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ESTIMATION OF THE COMPLIANCE LEVEL OF MIDDLE AGE PATIENTS WITH ARTERIAL HYPERTENSION

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Non-compliance to treatment recommendations of patients with chronic diseases is a global medical problem that significantly affects the effectiveness of treatment, leading to serious medical and economic consequences. Sufficient research on the problem of non-compliance with medical recommendations has led to the creation of a holistic concept of medical compliance.

The purpose of the work was to estimate the main factors influencing the compliance to antihypertensive therapy of middle age patients with Arterial hypertension.

Material and methods. We investigated 40 patients 50-60 years old (mean age 56.6±4.5 years) with Essential Arterial hypertension. Socio-demographic, clinical, pathopsychological, psycho-diagnostic methods (Morisky Medication Adherence Scale, self-assessment anxiety scale Charles D. Spielberger – Y. L Hanin, the Scale of Internality in relation to health and illness, the study of the self-esteem of mental states by H. J. Eysenck, the study of the level of depression by the *Beck Depression* Inventory), mathematical and statistical methods were used.

Results and discussion. With the Morisky Medication Adherence Scale survey, we distinguished three groups of patients: with high (22.5%), middle (27.5%) and low (50.0%) levels of adherence to the combined therapy of hypertension. Socio-demographic factors in patients with low adherence to treatment were determined by lower level of education and absence of continuous marital relations. Clinical characteristics of patients with low compliance level included the presence of 3rd degree of severity, I stage of the Arterial hypertension, often comorbidities (Diabetes Mellitus 2nd type, Chronic Obstructive Pulmonary Disease, Ischemic Heart disease), long tobacco smoking. According to the psychopathological and psycho-diagnostic examination, patients with an internal type of personality control, low anxiety and depression mostly showed the low level of compliance and also more frequent aggressiveness in the self-esteem of mental states ($p < 0.05$).

Conclusion. Thus, patients of middle age with Essential arterial hypertension very often (up to 78%) showed the insufficient level of adherence to antihypertensive treatment. Socio-demographic, clinical and psychopathological factors significantly affect the level of compliance in these patients. Improving the effectiveness of therapy of Arterial hypertension in such patients is possible due to optimization of treatment regimens, wide introduction of psycho-diagnosis and psycho-correction with the involvement of psychologists into this process.

Keywords: arterial hypertension, antihypertensive therapy, compliance.

Connection of work with scientific programs, plans, themes. This article is a fragment of scientific-research work “Features of the comorbid course of diseases of internal organs: risk factors, mechanisms of development and mutual burden, pharmacotherapy”, state registration number is 0114U002475.

Introduction. According to the WHO, non-compliance with medical recommendations of patients with chronic diseases is a global medical problem that significantly affects the effectiveness of treatment, leading to serious medical and economic consequences [1]. Sufficient research on the problem of non-compliance with medical recommendations has led to the creation of a holistic concept of medical compliance [2, 3, 4].

More than 200 factors are considered in the modern medical literature. This determines the attitude of patients to adherence to the treatment regimen prescribed by a doctor in different ways. Systematization of factors affecting compliance to treatment by patients distinguishes the following main groups [5, 6, 7]: psychological properties of the patient; clinical features of the disease; specificity of the treatment program; socio-economic factors; factors that are associated with the organization of medical care. According to the literature, 34% of all patients fully comply with all doctor’s appointments, 33% fulfill some of the appointments, and a third of all patients do not fulfill at all. Positive compliance is achieved more often with a single dose of medicine during a day in 79.6% of cases, with double dose – in 68%, triple – only in 37.7% of cases [2, 3, 8].

Essential Arterial Hypertension (AH) in people aged 50-60 years is one of the most common prob-

lems from cardiovascular diseases [9, 10]. Framingham Heart Study suggests that more than half of all people aged > 50 are suffering of hypertension [5]. The morbidity of hypertension in Ukraine, according to epidemiological studies in people over 50 years exceeds 45% [11]. High blood pressure (BP) significantly increases the risk of coronary heart disease (CHD), stroke, heart and kidney failure. However, effective drug therapy reduces overall and cardiovascular morbidity and mortality, improves the course and prognosis of hypertension. Therefore, the development of treatment algorithms of AH is one of the most important problems of modern cardiology [9, 11, 12, 13].

Patients with hypertension often require lifelong medical treatment, so the strict adherence to prescriptions by these patients determines the course of the disease and the effectiveness of medical measures. The findings show that worldwide most patients with hypertension do not receive treatment, and among those treated – almost half of people do not reach the target level of blood pressure, despite the introduction of effective drug therapy [3, 13, 14].

The purpose of the work was to estimate the main factors influencing the compliance to antihypertensive therapy of middle age patients with Arterial hypertension.

Material and methods. The study was conducted under the warranty of informed consent of the patients and in compliance with the principles of bioethics and deontology. We examined 40 patients with Arterial Hypertension (26 women and 14 men) with mean age of 56.6±4.5 years. The duration of the disease ranged from 6 to 11 years, with an average of 8.3±1.4 years. Criteria for inclusion in the study included informed consent of the patient, aged 50-60 years; AH I-III stages, 1-3 degrees of severity; exclusion criteria consisted of the age more than 60 years; presence of chronic heart failure of IIB-III stages, severe concomitant pathology (decompensated Diabetes Mellitus; Transient Ischemic attack, history of stroke).

All enrolled patients signed patient informed consent, the study conducted in accordance to the Helsinki Declaration of the World Medical Association, the Statute of the Ukrainian Bioethics Association, the standard provisions on ethics of the Ministry of Health of Ukraine No. 66 dated February 13, 2006.

The following research methods were used: clinical-diagnostic with analysis of clinical and anamnestic data, results of laboratory, instrumental research methods, medical documentation; clinical-psychopathologic, psycho-diagnostic: survey of patients on the scale of adherence to treatment Morisky (MMAS) (high adherence to treatment – 8 points, moderate – 7-6 points, low – <6 points) [5]; testing using the method of determining anxiety by Spielberger-Khanin (up to 30 points – low anxiety; 31-45 – moderate anxiety; 46 and more – high anxiety.) [15]; survey on the method of "Level of subjective control" Scale of internality in relation to health and disease (questions 3, 13, 23, 34), a study of self-assessment of mental states by H. J. Eysenck, a study of the level of depression by the Beck Depression Inventory. Statistical analysis and processing of the obtained data was performed using MS Excel for Windows XP and SPSS 10.0.5 for Windows, using the methods of descriptive and mathematic statistics.

Results and discussion. At the beginning of the study, we determined the level of compliance in 40 patients with hypertension on the Morisky treatment adherence scale (MMAS). Depending on the level of compliance, three groups of patients were identified: with high (22.5%), moderate (27.5%) and low (50.0%) levels of adherence to the prescribed antihypertensive therapy.

Socio-demographic characteristics of patients with AH depending on the level of compliance are presented in **table 1**. A significant difference between the groups was found on the indicators of education and marital status. Higher levels of adherence were observed in married patients with higher or secondary special education; single patients for various reasons showed a relatively low level of compliance to prescribed antihypertensive therapy.

Table 1 – Socio-demographic characteristics of patients with AH with different levels of adherence to treatment

Socio-demographic characteristics	High level of compliance (n=9)	Moderate level of compliance (n=11)	Low level of compliance (n=20)
Male	2 (22,22%)	2 (18,18%)	10 (50,00%)
Female	7 (77,78%)	9 (81,82%)	10 (50,00%)
Married	7 (77.78%)	6 (33.33%)	5 (25.00%)
Unmarried	2 (22.22%)	5 (16.67%)	15 (75.00%)
Higher education	6 (66.67%)	4 (36.36%)	4 (20.00%)
Secondary education	3 (33.33%)	7 (63.63%)	16 (80.00%)

During the assessment of clinical characteristics of AH it was found that the high level of compliance was reliably more common ($p < 0.05$) in patients with grade 2 and stage II hypertension, low – reliably more often in patients with grade 3 and I stage of hypertension. Analysis of clinical, anamnestic, laboratory and instrumental data revealed that the presence of comorbidity in the form of type 2 Diabetes Mellitus, COPD, coronary heart disease, and long-term smoking was more common in patients with moderate and low compliance for the treatment (44% and 76%, respectively) (**table 2**).

Table 2 – The main clinical characteristics of patients with different levels of compliance

Clinical characteristics	High level of compliance (n=9)	Moderate level of compliance (n=11)	Low level of compliance (n=20)
Degree of AH			
1st	2 (22,22%)	3 (27,27%)	7 (35,00%)
2nd	6 (66,67%)	6 (54,55%)	5 (25,00%)
3rd	1 (11,11%)	2 (18,18%)	8 (44,00%)
Stage of AH			
I stage	1 (11,11%)	2 (18,18%)	12 (60,00%)
II stage	5 (55,56%)	5 (45,45%)	4 (20,00%)
III stage	3 (33,33%)	4 (36,36%)	4 (20,00%)

According to the results of psychodiagnostic and clinical-psychopathological examination based on the survey of patients according to certain methods, it was determined that the group of patients with a high level of compliance was dominated by individuals with external type of subjective control ($p < 0.05$), high levels of personal anxiety and high and medium level of depression ($p < 0.05$). The group with medium level of compliance was dominated by patients with mental rigidity and low and medium levels of depression. Individuals with internal type of personality control and low levels of anxiety and depression were mostly characterized by a low level of adherence to therapy and showed significantly more aggressiveness in self-assessment of mental states ($p < 0.05$) (**table 3**).

Table 3 – The main individual psychological characteristics of patients with hypertension at different levels of compliance

Individual psychological characteristics	High level of compliance (n=9)	Moderate level of compliance (n=11)	Low level of compliance (n=20)
Type of subjective control			
External	7 (77.78%)	6 (54.54%)	7 (35.00%)
Internal	2 (22.22%)	5 (45.45%)	13 (65.00%)
The level of personal anxiety			
High	6 (66.67%)	5 (45.45%)	3 (15.00%)
Moderate	2 (22.22%)	4 (36.36%)	7 (35.00%)
Low	1 (11.11%)	2 (18.18%)	11 (55.00%)
Indicators of self-assessment of mental states			
Anxiety	8 (88.89%)	4 (36.36%)	4 (20.00%)
Frustration	1 (11.11%)	2 (18.18%)	2 (10.00%)
Aggressiveness	0 (0%)	1 (9.09%)	9 (45.00%)
Rigidity	0 (0%)	4 (36.36%)	5 (25.00%)
The level of depression			
High	6 (66.67%)	1 (9.09%)	2 (10.00%)
Moderate	3 (33.33%)	4 (36.36%)	9 (45.00%)
Low	0 (0%)	6 (54.54%)	9 (45.00%)

The study also showed that a high level of compliance to the prescribed antihypertensive therapy was demonstrated by patients with monotherapy or multicomponent ("polypill") antihypertensive drugs with once-twice daily regimen (90.00%). Medium and low levels of compliance were demonstrated by patients with comorbidities or complications of hypertension, which required the appointment of more than five drugs for daily use.

Discussion. The main reasons for non-compliance with the recommendations of doctors in Ukraine include independent choice of a more economical drug – up to 40%; as well as lack of control by a doctor – up to 58% [6, 8]. Direct estimations (monitoring of drugs using, study of the active drug substances, biological markers in the patient's blood) and indirect methods (filling questionnaires by the patient; evaluation of clinical efficacy; quantification of physiological markers; using electronic dispensers or the issuance of new prescriptions) can be used to assess the patient's compliance to treatment [4, 13]. Due to the simplicity of implementation and sufficient objectivity, the Scale of assessment of patient adherence to treatment, proposed by D. E. Morisky in 2008 (8-item Morisky Medication Adherence – MMAS) was improved and introduced into the clinical practice.

Opportunities to increase compliance of the patients with AH include active patient education, prescribing multicomponent medications, and organizational arrangements. Psychological care tools for the correction of unfavorable compliance types, maladaptive psychological reactions to the disease and building effective interaction between doctor and patient should be introduced [7, 14]. The study of compliance problems of patients with AH and the search for the most important determine factors can significantly increase the effectiveness of treatment and improve the prognosis of disease [6, 14].

Conclusion

1. Estimation of the compliance level to prescribed therapy of patients with hypertension should be carried out at all stages of medical care using indirect research methods with proven effectiveness.
2. The study showed that the level of compliance in middle age patients with Arterial hypertension significantly depended on socio-demographic characteristics, clinical indicators and, especially, on individual psychological factors, such as a type of subjective control of personality, the level of personal anxiety and depression, and the self-esteem of mental states.

3. The presence of a low level of compliance in middle age patients with hypertension directly correlates with the internal type of subjective control (65.00%), low personal anxiety (55.00%) and aggression in self-assessment of mental states (45.00%).
4. Improvement of the compliance in such patients is possible through the development and implementation of special training programs for physicians at different levels of health care in order to identify influential individual psychological factors for their timely correction.
5. It is advisable to include psychologists into the multidisciplinary team for the treatment of patients with hypertension in order to maximize the individualization of the management program of such patients to increase adherence to the prescribed therapy.

Prospects for further research. In the future, it is planned to continue the study of adherence to prescribed therapy in patients with comorbid therapeutic pathology to determine socio-psychological and personal characteristics as factors influencing the level of compliance.

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ОЦІНКА РІВНЯ КОМПЛАЄНСУ У ХВОРИХ НА АРТЕРІАЛЬНУ ГІПЕРТЕНЗІЮ СЕРЕДНЬОГО ВІКУ

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Резюме. *Метою* дослідження було оцінити основні факторів, які впливають на комплаєнтність до антигіпертензивної терапії у хворих на артеріальну гіпертензію середнього віку.

У ході дослідження було обстежено 40 пацієнтів у віці 50-60 років (середній вік 56,6±4,5 років) із есенціальною артеріальною гіпертензією. Використовували соціально-демографічний, клініко-діагностичний, клініко-психопатологічний, психодіагностичний методи (MMAS, за методикою Спілбергера-Ханіна, за методикою «Рівень суб'єктивного контролю», дослідження самооцінки психічних станів за Г. Айзенком, дослідження рівня депресії за опитувальником Бека), математичний та статистичний методи. За опитуванням MMAS було виділено три групи пацієнтів: з високим (22,5%), середнім (27,5%) та низьким (50,0%) рівнями прихильності до призначеної комплексної терапії есенціальної артеріальної гіпертензії. Соціально-демографічні фактори у хворих із низькою прихильністю до лікування характеризувалися менш високим рівнем освіти та відсутністю постійних шлюбних стосунків. Клінічні характеристики включали: 3 ступінь важкості, I стадію артеріальної гіпертензії, наявність коморбідності (цукровий діабет 2-го типу, ХОЗЛ, ішемічна хвороба серця), тривале тютюнопаління. За даними клініко-психопатологічного та психодіагностичного обстеження хворі із інтернальним типом особистісного контролю, низьким рівнем тривожності й депресії здебільшого демонстрували низький рівень комплаєнсу та вірогідно частішу агресивність у самооцінці психічних станів ($p<0,05$).

Таким чином, хворі на артеріальну гіпертензію середнього віку частіше (до 78%) демонструють недостатній рівень прихильності до лікування. Соціально-демографічні, клінічні та психопатологічні фактори істотно впливають на рівень комплаєнсу в цих пацієнтів. Підвищення ефективності терапії артеріальної гіпертензії у таких хворих можливе за рахунок оптимізації схем лікування, широкого впровадження психодіагностики та психокорекції із залученням до цього процесу психологів.

Ключові слова: есенціальна артеріальна гіпертензія, антигіпертензивна терапія, комплаєнс.

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ОЦЕНКА УРОВНЯ КОМПЛАЕНСА У БОЛЬНЫХ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ СРЕДНЕГО ВОЗРАСТА

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Резюме. Целью работы было оценить основные факторы, влияющие на комплаентность к антигипертензивной терапии у больных артериальной гипертензией среднего возраста. В ходе работы было обследовано 40 пациента в возрасте 50 - 60 лет (средний возраст 56,6±4,5 года) с эссенциальной артериальной гипертензией. Использовали социально-демографические, клинико-диагностический, клинико-психопатологический, психодиагностический методы (MMAS, по методике Спилбергера-Ханина, по методике «Уровень субъективного контроля», исследование самооценки психических состояний по Г. Айзенку, уровня депрессии по опроснику Бека), математический та статистический методы. По результатам опроса MMAS было выделено три группы пациентов: с высоким (22,5%), средним (27,5%) и низким (50,0%) уровнями приверженности комплексной терапии артериальной гипертензии. Социально-демографические факторы у больных с низкой приверженностью к лечению определялись более низким уровнем образования и отсутствием постоянных супружеских отношений. Клинические характеристики таких больных включали наличие 3 степени тяжести, I стадии артериальной гипертензии, коморбидности (сахарный диабет 2-го типа, ХОЗЛ, ишемической болезни сердца), длительного табакокурения. По данным клинико-психопатологического и психодиагностического обследования больные с интернальным типом личностного контроля, низким уровнем тревожности и депрессии в основном демонстрировали низкий уровень комплаенса и достоверно частую агрессивность в самооценке психических состояний ($p <0,05$).

Таким образом, больные эссенциальной артериальной гипертензией среднего возраста чаще (до 78%) демонстрируют недостаточный уровень приверженности к лечению. Социально-демографические, клинические и психопатологические факторы существенно влияют на уровень комплаенса у этих больных. Повышение эффективности терапии артериальной гипертензии у таких больных возможно за счет оптимизации схем лечения, широкого внедрения психодиагностики и психокоррекции с привлечением к этому процессу психологов.

Ключевые слова: эссенциальная артериальная гипертензия, антигипертензивная терапия, комплаенс.

The authors of this study confirm that the research and publication of the results were not associated with any conflicts regarding commercial or financial relations, relations with organizations and/or individuals who may have been related to the study, and interrelations of coauthors of the article.

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