the evaluation index of clinical symptoms of atrial fibrillation - EHRA) for diseases associated with lack of adherence to treatment in men only (Pirson $\chi 2$, $p < 0,05$). Women, with less development of symptoms, are more committed to the medical support than men (Kolmogorov-Smirnov, $p < 0.05$). Men with EHRA II have high adherence to treatment (Pirson $\chi 2$, $p < 0,05$). Men with EHRA III insufficiently committed to the maintenance of health and lifestyle

modifications; women with the same criteria have a high commitment (Pirson $\chi 2$, $p < 0,05$). With EHRA IV significantly more likely to lack of commitment to the lifestyle modifications observed in men (Pirson $\chi 2$, $p < 0,05$). In general, the increase in symptoms associated with reduced adherence to treatment among men (Wald-Wolfowitz, $p < 0.05$) and increased adherence to lifestyle modifications and drug therapy at women (Wald-Wolfowitz, $p < 0.05$).

Regardless of gender in paroxysmal atrial fibrillation adherence to drug therapy is higher than in a permanent form (Kolmogorov-Smirnov, $p < 0.05$). For men with persistent atrial fibrillation is characterized by high commitment to health maintenance (Pirson $\chi 2$, $p < 0,05$).

The absence of angina in men is associated with a high commitment to health maintenance and modification of lifestyle, while for women - with a unsatisfactory of adherence (Pirson $\chi 2$, $p < 0,05$). Men with angina functional class I committed insufficiently to the medical support, but highly committed to drug therapy (Pirson $\chi 2$, $p < 0,05$). With an increase in severity of angina adherence to treatment in men decreases. In women, the emergence and worsening of angina adherence to the medical support increases (Pirson $\chi 2$, $p < 0,05$).

For men with chronic heart failure (CHF) I stage is characterized by low adherence to lifestyle modifications and drug therapy with high adherence to health maintenance. Men with 2A stage heart failure are associated with a high adherence to health maintenance. Women with 2B stage heart failure are associated with poor adherence to medical support and lifestyle modifications. For patients with chronic heart failure functional class II, in the sample, is characterized by low adherence to lifestyle modifications, but it increases wiht CHF functional class III for men only (Pirson $\chi 2$, $p < 0,05$). Weighting stage heart failure is accompanied by a statistically significant reduction in adherence to lifestyle modification in the total sample (Wald-Wolfowitz, $p < 0.05$). Adherence to medication is worse by people with CHF functional class III-IV, than CHF functional class I-II (Wald-Wolfowitz, $p < 0.05$).

Regardless of gender, myocardial infarction in a history is accompanied by inadequate adherence to health maintenance and modification of lifestyle, but women, at the same time, high adherence to drug therapy (Pirson $\chi 2$, $p < 0,05$).

Men with coronary artery bypass grafting, have an inadequate adherence to medical support to drug therapy. Men with stenting have high adherence to lifestyle modifications (Pirson $\chi 2$, $p < 0,05$).

The increase in the total number of related diseases characterized by increased adherence to lifestyle modifications and drug therapy, regardless of gender, with a decrease in adherence to medical support for women (Wald-Wolfowitz, $p < 0.05$).

Regardless of gender, the increase in the number of drugs taken and the multiplicity of receiving medication three times a day or more, accompanied by a statistically significant reduction

in adherence to medical support (Wald-Wolfowitz, $p < 0.05$). Patients taking statins, more committed to the therapy, than not taking them (Wald-Wolfowitz, $p < 0.05$).

Receiving Amiodarone is accompanied by low adherence to drug therapy for men and higher for women. Admission sotalol associated with high adherence to medical support and drug therapy of men and inadequate for women (Pirson $\chi 2$, $p < 0,05$). Men, who take propafenone, have the low adherence to the medical support. Regardless of gender, people who took digoxin, have a low adherence to treatment for more the criteria.

Appointment acetylsalicylic acid combines with low adherence to drug therapy among men and higher among women, but appointment clopidogrel shows the opposite situation (Pirson $\chi 2$, $p < 0,05$).

Warfarin is accompanied by increased adherence to treatment for men and women, but women are more committed to drug therapy, than men (Wald-Wolfowitz, $p < 0.05$). Receiving Dabigatran is associated with high adherence to drug therapy, regardless of gender, but women, at the same time, have low adherence to the medical support (Pirson $\chi 2$, $p < 0,05$). Men, who taking new oral anticoagulants, are more committed to drug therapy, than those taking warfarin (Wald-Wolfowitz, $p < 0.05$).

Discussion:

The research revealed the factors that can be considered as prognostic markers - Predictors of adherence to treatment of patients with atrial fibrillation.

By universal predictors of inadequate adherence to treatment include: male sex; age younger than 65 years; permanent form of atrial fibrillation; clinically significant chronic heart failure; medication 3 times or more per day; warfarin and digoxin. Additional predictors inadequate of adherence to treatment for men are: clinically significant for atrial fibrillation; appointment of 7 or more drugs; amiodarone. Predictors of high adherence to treatment may include: paroxysmal atrial fibrillation; statins reception; ported cardiovascular accident in women; men, who accept of new oral anticoagulants.

Predictors of insufficient adherence to treatment can be differentiated in view of modifiability. Non-modifiable predictors (age, sex, peculiarities of atrial fibrillation, concomitant diseases, etc.) should be taken into account when organizing and conducting the treatment. Impact on modifiable predictors (primarily - changes drug therapy) may be one of the new features improve the efficiency of treatment of patients with atrial fibrillation.

The findings made actual a number of questions. The level of adherence is determined by the influence of a specific clinical condition, or on the contrary, the clinical condition is influenced by an

individual adherence? Whether the adherence base for a specific patient, or they are able to change under the influence of external factors?

We believe, that adherence to treatment should be considered as including both components of the system, parts of which have independent and dynamic, each within its limits. The design and instrumentation of this research allowed us to estimate primarily basic commitment. In contrast to the base, changing situational commitment described in many studies, significantly changing under the influence of external factors.

For example, this may explain the significant difference obtained in the present research, data on lower adherence to treatment of patients who underwent myocardial infarction, by improving information on adherence to treatment after suffering a myocardial infarction, cited by other authors.

The results showed that the quantitative analysis of the adherence reveals many previously not accounted for factors that could materially affect the outcome of treatment. Identifying predictors of adherence to treatment makes it possible to develop adherence management technologies that improve the efficiency of the treatment not only of atrial fibrillation patients, but also patients with other chronic medical conditions.

Conflict of interest:

The authors declare no conflict of interest.

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