

## PATHOGENETIC TREATMENT OF PATIENTS WITH ARTERIAL HYPERTENSION COMPLICATED BY ERECTILE DYSFUNCTION

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**Abstract:** The 66 male patients aged 45-60 years with hypertension complicated by erectile dysfunction were examined. In all patients, hypertension was stress-induced. Treatment of AH and ED with Impaza and Afil-5 gave positive results. Mandatory is the management of such patients by a urologist and a cardiologist or therapist with an indispensable assessment of the microcirculatory bed with the determination of markers of erectile dysfunction, assessment of the state in dynamics for adequate medication prescriptions.

**Keywords:** arterial hypertension, erectile dysfunction, microcirculation disorders

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## ПАТОГЕНЕТИЧЕСКОЕ ЛЕЧЕНИЕ БОЛЬНЫХ С АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ, ОСЛОЖНЕННОЙ ЭРЕКТИЛЬНОЙ ДИСФУНКЦИЕЙ

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**Abstract:** Обследовано 66 больных мужчин в возрасте 45-60 лет с гипертонической болезнью, осложненной эректильной дисфункцией. У всех больных гипертоническая болезнь была стресс-индуцированной. Лечение АГ и ЭД препаратами Импаза и Афил-5 дало положительные результаты. Обязательным является ведение таких пациентов урологом и кардиологом или терапевтом с неперменной оценкой микроциркуляторного русла с определением маркеров эректильной дисфункции, оценкой состояния в динамике для адекватных медикаментозных назначений.

**Keywords:** артериальная гипертензия, эректильная дисфункция, нарушение микроциркуляции.

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## АРТЕРИАЛ ГИПЕРТЕНЗИЯНИ ЭРЕКТИЛ ДИСФУНКЦИЯ БИЛАН АСОРАТЛАНГАН БЕМОРЛАРНИ ПАТОГЕНЕТИК ДАВОЛАШ

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**Abstract:** Артериал гипертензиянинг эректил дисфункция билан асоратланган 45 ёшдан 60 ёшгача бўлган 66 эркак беморлар текширилганда, барча беморларда гипертония касаллигини стресс натижасида эканлиги аниқланди. АГ ва ЭД ни Импаза ва Афил-5 препаратлари билан даволаш ижобий натижа берди. Бу беморларни адекват медикаментоз даволаш самарадорлигини баҳолаш уролог ва кардиолог ёки терапевт томонидан олиб борилиши, микроциркуляция ва эректил дисфункция маркерларини динамикада аниқлаш зарур.

**Keywords:** артериал гипертония, эректил дисфункция, микроциркуляциянинг бузилиши.

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Arterial hypertension is one of the most common diseases and is detected from 6% to 17% among the massively examined contingents of the population of various countries. The problem acquires serious economic significance, since as a result of the severe course of the disease, disability occurs in people at the most working aged [8,9].

According to the leading specialized centers, vasorenal hypertension ranges from 2 to 15% without special selection of patients, up to 77% with special selection to the total number of patients with high blood pressure [1,5,6]. At the same time, according to various sources, the incidence of erectile dysfunction (ED) among patients with arterial hypertension reaches 46% [3,4].

The pathogenesis of arterial hypertension and erectile dysfunction is based on their common process of endothelial dysfunction, which is detected by an imbalance in the production of endothelial signaling molecules during the transformation of an adaptive response of the endothelium into a maladaptive one [2,7].

**The aim of the study** was to develop the diagnosis of erectile dysfunction before the onset of clinical manifestations that make one consult a doctor, as well as the selection of therapy in terms of pathogenesis in patients with arterial hypertension.

**Materials and methods :** Under our supervision there were 66 men aged 45-60 years (average age from 50.4±1.3). All patients had medically compensated arterial hypertension.

Examinations performed: physical examination, complete blood and urine analysis, lipidogram, total testosterone level, thyroid stimulating hormone (TSH), laser Doppler penile flowmetry, IIEF (International Index of Erectile Function) and ICF (International Classification of Functioning) questionnaires.

The exclusion criteria were any deviations in the hormonal status of men, the presence of diabetes mellitus or benign prostatic hyperplasia, previous injuries of the pelvic organs. 36 people received regular therapy for arterial hypertension, 30 patients received periodic therapy. 50% of the studied patients received combination therapy (in various combinations: highly selective  $\beta$  - blockers, angiotensin-converting enzyme inhibitors or diuretics), and 50% received monotherapy. In all the subjects, a decrease in elevated levels of A/D was achieved and the latter was maintained at the target level.

For the correction of ED, all patients were prescribed Impaza, 1 tab. 2 times a day under the tongue daily for 3 months and Afil-5 1 tab. e daily 28 days.

It should be noted that the patients were included in the survey before they complained about the presence of violations in the genital area, they did not apply to the urologist on their own, considering the existing violations as "normal" for the way of work and the concomitant elevated level of blood pressure.

Erectile dysfunction was initially established according to the IIEF and MCF questionnaires . To assess the state of the microcirculatory bed, a laser blood microcirculation analyzer was used. Measurement of basal blood flow was carried out using a skin sensor at two points on the penis in the area of the coronal sulcus on 3 and 9 o'clock of the conventional dial. All measurements were carried out in the same thermal regime of the room, at the same time of day. Conducted studies at symmetrical points were evaluated after calculating the average statistical indicator and reflected the speed of basal blood flow at 2 points for 2 minutes. Using the software, the curves were processed immediately after each study. The criteria for adequate penile blood flow were determined by the results of a survey of a control group consisting of 15 healthy volunteers aged 25-35 years without complaints of erectile dysfunction .

**Results.** In all patients, the level of total testosterone was in the normal range, androgen index > 70% . Patients with elevated sugar levels were excluded from the study and were referred to an endocrinologist for correction of their condition. According to lipidograms, there were no significant deviations or data for atherosclerosis.

The norm for this age category (45-60 years) according to the IFF questionnaire is the result of 36 points. In the examined patients, it was  $23.3 \pm 2.4$  points. At the same time, the erectile component is  $3.2 \pm 1.8$  points, the copulative function as a whole  $4.5 \pm 1.5$  points and psychogenic  $4.3 \pm 2.6$ . According to the IIEF scale, the maximum score is 75, in the examined patients the score is  $46.6 \pm 4.8$  points. These data correspond to mild to moderate erectile dysfunction.

When evaluating the results of the study of microcirculation in patients of the main and control groups, a number of calculated indicators were used: the indicator of the average blood flow M was reduced, low-amplitude pulse fluctuations, the amplitudes of slow fluctuations and vasomotor activity were compensatory increased. These data indicate the presence of a spastic form of microcirculatory disorders (5).

Number of desquamated endotheliocytes , determined before treatment, amounted to  $9.65 \pm 0.79$  cells / 100  $\mu$ l , which exceeds the normal values ( $3.6 \pm 0.4$  cells / 100  $\mu$ l) by more than 2 times. This indicates the presence of vascular endothelial dysfunction in this category of patients.

Therefore, the presence of ED in all patients was proved, which was confirmed in addition to the subjective assessment according to the IIEF and ICF

questionnaires scored, by objective data: revealed microcirculation disorders of the cavernous bodies of the penis, the presence of endothelial dysfunction.

In the control after 1 month, according to the questionnaires, the total score of the ICF increased and reached normal values - up to  $38.4 \pm 1.8$ , the indicators for erectile , copulative and psychogenic components increased more than 2 times , the total score for ICEF approached the maximum  $59, 8 \pm 2.4$ . When analyzing LDF-grams (laser Doppler flowmetry ), positive changes in the microcirculation system are evidenced by: an increase in the microcirculation index, an increase in the coefficient of variation, i.e. decrease in hypoxia and tissue ischemia , increase in blood flow into the microcirculation system, increase in the passive mechanism of blood flow regulation, increase in pulse fluctuations and increase in blood flow into the microcirculatory bed. When re-counting the number of desquamated endothelocytes revealed a significant decrease in the latter to  $5.43 \pm 0.9$  cells/100  $\mu$ l. Reducing the content of desquamated we regarded endothelial cells as an improvement in endothelial metabolism (2,4).

**Discussions** . Thus, our patients experience stress -induced erectile dysfunction, endothelial dysfunction, microcirculation disorders. The use of the drug Impaza , subject to correct antihypertensive therapy (keeping blood pressure figures at a target level not higher than 140/90 mm Hg), helps to compensate for erectile dysfunction, improve microcirculation. There is no doubt the relationship between the occurrence and course of erectile dysfunction in patients with cardiovascular pathology, the severity of endothelial dysfunction, and, as one of its manifestations, arterial hypertension.

**Conclusions** . Erectile dysfunction occurs simultaneously with stress-induced arterial hypertension in patients with " hypertonic " directed professions . The drug Impaza , positively affecting the endothelium of the vessels of the penis, is a pathogenetic drug for endothelial insufficiency in general, which expands its use in patients with ED, in combination with hypertension (6).

Correction of HA with only antihypertensive drugs is insufficient for the reversibility of endothelial dysfunction, and the treatment of ED with on-demand regimens is doomed to negative dynamics. It is obligatory for us to provide management of such patients by a urologist and a cardiologist or a therapist, with an indispensable assessment of the microcirculatory bed and the determination of markers of endothelial dysfunction, an assessment of the state in dynamics for adequate medication prescriptions.

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