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## FEATURES OF PHARMACOEPIDEMIOLOGY IN HOSPITAL CONDITIONS AND AT THE REMOTE STAGE OF OBSERVATION IN PATIENTS WHO HAVE SUFFERED A MYOCARDIAL INFARCTION

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***Resume***

***Results were demonstrated insufficient efficiency of medicaments therapy as secondary prophylactic in patients with myocardial infarction in stationary condition, as well in the remote monitoring phase. It is established, that remedy preparations in the remote monitoring phase administrated in relatively low-level doses. It is found the low-level adherence of patient's treatment with myocardial infarction in the remote monitoring phase.***

***Key words: myocardial infarction, arterial hypertension, diabetes.***

## MIOKARD INFARKSINI O'GAN KASALAHASH SHARTLARIDA VA MASALOV BOSHQACHIDA FARMAKOEPIDEMIOLOGIYA XUSUSIYATLARI

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***Rezyume***

***Natijalar miokard infarkti bilan og'rigan bemorlarda statsionar holatda, shuningdek, masofaviy monitoring bosqichida ikkilamchi profilaktika sifatida dori-darmonlarni davolashning samarasizligini ko'rsatdi. Aniqlanishicha, dori vositalari masofaviy monitoring bosqichida nisbatan past dozalarda qo'llaniladi. Masofaviy monitoring bosqichida miyokard infarkti bilan og'rigan bemorning davolanishiga past darajada rioya qilish aniqlanadi.***

***Kalit so'zlar: miokard infarkti, arterial gipertenziya, qandli diabet.***

## ОСОБЕННОСТИ ФАРМАКОЭПИДЕМИОЛОГИИ В ГОСПИТАЛЬНЫХ УСЛОВИЯХ И НА ОТДАЛЕННОМ ЭТАПЕ НАБЛЮДЕНИЯ У БОЛЬНЫХ, ПЕРЕНЕСШИХ ИНФАРКТ МИОКАРДА

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***Резюме***

***Результаты показали недостаточную эффективность медикаментозной терапии в качестве вторичной профилактики у больных с инфарктом миокарда в стационарном состоянии, а также на этапе дистанционного наблюдения. Установлено, что лечебные препараты в фазе дистанционного наблюдения вводят в относительно низких дозах. Выявлена низкая приверженность лечению больных инфарктом миокарда на этапе дистанционного наблюдения.***

***Ключевые слова: инфаркт миокарда, артериальная гипертензия, сахарный диабет.***



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**Relevance**

According to the World Health Organization, more than 17 million people die from cardiovascular diseases every year in the world, they consistently occupy the first place in the structure of mortality (53%) [1]. According to the World Health Organization, the projected mortality rate from cardiovascular diseases by 2020 will be up to 25 million people per year worldwide [6].

The analysis of the causes of mortality shows that the most significant among the diseases of the circulatory system is coronary heart disease -48.1%, and the main life-threatening and disabling clinical variant is acute myocardial infarction [9]. Cerebrovascular diseases are in second place in the structure - 36.7%. These two nosologies account for up to 84.8% of all deaths in this class [26; 32].

It is known that the frequency of cardiovascular complications and the mortality rate are maximal during the first 3 months after myocardial infarction [12]. Over the next 2 years, the frequency of deaths and new cases of myocardial infarction is 7% per year [14]. One of the most significant problems of coronary heart disease is the development of repeated myocardial infarctions, the frequency of which is 25-29%. Adequate secondary prevention plays a significant role in reducing disability and mortality rates in the long-term prognosis after myocardial infarction [2; 3; 7; 17]. However, at present it has to be stated that the effectiveness of secondary prevention of myocardial infarction is far from optimal.

Three large-scale studies conducted in European countries as part of the EUROASPIRE study (European Actionon Secondary Prevention through Intervention to Reduce Events) in 1995-1997, 1999-2000, and 2006-2007, in which the results of examinations of patients with coronary heart disease who have suffered myocardial infarction and other acute coronary conditions, as well as myocardial revascularization interventions were compared, established a high incidence of modifiable risk factors among patients with coronary heart disease, including smoking, obesity, diabetes mellitus, hypertension, hypercholesterolemia [15]. The study of the effectiveness of secondary prevention in dynamics showed that the frequency of smoking among patients practically did not change (19.4% vs 20.8%), the prevalence of obesity increased (25.3% vs 32.8%), as a result, the number of patients with diabetes mellitus increased by 18-20%. The number of patients with arterial hypertension has practically not changed (55.4 vs 53,9 %) [14].

High mortality in primary and repeated myocardial infarctions indicate insufficient effectiveness of medical care for patients with diseases of the circulatory system [10]. It is necessary to look for new approaches to the prevention of cardiovascular diseases in general, aimed at eliminating not so much risk factors as the main "trigger" causal factors that form them [8].

In the secondary prevention of patients with coronary heart disease, it seems relevant to increase the effectiveness of post-hospital rehabilitation of patients who have suffered a myocardial infarction, using the already available various diagnostic and therapeutic and preventive capabilities in a polyclinic.

The relevance of the study of favorability to MI treatment is one of the discussed provisions in the modern literature [11]. Compliance with the principles of evidence-based medicine reduces mortality and the risk of repeated MI when using a large number of drugs with a high evidence base, since the effect of a combination of two drugs is reliable ($p<0.001$) in comparison with the absence of such drugs [13], and the model of building the principles of "adhesion" in MI remains extremely complex [16].

**Aim of work:** Estimation of preparation administration to patients who suffered from MI in stationary condition and in the remote monitoring phase.

**Materials and methods**

Work was a retrospective investigation of patients, who admitted to city clinical hospital No 7 of Tashkent with MI. It was included patients of both sexes. In result of screening of patients according to criterions was included 631 patients. 516 patients went till the end of investigation. In the remote monitoring phase 30 % (n=155) of patients refused from investigation, 5 % (n=26) patient's destiny is unknown.

Diagnosis MI on stationary stage was established according to existed criterions of national recommendations in diagnostic and treatment of patients with MI with ST segment elevation, 2007 y. All patients, who included, were invited to the interview (remote monitoring phase). In case of patient absence it was indicated a reason: death, aggravation of state, changing of living place, unwilling etc. In case of patient death indicated a date and a reason - coronary death, un coronary death. In the study, doctor filled individual card of the patient of one example, which consisted of questions of retrospective estimation of features, quality of stationary stage of treatment and remote monitoring phase.

Methods of statistical analysis of investigation results were made using application package



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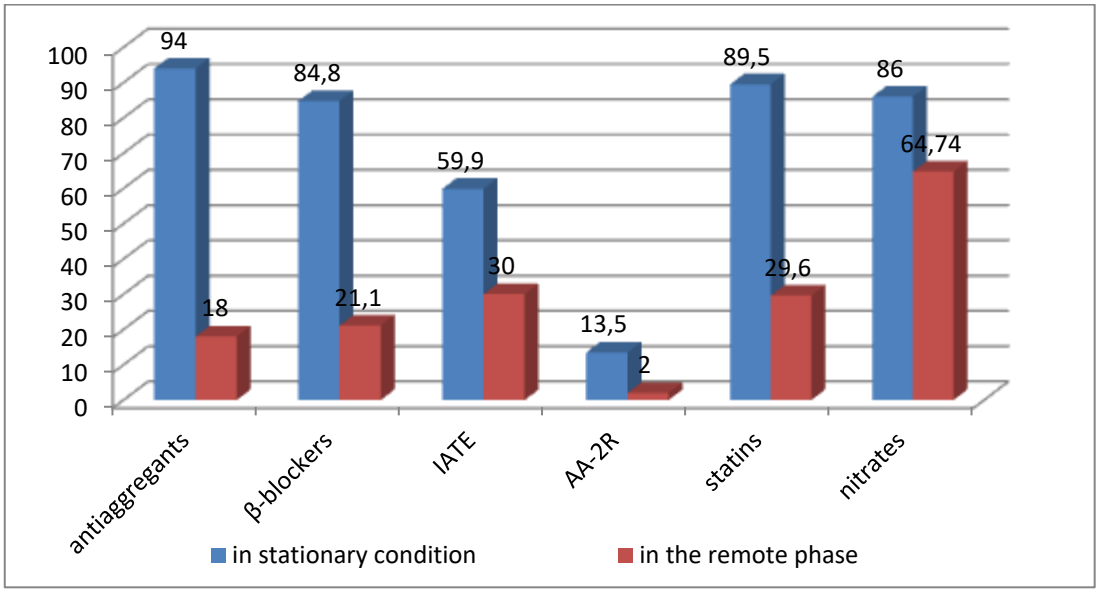
statistic programs MEDIOSTAT. It was used standard methods of variation statistics: calculation of average, standard deviation (M±m), criterions of Styudent ($p<0.05$).

**Result and discussion**

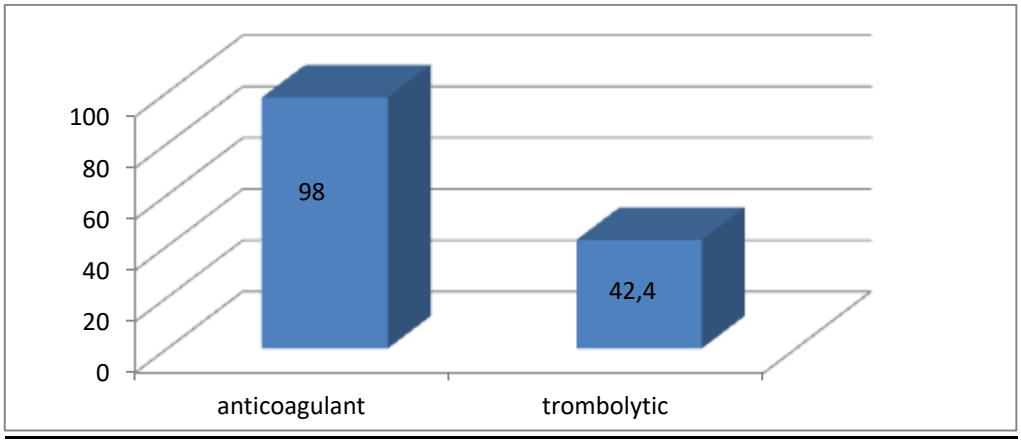
After coming of patients into clinic was administrated standard therapy of MI; which included: antiaggregants 94% (n=593), anticoagulants 98% (n=616), inhibitors of angiotensin transforming enzyme (IATE) 60% (n=378), antagonists of angiotensin 2 receptor (AA-2R) 14% (n=85), statins 90% (n=565), trombolytics 42.4 % (n=122) (pic.1)




*Pic.1 Characteristics of the therapy to MI patients in stationary condition and in the remote monitoring phase (%)*

Double antiaggregant therapy was done in 591 patients (93.7%) (aspirin in dose 150 mg and clopidogrel in dose 300 mg). In the remote monitoring phase double antiaggregant therapy (aspirin 75 mg and clopidogrel 75 mg) were taken just in 18% (n=60) of cases. In 82% (n=275) cases patients independently took antiaggregants as a monotherapy (aspirin 82 % (n=225) and clopidogrel 18 % (n=50). High frequency of antiaggregant therapy administration in patients with MI as in moment of hospitalization so in the remote monitoring phase is positive factor.

In stationary condition to 98% (n=616) patients were done anticoagulant therapy, 19% (n=114) from them heparin, 81% (n=502) enoxiparin, 46% (n=288) patients came with ST segment elevation, from them to 42.4% (n=122) patients was done trombolytic therapy using streptokinase in dose 1.5 ml IU (pic.2)




*Pic 2. Anticoagulant and trombolitic therapy in stacionari condition (%)*



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β-adrenoblocks in stationary condition took 84.8% (n=535) patients. Most frequent administrated preparations for patients with MI among β-adrenoblocks in stationary condition was bisoprolol in 92% (n=491) cases; in the remote monitoring phase took 21.1% ( n=71) patients.

In stationary condition carvidelol 4.5 % (n=29) and atenalol 3.7 % (n=20) was administrated rarely. Atenalol was not used in controlled investigations in secondary prophylactic of MI; hence, it was not proved its positive influence to remote indexes survival and mortality.

IATE in stationary condition was recommended to 59.9 % (n=378) patients, frequency of administration in the remote monitoring phase was 30% (n=101). Most frequent administrated ramipril in 28.8 % (n=182), rarely enalapril 15.5 % (n= 98), lysinopril 6.3% (n=40) and perindopril 9.03% (n=57) cases.

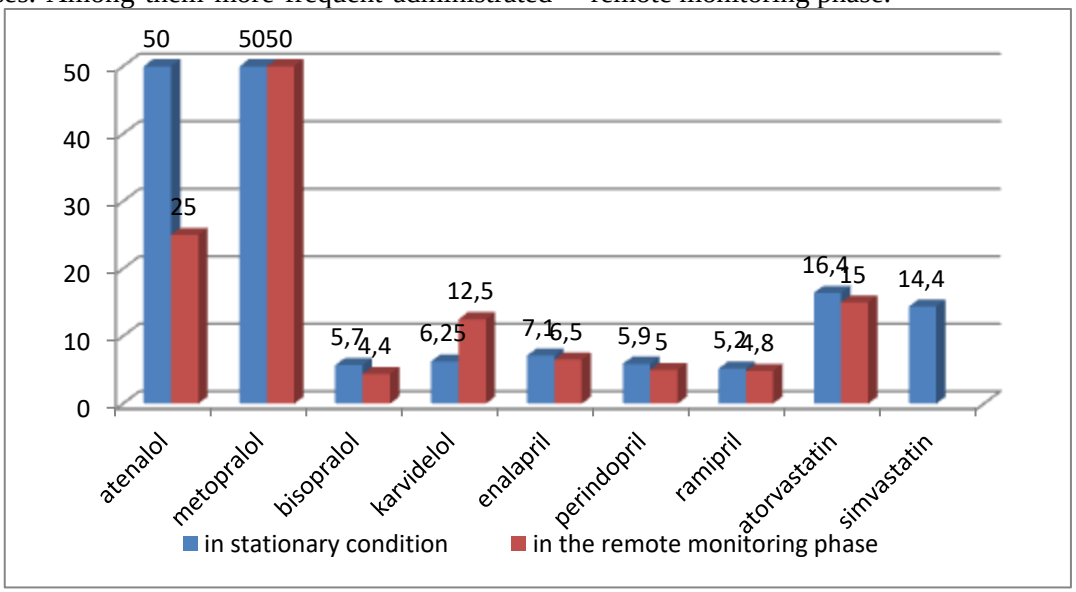
Inspite of sufficient good tolerance and safety of AA-2R in stationary condition was administrated patients with MI just in 13.5 %( n= 85), azilsartan 0.63% (n= 4), valsartan 0.95 % (n=6), irbisartan 1.4 %( n= 9), losaratan 10.5% (n= 66). In the remote monitoring phase frequency of taking of preparations of this group was just 2 % (n= 85) cases.

Statins were administrated in 89.5% (n=565) cases. Among them more frequent administrated atorvastatin 76.1% (n= 480), rarely simvastatin 5.4 % (n=34), rozuvastatin 4.8 % (n= 30). Preparations of other groups as lipid decreased therapy: preparations of a nicotinic acid, fibrates, and ezetemib's group were not recommended for taking. It was noticed a positive fact of more wide using of statins in the remote monitoring phase as secondary prophylactic CVD. In our investigation according to worlds of patients statins were taken only by 29.6 % (n= 99) cases.

In stationary condition to 86% (n=543) patients with MI were administrated nitrates. In the remote monitoring phase nitrates took 64.74% (n= 217) patients. More frequently administrated mononitrates 45% (n=151), rarely dinitrates 6.41% (n=21). Relatively high using of nitrates by patients with MI in the remote phase from one hand one may explain by existence in most number of cases effort angina of different functional classes. From other hand, just little group of patients with MI in the remote monitoring phase underwent to intervention on coronary vessels of heart.

During indicated period intervention cause of revascularization of myocardium made to 5% (n=17) patients, ACB 3% (n=10), TLBA 2% (n=7).

In pic. 3 represented average daily doses of remedy preparations, which were administrated to patients in stationary condition and in the remote monitoring phase.




*Pic.3. Characteristics of average daily doses of drugs preparations, which were administrated to MI patients in stationary condition and in the remote monitoring phase (mg)*

As we can see from received results, average daily doses of indicated preparations relatively not high and in stationary condition and in the remote monitoring phase, and it does not



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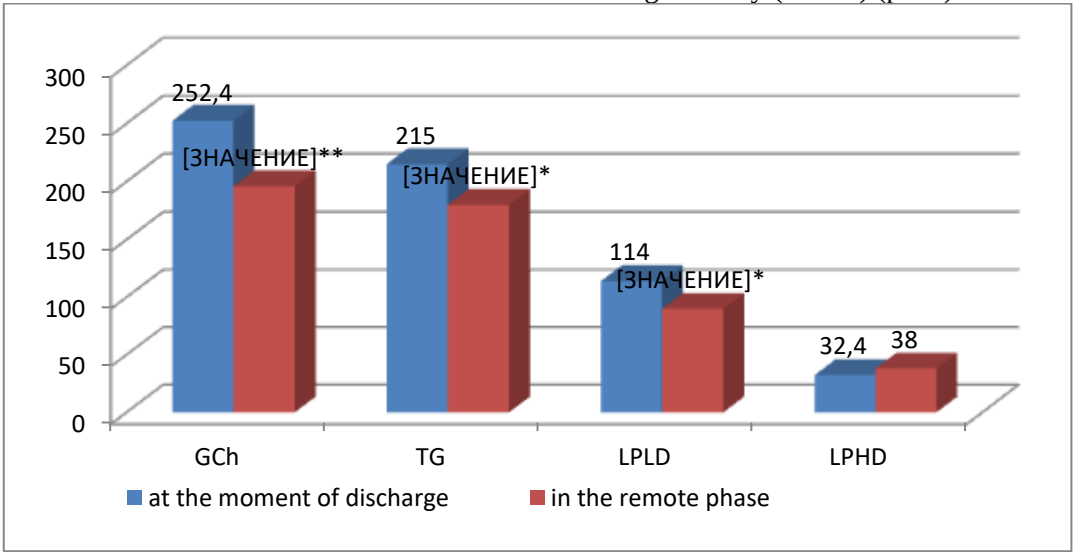
appropriate to international and national recommendations by treating of MI with ST segment elevation to preparations of secondary prophylactic of CVD at patients with MI after discharging from stationary.

At the moment of hospitalization in 86.5% (n=546) patients MI developed on the background of AG, duration of disease was 7.3±4.5 year. At the moment of hospitalization average index of SAP was 156±45, DAP 90±12 mm Hg. Number of patients who reached target level of SAP and DAP in stationary condition was 69% (n=356). In the remote monitoring phase did not reach target level of BP 17.2 % (n=356) patients.

On the background diabetes at 140 (22.2%) patients was registered MI, when average index of blood sugar was presented 6.14±2.5 mmol/l. From data of patients 121(86.4%) had got hypoglycemic preparations and 19(13.6%) had got insulin therapy.

At admission in stationary in patients was found hypercholesterolemia, which characterized by increasing of general cholesterol (GCh), triglycerides (TG), lipoproteins of low density (LPLD) and decreasing the level of lipoproteins of high density (LPHD) (pic.4).




*Footnote: *p<0.05:**p<0.01veracious difference between groups*

*Pic.4. Indexes of blood lipid profile in MI patients in stationary condition and in the remote monitoring phase (mg/dl)*

In the remote monitoring phase the most negative tendency related to absence of reaching a target level of lipids among majority of patients, although it was observed veracious decreasing of GCh (22%), TG (16%), LPLD (21%).

How can we explain insufficient efficacy of ongoing drug therapy in patients with MI in the remote phase?

Results of investigation showed that in 11.7% cases (n=39) patients had forgotten to take drug preparations and violated the multiplicity of their taking. In 47.9% cases (n=161) violations was not administrated treatment in scheme. But we have to emphasize, that in 40.4 % cases (n= 135) patients independently changed doses of drug preparations and even multiplicity of their taking.

**Conclusions**

The results obtained demonstrated the insufficient effectiveness of drug therapy in terms of secondary prevention in patients who have suffered a myocardial infarction, both in a hospital setting and at a remote stage of follow-up. It has been established that medications are prescribed at a remote stage in relatively low doses with persistent non-target levels of systolic blood pressure, diastolic blood pressure, heart rate, total cholesterol, low-density lipoproteins, high-density lipoproteins, triglycerides. It was found low adherence treatment of patients, who suffered from MI in the remote monitoring phase.

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