PROGNOSTIC SIGNIFICANCE OF CLINICAL-ANAMNESTIC FACTORS IN ASSESMENT OF THE THERAPY EFFICIENCY OF HYPERTENSIVE PATIENTS WITH OBESITY AND CHRONIC BRONCHITIS*

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Arterial hypertension (AH) is a major risk factor, which increases the development of atherosclerosis and raises the level of its complications. Left ventricular hypertrophy (LVH) is an important factor of cardiovascular morbidity and mortality in patients with hypertension. Antihypertensive treatment, which leads to regression of LVH, reduces the incidence of cardiovascular complications and improves survival rates, and this is irrespective of the degree of reduction in blood pressure (BP) [1].

According to the official statistics of Ministry of Health of Ukraine on the 1st of January 2011, Ukraine registered more than 12 million hypertensive patients, representing 32,2 % of the adult population in Ukraine. The course of hypertension and the risk of complications (coronary heart disease, stroke, cardiac and renal failure) are closely related to the presence of risk factors (abdominal obesity, dyslipidemia, microalbuminuria, hyperinsulinemia and insulin resistance, type 2 diabetes) [2].

The interest for further study of adipose tissue as an independent endocrine organ has not been diminished for many decades. It is generally accepted that the mass of visceral adipose tissue is much more accurate diagnostic criterion that allows us to estimate the risk of cardiovascular disease better than subcutaneous fat mass [3].

Angiotensin-converting enzyme inhibitors (ACEI) have become indispensable in the treatment of cardiovascular diseases in last 20 years, due to their protective properties and ability to reduce mortality and prolong the life of patients [4–6]. The research results (ALLHAT, CAPPP, STOP-2) showed equivalence effects of ACE inhibitors on the impact of cardiovascular diseases and mortality compared to antihypertensive drugs 1st rank — diuretics and blockers of β-adrenergic receptors [7, 8].

The difficulty in treatment of patients with comorbid disorders is caused by huge amount of drugs taken by the patient. It leads to low compliance and as a result doesn't improve the health of a patient. Optimization of antihypertensive therapy in patients with obesity involves an individual approach to a patient

taking antihypertensive drugs. And this is possible only when the clinician may provide a therapeutic effect of a drug for a particular patient at the beginning of treatment. Therefore, the solution of optimal therapy for such patients lies in the development of efficiency of therapeutical predictors.

The **aim** of the study is to determine prognostic significance of clinical-anamnestic factors due to the effectiveness of therapeutic correction of hypertension on the background of obesity and chronic bronchitis using angiotensin-converting enzyme inhibitor ramipril.

MATERIALS AND METHODS

64 patients were involved in the study with stage II hypertension and with obesity level 1–2 and chronic bronchitis, from the cardiology department of Kharkiv Municipal Clinical Hospital № 27 (average age $61,6 \pm 6,7$ years). Chronic heart failure was not higher than stage II–III by NYHA. Body mass index (BMI) was determined by the ratio of body weight in kilograms to height in sq. meters. Patients were monitored for 3 months. Evaluation of prognostic factors of studied properties was carried out using heterogeneous Wald-Genkin procedures under which all indicators were distributed by graduation with further definition of prognostic factor (PF) and general informative signs (I).

All patients signed their informed consent to participate in research. The control group consisted of 20 healthy individuals of similar age and sex without evidence of disease.

The criteria of inclusion of patients in the study were: presence of clinical signs of hypertension with obesity that have been confirmed by additional data methods. Clinical diagnosis established on the basis of patient complaints, anamnesis of disease, data, of physical examination, laboratory and instrumental methods. Ultrasound investigation (sonogra-phy) was carried out to assess the level of kidney function, and serum creatinines with creatinine clearance were determined.

The study excluded patients with concomitant infections, immune diseases and chronic diseases in the acute stage, patients with rheumatic diseases, patients with hypertension level $EF < 50\%$, anemia, renal failure, acute coronary syndrome within the previous 3 months, inflammatory diseases in the acute stage, paroxysmal tachycardia, arrhythmia, chronic obstructive pulmonary disease, occlusive diseases of lower extremities.

Investigation was carried out in accordance with the requirements of the provisions of the Helsinki Declaration of the World Medical Association, the Directive Council of the European Economic Society for the Protection of Vertebrate Animals (Strasbourg, 24.11.1986), the Charter of the Ukrainian Association of Bioethics and regulations GCP (1992), in accordance with the requirements and standards ICH GCP (2002) model regulations on the Ethics Committees of Health Ministry of Ukraine 13.02.2006 № 66. All the patients expressed their informed consent to take part in the study and were fully aware of the scope and methods of research.

RESULTS AND DISCUSSION

There are several anthropometric indicators, which indirectly characterize the amount of adipose tissue and used to assess the prognosis of cardiovascular events: body mass index (BMI), waist value (WV) to the thigh value (WV/TV), sagittal abdominal diameter, WV ratio to the height and «body adiposity index (BAI)». It is believed that the BAI can be used to determine percentage of body fat. Also adi-pose tissue was studied with help of bioelectric impedance analysis and skinfold thickness, but these methods do not take into account the distribution of fat in visceral and subcutaneous fat.

Body mass index has been used to determine the degree of obesity for nearly 200 years. Despite a frequent usage of BMI in clinical practice, it does not distinguish subcutaneous

and visceral adipose tissue components [9]. Because of this, the WV has become more widely used as indicator only for visceral adipose tissue in medical practice, and TV — for the assessment of peripheral fat.

The patients (64), received ACEI — ramipril 10 mg once per day, and were divided into two groups to assess the prognostic significance of clinical-anamnestic factors: a) first one with good hypotensive effect (48), who have reached the target levels of blood pressure, b) satisfactory effect (16) when the normal range of blood pressure was not achieved. Then, according to heterogeneous sequence procedure, frequency parameters were analyzed in groups before treatment with the definition of a PF and I.

From the table, which shows the practical importance of clinical and anamnestic factors, it can be estimated that high informative sign ($I > 6,0$) was found for the length of AH ($I = 8,76$), hypertension stage ($I = 7,83$), age of patient ($I = 6,34$) and the presence of diabetes ($I = 5,76$). Moderate prognostic properties ($1,0 >$ and $> 0,50$) were found for BMI ($I = 3,67$), sex of the patient ($I = 1,23$).

Such values of PF evidences for favorable prognosis: a low stage of hypertension and

heart failure (II stage by NYHA), short duration of hypertension (less than 5 years), the age of patients (less than 50 years) and the absence of comorbidities, including type 2 diabetes.

Vague or worse prognosis is determined by: prolonged hypertension (over 10 years), stage III arterial hypertension, the presence of comorbidities including type 2 diabetes, the patient's age (75 years and over).

Thus, reducing of the effectiveness of treatment with ACEI ramipril can be expected in patients with prolonged hypertension, signs of heart failure III stage and above, age above 75 years, and with the presence of comorbidity type 2 diabetes.

Taking in consideration that some of the clinical and medical history factors manifested prognostic significance in patients with hypertension and obesity, it become possible to create a predictive algorithm using mentioned criteria.

Thus, some clinical and medical history factors for this disease could be used to determine the effectiveness of taking ramipril in the treatment of hypertension with obesity and chronic bronchitis. The most informative criteria are the length and stage of hypertension, and the patient's age and the

T a b l e

Prognostic significance of clinical-anamnestic factors in hypertensive patients with obesity and chronic bronchitis

Studied factor	Graduation	PF	I
Hypertension stage	II III	−4,6 −7,4	7,83
Hypertension duration	< 5 years 5–10 years > 10 years	+2,3 −3,6 −11,2	8,76
Patient's age, years	< 59 60–74 75 and over	+4,5 −5,3 −8,7	6.34
Presence of diabetes mellitus, type 2	Yes No	−4,3 +3,8	5,76
Body mass index	$< 22,0$ 22,1–24,9 25,0–29,9	−0,8 −3,2 −6.4	3,67
Sex	Male Female	+2,7 −1,6	1,23

N o t e. (+) — shows the positive therapeutic effect, signs of (−) — satisfactory therapeutic effect.

presence of comorbidities, including obesity and chronic bronchitis. This causes the desirability and possibility of using these criteria at all levels of medical and preventive assistance to assess efficiency of therapeutic tactics.

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ПРОГНОСТИЧНЕ ЗНАЧЕННЯ КЛІНІКО-АНАМНЕСТИЧНИХ ЧИННИКІВ ЕФЕКТИВНОСТІ ТЕРАПІЇ АРТЕРІАЛЬНОЇ ГІПЕРТЕНЗІЇ З ОЖИРІННЯМ І ХРОНІЧНИМ БРОНХІТОМ

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В дослідженні проведено аналіз предикторної цінності клініко-анамнестичних параметрів в відношенні до ефективності терапії артеріальної гіпертензії з ожирінням і хронічним бронхітом. Результати дослідження демонструють, що для визначення ефективності прийому раміприлу в лікуванні артеріальної гіпертензії з ожирінням і хронічним бронхітом можна використовувати деякі клініко-анамнестичні чинники цього захворювання. Найбільш інформативними критеріями являються тривалість і стадія артеріальної гіпертензії, а також вік хворого і наявність супутньої патології, зокрема цукрового діабету 2 типу. Це обумовлює доцільність і можливість застосування даних критеріїв на всіх рівнях лікувально-профілактичної допомоги з метою стратифікації ефективності терапевтичної тактики.

К л ю ч о в і   с л о в а: артеріальна гіпертензія, ожиріння, хронічний бронхіт, раміприл, прогноз, лікування.

ПРОГНОСТИЧЕСКОЕ ЗНАЧЕНИЕ КЛИНИКО-АНАМНЕСТИЧЕСКИХ ПОКАЗАТЕЛЕЙ ЭФФЕКТИВНОСТИ ТЕРАПИИ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИИ С ОЖИРЕНИЕМ И ХРОНИЧЕСКИМ БРОНХИТОМ

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В исследовании проведен анализ предикторной ценности клинико-анамнестических параметров в отношении эффективности терапии артериальной гипертензии с ожирением и хроническим бронхитом. Результаты исследования показывают, что для определения эффективности приёма рамиприла в лечении артериальной гипертензии с ожирением и хроническим бронхитом можно использовать некоторые клинико-анамнестические факторы этого заболевания. Наиболее информативными критериями являются продолжительность и стадия артериальной гипертензии, а также возраст больного и наличие сопутствующей патологии, в частности сахарного диабета 2 типа. Это обуславливает целесообразность и возможность применения данных критериев на всех уровнях лечебно-профилактической помощи с целью стратификации эффективности терапевтической тактики.

К л ю ч е в ы е   с л о в а: артериальная гипертензия, ожирение, хронический бронхит, рамиприл, прогноз, лечение.

PROGNOSTIC VALUE OF CLINICAL-ANAMNESTIC FACTORS IN TREATMENT EFFICACY OF ARTERIAL HYPERTENSION WITH OBESITY AND CHRONIC BRONCHITIS

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The study analyzes the predictive value of clinical and anamnestic parameters in the effectiveness of therapy of hypertension with obesity and chronic bronchitis. The results shown that some clinico-anamnestic factors of hypertension with obesity and chronic bronchitis can be used for determining the efficiency of ramipril in the treatment. The most informative criteria were the duration and the stage of hypertension as well as age of the patient and the presence of concomitant diseases, in particular type 2 diabetes. Given results causes the desirability and feasibility of the applying of these criteria at all levels of medical and preventive assistance for the stratification of the effectiveness of therapeutic tactics.

K e y   w o r d s: arterial hypertension, obesity, chronic bronchitis, ramipril, prognosis, treatment.