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MANAGEMENT OF INDIVIDUALS DIAGNOSED WITH BENIGN PROSTATIC HYPERPLASIA ACCOMPANIED BY COMPROMISED SOMATIC CONDITION

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Abstract. Benign prostatic hyperplasia (BPH) is considered the most common disease in middle-aged and elderly men. Morphological signs of benign prostatic hyperplasia are found in more than 40% of men aged 50 years and more than 90% of men over 80 years of age.
The actual problem of scientific research in the field of drug therapy of benign prostatic hyperplasia is the determination of prognostic criteria for the effectiveness of the use of a particular drug. It is known that the additional appointment of al-blockers affects the function of the cardiovascular system, influencing blood pressure, and requires hemodynamic control.
Keywords: prostate, benign prostatic hyperplasia, age, blood pressure, cardiovascular system.

Relevance. Benign prostatic hyperplasia (BPH) is considered the most common disease in middle-aged and elderly men [2, 4, 7, 9]. Morphological signs of benign prostatic hyperplasia are found in more than 40% of men aged 50 years and more than 90% of men over 80 years of age [1, 3, 5, 10]. The actual problem of scientific research in the field of drug therapy of benign prostatic hyperplasia is the determination of prognostic criteria for the effectiveness of the use of a particular drug [6, 8, 9, 10]. It is known that the additional appointment of al-blockers affects the function of the cardiovascular system, influencing blood pressure, and requires hemodynamic control.
Benign prostatic hyperplasia (prostate adenoma, BPH, BPH) is a common global problem faced by one third of men over 50 years of age and 90% of patients who have lived to 85 years of age. According to statistics, about 30 million men have urogenital dysfunction associated with BPH, and this figure is increasing every year. Pathology is more common in African Americans with initially higher levels of testosterone, activity of 5-alpha-reductase, growth factors and expression of androgen receptors (a population feature). In residents of eastern countries, prostate adenoma is registered less often, which is apparently due to the consumption of a large number of foods containing phytosterols (rice, soy and its derivatives).
Benign prostatic hyperplasia (BPH) is a benign tumor that develops due to hyperplasia of predominantly glandular (epithelial) and less – stromal prostate cells, against the background of a violation of the prostate receptor apparatus interacting with testosterone metabolites, which leads to an increase in the mass of the organ, as well as a deterioration in the passage of urine from the bladder (infravesical obstruction), due to compression of the posterior urethra (the prostate surrounds the urethra). The process has a chronic course, resulting in decompensation of the contractile function of the bladder, an increase in residual urine, the formation of

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ureterohydronephrosis, the occurrence and progression of inflammatory diseases of the kidneys, bladder, kidney failure.

The aim of this study was to assess the safety of al-blockers in benign prostatic hyperplasia and the presence of concomitant diseases of the cardiovascular system.

Material and research methods. For the period 2019-2022 120 patients with benign prostatic hyperplasia aged 55 to 82 years were under observation, who received various combinations of al-blockers. In this regard, all patients were divided into 4 groups:

Group 1-30 patients with benign prostatic hyperplasia who received sequentially tamsulosin and terazosin;

Group 2-30 patients with benign prostatic hyperplasia who received sequentially terazosin and tamsulosin;

Group 3-30 patients with benign prostatic hyperplasia who received alfuzosin and tamsulosin sequentially;

Group 4-30 patients with benign prostatic hyperplasia who received sequentially tamsulosin and alfuzosin.

Results of the study: In order to assess the effect of the drug on hemodynamic parameters, all patients during the study underwent measurements of blood pressure and heart rate in the supine and standing positions. Blood pressure (systolic and diastolic) and heart rate were measured after resting for 10 minutes in the patient's lying position, then standing, in the morning before taking the next dose of the drug, with an interval of 2 minutes.

The average value of 3 measurements was taken as the level of blood pressure and heart rate at a given visit.

All patients had various concomitant diseases, which mainly (85%) belonged to the class of diseases of the circulatory system: chronic ischemic heart disease, angina pectoris, atherosclerotic heart disease, hypertension. The most common of these diseases was coronary heart disease, the frequency of which was 74.1%. The second place in frequency was shared by exertional angina (50.9%) and atherosclerotic heart disease (50.0%). More than a third of patients suffered from arterial hypertension (34.3%). 22% of patients had a history of myocardial infarction. Chronic diseases of the lungs, digestive organs, musculoskeletal system, etc. were observed. 89.8% of patients had a combination of chronic diseases, and 76.9% received concomitant drug therapy. Most often, these were cardiac and antihypertensive drugs. A small proportion of patients received drug therapy aimed at correcting chronic disorders of the gastrointestinal tract (enzymes). At the same time, in 53% of patients, concomitant therapy was combined. Only 23.1% of patients during the observation period did not use drugs for concomitant diseases.

Summarized data on the dynamics of mean systolic and diastolic blood pressure and heart rate in the supine and standing positions in groups of patients taking tamsulosin, terazosin and alfuzosin are presented in Table 1.

Table 1. **Dynamics of mean hemodynamic parameters in patients treated with tamsulosin, terazosin and alfuzosin.**

	tamsulosin (n=75)		**terazosin (n=35)**		**alfuzosin (n=10)**	
	Initially	**1 month**	**Initially**	**1 month**	**Initially**	**1 month**
systolic pressure (lying down)	134,6±2,0	132,8±1,4	132,3±3,2	126±1,9	130,5±2,5	128,8±2,1

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diastolic pressure (lying down)	80,5±1,8	79,7±0,8	81,8±2,1	79,3±0,9	79,8±1,9	79,2±1,0
systolic pressure (Standing)	138,2±2,1	135,2±3,1	139,0±2,4	118,1±1,3	140,0±3,0	135,8±1,7
diastolic pressure (Standing)	85,7±2,7	84,2±1,8	84,5±2,3	80,7±1,6	86,8±2,5	84,6±0,8
heart rate (lying down)	69,5±3,7	70,0±3,2	68,7±3,6	71,6±3,0	68,2±3,5	68,6±2,9
heart rate (Standing)	74 ,5±3,5	75,9±3,0	75,2±3,8	76,3±3,2	76,9±4,0	77,7±3,1

The study of the safety of drugs did not give unexpected results. Tamsulosin and alfuzosin had no significant effect on blood pressure (both systolic and diastolic) and heart rate, while terazosin moderately reduced blood pressure and slightly increased heart rate. The results of our studies showed that against the background of tamsulosin and alfuzosin, the average change in blood pressure did not exceed 5-6 mm Hg. Art. and had an unreliable character ($p = 0.129$). However, patients treated with terazosin showed a significant ($p<0.05$) decrease in systolic blood pressure lying down by 12 mm Hg. Art. and standing at 23 mm Hg. Art., which manifested its orthostatic effect. The effect of terazosin on diastolic blood pressure was insignificant: a decrease in lying diastolic blood pressure by 1.5 mm Hg, standing diastolic blood pressure by 4 mm Hg. ($p<0.05$). Mutual influence of vasoactive and vasoactive al-blockers on the activity of the cardiovascular system, in our opinion, was not. Of interest are the data of daily monitoring of blood pressure during treatment with tamsulosin, terazosin and alfuzosin.

Adverse reactions to the drugs were observed in 29 patients with benign prostatic hyperplasia. Complaints of dizziness were noted by 12 patients (5.6%), and in 1 patient (0.5%), they were accompanied by fainting. The second place in frequency was occupied by complaints of retrograde ejaculation - in 5 patients (2.3%). In 2.3% of patients, side effects were noted in the form of dry mouth and nasal congestion. Significantly less often, patients were bothered by headaches (1%) and pain in the right hypochondrium (1%). When taking tamsulosin, the main complaint of patients with benign prostatic hyperplasia was retrograde ejaculation (3.7% of patients taking tamsulosin).

When prescribing terazosin and alfuzosin, dizziness was more common in 6.7% and 20% of cases, respectively. It should be noted that in our study, the smallest range of side effects was observed when using tamsulosin, and the largest - alfuzosin, which, however, cannot be considered reliable, since the number of patients taking tamsulosin was almost 3 times more than the number of patients taking alfuzosin. Not all side effects are permanent and may disappear with long-term use of the drug. Potentially dangerous side effects included dizziness and fainting. They occurred mainly at the initial stage of taking the drug and sometimes took place with further treatment.

Bilateral EPA was successfully performed in 146 (86.9%) cases, in 22 (13.1%) patients, due to anatomical features, a unilateral EPA was performed. Selective EPA from the mouth was performed in 17 (10.1%) cases, superselective EPA was applied in 67 (39.9%) cases, and perfect embolization was applied in 84 (50.0%). The most frequent complication was acute

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urinary retention, which was noted in 28 (16.6%) patients: in 11 (6.5%) cases, trocar cystostomy was required, in 17 (10.2%) additional conservative therapy. In 23 (14.2%) cases, complications associated with unintentional embolization of prostatic artery anastomoses were identified: pain in the rectum and/or the appearance of blood in the stool — in 19 (11.3%) patients, the appearance of trophic ulcers on the head of the penis — in 5 (2.8%) patients. In addition, adverse events that are not complications of EPA were noted: postembolization syndrome — in 50 (29.7%) patients, worsening of lower urinary tract symptoms — in 41 (24.4%), acute epididymitis — in 7 (4.1%), hematoma at the puncture site — in 4 (2.4%).

Bilateral EBA was successfully performed in 146 (86.9%) cases. A unilateral EPA was performed in 22 (13.1%) patients due to anatomical features. Unilateral transfemoral access was used in 149 (88.7%) cases, puncture of the contralateral femoral artery was required in 19 (11.3%) patients due to technical difficulties. Selective EPA from the mouth was performed in 17 (10.1%) cases, superselective EPA was applied in 67 (39.9%) cases, and perfect embolization was applied in 84 (50.0%).

The most frequent complication of EPA in the early postoperative period was acute urinary retention (OCM), observed in 28 (16.6%) patients. In 17 (10.2%) cases, OZM was resolved against the background of conservative therapy, and 11 (6.5%) patients required trocar cystostomy.

In 23 (14.2%) cases, complications associated with unintentional embolization of prostatic artery anastomoses were identified: pain in the rectum and/or the appearance of blood veins in the stool — in 19 (11.3%) patients, the appearance of trophic ulcers on the head of the penis — in 5 (2.8%) patients.

In addition, a certain number of adverse events that are not complications of EPA were noted: in 50 (29.7%) patients, postembolization syndrome phenomena were detected, and in 41 (24.4%) patients, a worsening of the SNMP was noted. Also, acute epididymitis was detected in 7 (4.1%) patients, and the formation of a clinically insignificant hematoma was noted in 4 (2.4%) patients at the site of femoral artery puncture.

More often, dizziness began to bother patients during treatment with terazosin and alfuzosin from the first week of treatment, and then stopped, although there were cases of their occurrence at later stages of treatment (2-4 weeks after the start of treatment). Fainting often accompanied dizziness, joined at the 4th week of treatment. After reducing the dose of drugs (to 2-5 mg / day for terazosin and 5 mg / day for alfuzosin), complaints of dizziness, as a rule, disappeared. Due to severe dizziness and concomitant hypotension, terazososin was discontinued in one patient. One patient discontinued alfuzosin due to severe headaches.

Retrograde ejaculation in our patients was observed during treatment with both tamsulosin (4) and alfuzosin (1). It manifested itself, as a rule, in the first week of treatment and continued until its termination. Nasal congestion was observed during treatment with tamsulosin and terazosin in the first days of observation, then disappeared. Diarrhea also occurred during treatment with these drugs and in the early stages of treatment. Pain in the right hypochondrium and dry mouth were registered only during the treatment with alfuzosin in the first weeks of taking the drug. The overall incidence of side effects in this study was 13.3%, which is consistent with the data of numerous studies.

Also, there is little data in the published medical literature regarding the intensity of radiation exposure during EPA. S. Bagla et al. in their follow-up, 72 patients reported an average radiation dose of 55,923 mGr/cm2 (from 5,689 to 339,776 mGr/cm2) with an average fluoroscopy time of 30.2 minutes (from 11.5 to 63.9 minutes; 10 frames per second). In a study by A.M. de Assis et al. with the participation of 34 patients, the duration of EPA lasted 95 –

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295 minutes, on average 158 minutes, and the time of X-ray varied from 19 to 143 minutes, on average 55.4 minutes. In J.M. Pisco et al. EPA was performed in an average of 72 minutes, and the average time of X-ray was 18 minutes, which is slightly lower than in other published studies.

Conclusion: The clinical efficacy of the most commonly used al-blockers (tamsulosin, alfuzosin, terazosin) in relation to the symptoms of impaired urination and the main urodynamic parameters is practically identical.

Superselective embolization of prostatic arteries may cause a limited number of complications. Unification of the EPA complication reporting system is needed. Antibiotic prophylaxis is recommended. The use of imaging and X-ray navigation methods can make the EPA safer. The PERFECT technique in combination with small-caliber particles leads to an increased risk of complications. The surgeon's experience and knowledge of special surgical techniques are of great importance. Transradial access is promising, but further monitoring and an increase in patient samples are required. The issue of choosing the optimal embolization drug continues to remain relevant.

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