ORIGINAL ARTICLE

Comparison of the Expression of Antihypertensive Action of Preparation of Different Clinical and Pharmacological Groups

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Abstract

Introduction: Increased blood pressure (BP) is one of the most significant epidemiological, medical, social, and economic consequences of problems. The results of many studies indicate that in one-third of people in Ukraine, the level of BP exceeds 140/90 mm Hg, it is increased. There is a contradiction between the need to adhere to the current level of therapy, which involves the use of new, as a rule, expensive techniques and drugs, and the constant lack of funding for health care. **Materials and Methods:** Methods of statistical description, systematic, sociological, economic, and statistical analysis, including variational statistics, correspondence questionnaires, and expert assessments, were used in the research process. The study included 1568 patients diagnosed with hypertension. As a result of the pharmacoepidemiological analysis, it was shown that the most often antihypertensive monotherapy is performed for younger patients with initial lower BP values. **Results:** A more detailed analysis of the antihypertensive activity of drugs belonging to the main pharmacological groups was performed with arterial hypertension monotherapy. Therefore, it is important to analyze the therapeutic efficacy of antihypertensive drugs from different clinical and pharmacological groups, safety, and their impact on the well-being of patients. **Discussion and Conclusion:** Analysis of the structure of prescriptions revealed the dominant positions of Agriculture Commercialization Equity Fund drugs, and, above all, drugs enalapril, among patients with hypertension in all study groups, regardless of age and gender, as well as regimens of antihypertensive therapy. A retrospective study of the antihypertensive effect of drugs from different clinical and therapeutic groups revealed no significant differences, but significant differences were noted when comparing the original drugs with their reproduced analogs (generics).

Key words: Antihypertensive drugs, hypertension, marketing research

INTRODUCTION

In the 21st century, the high prevalence of hypertension remains a leading medical and social problem that has attracted the attention of internists worldwide. Arterial hypertension (AH) is the most common non-communicable disease on Earth, which largely determines the high mortality of persons of working age and disability from cardiovascular and cerebrovascular diseases.

It is safe to say that the problem of hypertension for the past 20 years is the most thoroughly researched, most often discussed, and covered in the most detail in the world as well as in Ukrainian medical literature, recommendations, and guidelines.

The current arsenal of drugs for the treatment of patients with cardiovascular disease is extremely large and includes about 20 major pharmacological groups, comprising hundreds of drugs with different mechanisms of action. This requires the internist to have a thorough and versatile knowledge of clinical pharmacology as a fundamental basis, in line with evidence-based medicine and rational pharmacotherapy.

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The purpose of our study was to perform a comprehensive clinical study of the most common antihypertensive drugs from different clinical and pharmacological groups, taking into account the severity of their antihypertensive and organoprotective effects, as well as safety indicators.[1-4]

MATERIALS AND METHODS

The methodological basis of the study was the modern concept of market research in the pharmaceutical market, the methodology of systematic analysis. Using the content is the analysis of medical histories, the assortment is analyzed, and the basic tendencies of consumption of drugs for the treatment of hypertension at the outpatient and inpatient stage of treatment are identified.[5-7]

The study included 1568 patients diagnosed with hypertension. The criteria for inclusion of patients in the study were the presence of grade II AH with a risk of 3–4 and age from 40 to 80 years. In the future, patients were divided into six groups, depending on the drugs used. The mean age of the patients was 59.7 ± 0.8 years, for women – 60.6 ± 1.0 years and for men – 57.4 ± 1.5 years. The study involved 653 men and 915 women. The duration of the disease ranged from 1 year to 35 years, with an average of 12 ± 0.98 years.

The effectiveness of therapy was evaluated by surrogate points by reducing systolic and diastolic blood pressure (DBP).[8-10] The use of two or three or more antihypertensive drugs is common in elderly patients with initially high blood pressure (BP). Analysis of the structure of prescriptions of drugs revealed the dominant positions of drugs.

RESULTS

The analysis of variance identified significant differences in baseline systolic BP (SBP) scores in the study groups, and multiple comparisons of the groups using the Newman-Keyles[9] test revealed that baseline SBP was lower ($P < 0.05$) in patients with received beta-blockers in comparison with the group of patients treated with Agriculture Commercialization Equity Fund (ACEF), combination drugs and drugs of central action [Table 1]. In addition, the comparative cross-group analysis showed that initially high levels of SBP were observed in patients receiving central-acting, combined, and reserpine-containing drugs, which, moreover, were administered for the longest time ($P < 0.05$). The original DBP levels had no statistically significant differences in all the comparison groups.

In all compared groups, the levels of DBP achieved were not significantly different, while the achieved level of SBP with beta-blockers was lower ($P < 0.05$) compared to the group of patients receiving ACEF, combination drugs, and central actions. However, as shown above, this was noted against the background of a lower baseline SBP value in patients treated with beta-blockers.

However, it should be noted that against the background of treatment with drugs of all presented clinical and pharmacological groups, there was a significant ($P < 0.05$) decrease in the levels of SBP and DBP. A comparison of the severity of the antihypertensive activity of these groups represented in the percentage decrease in BP revealed no differences of statistically significant nature.

Next, an intragroup comparative analysis of the antihypertensive activity of drugs was carried out. The algorithm for statistical analysis of the results also included a group (by drugs) comparison by means of the analysis of variance, and in the case of inhomogeneity, the Newman-Keyles test was applied. The t-test was also used to compare group averages.

A comparison of the severity of the antihypertensive effects of ACEF presented by enalapril, captopril, perindopril, and fosinopril showed that there were some differences in the reduction of BP in the groups of patients to whom these drugs were assigned as monotherapy [Table 2]. However, the baseline SBPs and DBPs in all these groups had no significant differences.

Table 1: The average duration of admission, baseline, achieved level, and degree of decrease in blood pressure when prescribing different groups of antihypertensive drugs in monotherapy

Group of drugs	Average duration-of reception	The original level of blood pressure (mm Hg)		Atomic-level reached (mm Hg)		Decrease in blood pressure, %	
		SBP	DBP	SBP	DBP	SBP	DBP
ACEF	8.5±0.7	165.5±1.5	97.9±0.7	147.4±1.6	89.1±0.8	10.9±1.8	8.9±1.6
Beta blockers	10.2±2.0	156.4±2.3*	98.6±1.2	133.8±2.2*	85.4±1.2	14.5±3.6	13.4±3.5
Diuretics	12.9±6.3	161.8±3.7	97.4±1.2	141.2±3.5	85.6±1.6	12.7±4.8	12.1±4.7
Calcium antagonists	9.3±1.5	163.1±3.3	95.3±3.1	139.2±2.2	84.2±1.2	14.7±4.2	11.7±3.8
Central action drugs	7.1±2.1	175.1±5.6	96.6±2.4	154.2±4.8	87.4±2.1	11.9±6.2	9.5±5.6
Combination drugs	23.6±5.2*	172.7±3.1	97.2±2.3	149.0±2.4	88.9±1.3	13.7±3.2	8.5±2.6

*$P<0.05$ in accordance with the Newman-Keyles criterion[10]. ACEF: Agriculture Commercialization Equity Fund, SBP: Systolic blood pressure, DBP: Diastolic blood pressure

Table 2: The structure and performance indicators of ACEF drugs prescribed as antihypertensive monotherapy

The name of the drug	Part of appointments, %		Average daily dose (mg/day)	The original level of blood pressure (mm Hg)		Atomic-level reached (mm Hg)		Decrease in blood pressure, %	
	In the group	In a subgroup		SBP	DBP	SBP	DBP	SBP	DBP
Enalapril									
	69.5		9.1±0.5	164.1±1.8	97.3±0.9	145.0±2.0	88.5±1.0	11.6±2.2	9.0±2.0
Enap		38.7	10.2±0.8	162.1±2.6	98.9±1.1	140.2±2.5	88.6±1.4*	13.5±3.6	10.4±3.2
Enam		24.9	8.1±0.9	161.9+3.8	94.8±1.9	153.1±15.1*	90.6±2.6*	5.4±2.9	4.4±2.6
Ednit		24.6	7.3±0.8	171.3±4.8	101.3±2.1	138.3±3.7	87.1±2.0*	19.3±8.2	14.0±7.2
Enalapril		7.9	9.6±0.7	170.8±3.9	94.2±2.8	150.0±3.5*	87.1±1.8*	12.2±8.8	7.5±5.5
Renitek		3.9	7.5±1.4	170.0±7.2	98.8±4.3	140.0±0.0	80.0±0.0	17.6±14.4	19.0±14.8
Captopril									
	26.2		47.3±2.7	167.9±3.0	99.3+1.3	153.1±2.7	90.7±1.3	8.8±2.9	8.6±2.8
Capoten		77.6	49.9±3.2*	167.1±3.6	99.7±1.5	154.3±3.2	90.4±1.6	7.7±3.0	9.3±3.3
Tensiomin		12.2	26.7±5.7	163.3±5.6	99.2±4.2	158.3±7.9	91.7±3.0	3.1±5.2	7.6±8.0
Captopril		10.2	27.4±8.2	182.5 ± 6.3	95.0±2.9	162.5±2.5	92.5±4.8	11.0±11.8	2.6±6.1
Perindopril									
	3.7			160.0±6.1	97.9±2.5	133.5±1.5	81.5±8.5	16.6±14.1	16.4±14.0
Prestarium		100	4.0	160.0±6.0	97.5±2.5	133.5±1.5	81.5±8.5	16.6±14.1	16.4±14.0
Fosinopril									
	0.6			168.8±5.4	99.5±1.4	132.8±7.6	81.9±6.4	21.3±23.6	17.7±22.0
Monopril		100	20.0	168.8±5.4	99.5±1.4	132.8±7.6	81.9±6.4	21.3±23.6	17.7±22.0

*P<0.05 in accordance with the Newman-Keyles criterion. ACEF: Agriculture Commercialization Equity Fund, SBP: Systolic blood pressure, DBP: Diastolic blood pressure

The most commonly used ACEF was prescribed enalapril. They were presented with such drugs with the commercial names renitek, ednit, enalapril, enam, and enap. Baseline levels of SBP and DBP in patients taking these drugs did not have significantly significant differences.

However, an analysis of the achieved values of SBP and DBP against the background of the listed drugs, found that the prescription of renin resulted in a more pronounced decrease in SBP ($P < 0.05$), compared with the use of enalapril and enam, as well as a decrease in DBP ($P < 0.01$), and compared to the average in other patient groups who used enalapril generics. Comparison of the antihypertensive activity of ednit and enap showed that they were slightly inferior to rhenique, but had no significant differences from the efficacy of this drug. As among the enalapril and ednit drugs, the highest number of monotherapy appointments had to be performed, a comparison of their antihypertensive activity was also performed with similar overall averages of the enalapril drug group. However, this comparison did not reveal significant differences. The severity of the antihypertensive effect of enalapril was comparable to that of enap. The lowest decrease in SBP and DBP was observed in the enam.

Indicators of BP reduction, expressed in percent, found the greatest hypotensive activity in renitek reduction DBP, and ednit – reduction SBP. The lowest percentage of decrease in SBP and DBP was observed in patients on a background of reception of the enam. However, significant differences when comparing these indicators were not found in significant variation of characteristics in the study groups, as evidenced by the large magnitude of the standard errors of the average values (± m), which in this case was calculated for relative values. On the background of treatment with captopril, achieved the average level of SBP and DBP was not significant differences from the average value during therapy with preparations of enalapril. Multiple intergroup comparison (between the groups of patients who were treated by different drugs captopril) revealed significant ($P < 0.05$) difference only in the values assigned to the average dose Capoten, which was more than in the application tensiomin and captopril. All other parameters had no statistically significant differences. Achieved mean levels of SBP and DBP during treatment with perindopril, although he had smaller absolute values compared to the hypotensive effect of other drugs; however, a large variation of values not possible to ascertain the reliability of these differences. The same is true in relation to the effectiveness of fosinopril submitted by the drug with the commercial name of Monopril.

As one of the criteria for the effectiveness of the study, drugs were investigated the achievement of patients in the target levels of BP. These figures for the compared groups of patients, expressed as a percentage, are presented in Figure 1.

Obviously, the highest percentage of patients who had reached the target BP levels was noted on the background of RENITEC®, PRESTARIUM, and Monopril. At the same time, the target SBP was not recorded in patients treated with captopril.

In the study of diuretics represented by indapamide (arifon and indapamide) and hydrochlorothiazide (hypothiazide), multiple interspecific statistical comparisons using analysis

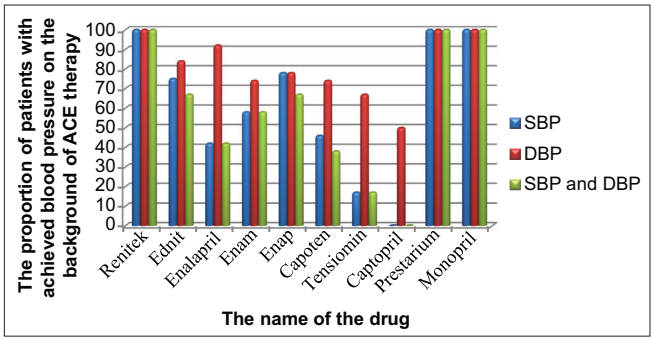

Figure 1: Achievement of target blood pressure levels against angiotensin-converting enzyme therapy

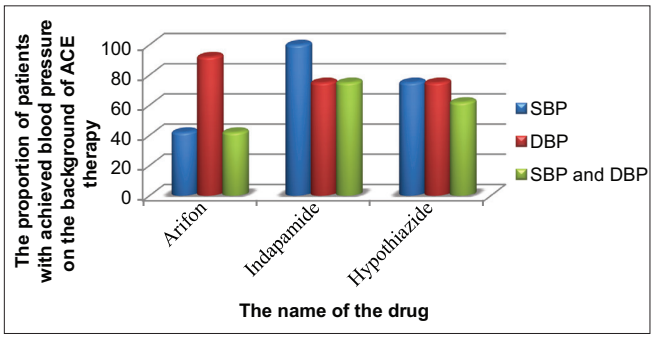

Figure 2: Achievement of target blood pressure levels on the background of diuretic therapy

of variance revealed the heterogeneity of the original values of SBP. Analysis using the Newman-Keyles test showed that baseline SBP was significantly ($P < 0.05$) higher in the arifon group.

A comparison of the achieved average total SBP and DBP values in the groups of patients treated with indapamide and hydrochlorothiazide did not reveal any significant differences. At the same time, a cross-group comparison of the achieved BP on the background of taking arifon and indapamide showed a significant ($P < 0.05$) difference in the levels of SBP: In the group of patients treated with indapamide, it was lower. However, since the baseline SBP level in these patients was also lower than in the arifon group, the antihypertensive effect of these drugs was comparable. This is evidenced by the comparison of indicators of the percentage decrease in BP, which did not reveal statistically significant differences between them [Table 3].

A comparison of percentages of the number of patients who managed to reach the target levels of BP on the background of taking diuretic drugs is presented in Figure 2, indapamide preparations were the most effective against this criterion.

Indapamide was in the leading position to reach the SBP target and arifon was considered to be a DBP. However, these benefits were not statistically significant. No significant differences were found either when comparing the indapamide treatment groups or when comparing their indices with the hydrochlorothiazide treatment group.

The drugs used for monotherapy from the beta-blockers group were presented with the drugs atenolol (atenolol and atenobene) and propranolol (obsidian and anaprilin). A comparison of the overall mean baseline and achieved BP in these groups showed no significant differences. However, comparisons across subgroups (among patients taking this or that drug) using analysis of variance revealed a difference in the studied parameters. Multiple comparisons using the Newman-Keyles test determined that baseline DBP in the

Table 3: Structure and performance of diuretic drugs prescribed as antihypertensive monotherapy

The name of the drug	Part of appointments, %		Average daily dose (mg/day)	The original level of blood pressure (mm Hg)		Atomic-level reached (mm Hg)		Decrease in blood pressure, %	
	In the group	In a subgroup		SBP	DBP	SBP	DBP	SBP	DBP
Indapamide									
	68		2.4±0.1	168.7±7.4	98.8±1.5	141.3±4.8	85.0±1.8	14.6±7.4	12.8±7.0
Arifon		76.4	2.5±0.0	171.7±5.9*	97.5±1.7	146.7±5.4	85.0±1.9	14.6±7.4	12.8±7.0
Indapamide		23.6	2.3±0.1	157.5±2.5	102.5+2.5	125.0±5.0*	85.0±5.0	20.6±15.3	17.1±14.2
Hydrochlorothiazide									
	32		34.3±10.3	149.4±4.7	94.4±1.8	140.0±5.4	86.3±3.8	6.3±6.3	8.6±7.2
Hypothiazide		100	34.3±10.3	149.4±4.7	94.4±1.8	140.0±5.4	86.3±3.8	6.3±6.3	8.6±7.2

*P<0.05 in accordance with the Newman-Keyles criterion. ACEF: Agriculture Commercialization Equity Fund, SBP: Systolic blood pressure, DBP: Diastolic blood pressure

group of patients treated with anaprilin was significantly ($P < 0.05$) lower than in patients in the other groups [Table 4].

A somewhat different pattern was observed when comparing the hypotensive action for anaprilin and obsidian. A lower value of the output of DBP in the subgroup taking anaprilin was recorded lower ($P < 0.05$) value of the achieved DBP. However, the severity of the hypotensive action of these drugs is presented; in the percent decrease in BP was comparable, as evidenced by the absence of significant differences. It was not revealed significant differences when comparing the percentage of BP reduction in subgroups who took the drugs atenolol and between groups on background treatment with atenolol and propranolol.

Clinical effectiveness of beta-blockers was also assessed in terms of the number of patients whose treatment was achieved target BP level. The results obtained in the study of this indicator are given in Table 4. The study group of drugs atenolol showed that almost all patients reached the target BP values during therapy atenobene. In the appointment of atenolol, these figures were somewhat lower. Achievements in all patients, the target level of DBP was observed in the subgroup of patients who received anaprilin (propranolol). The therapy obsidian, compare the indicators had lower values than in the group of anaprilin. However, due to the great variability of the studied trait comparison of results within each group (separately in the group of atenolol and propranolol group), significant differences were not revealed. There were no significant differences when comparing the mean group values of atenolol and propranolol Figure 3.

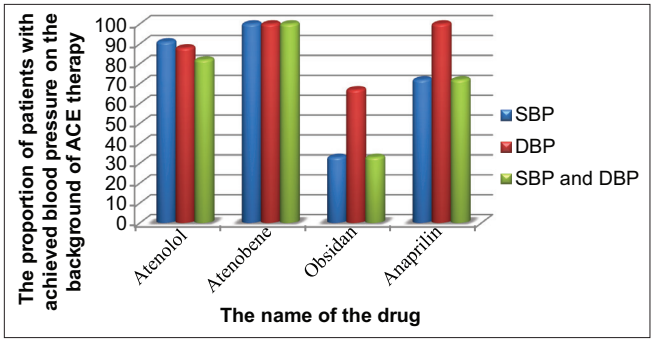

Figure 3: Achievement of target levels of blood pressure on the background of beta-blocker therapy

Representatives of calcium antagonists for hypertension monotherapy were verapamil, diltiazem, and nifedipine. A comparison of the original mean values of the BP of these groups in the multiple statistical analyses revealed no significant differences. No heterogeneity of indicators was found even in the intra-group comparison [Table 5].

To assess the antihypertensive activity of calcium antagonists, a comparison of the average group indices of the studied drugs was performed, as well as an intra-group comparison. Preliminary analysis revealed that all of the following drugs contributed to a significant reduction in SBP and DBP levels compared to their baseline values.

The preparations of verapamil were represented by commercial names such as verapamil and isoptin. Patients treated with isoptin, in contrast to patients receiving verapamil, had lower values of baseline and achieved SBP and higher levels of baseline and achieved DBP, but these differences were not significant because of significant differences in BP. There were no significant differences and percentages of BP reduction.

The most numerous in terms of trade names were the nifedipine group. It was represented by such trade names of drugs as phenigidine, corinfar, cordafen, Cordaflex, nifedipine, adalat-osmo, and cordipin.

Table 4: Structure and effectiveness of beta-blockers for antihypertensive monotherapy

The name of the drug	Part of appointments, %		Average daily dose (mg/day)	The original level of blood pressure (mm Hg)		Atomic-level reached (mm Hg)		Decrease in blood pressure, %	
	In the group	In a subgroup		SBP	DBP	SBP	DBP	SBP	DBP
Atenolol									
	72.9		54.0±3.2	153.2±2.2	98.5±1.1	130.3±1.9	84.3±1.5	15.0±4.4	14.4±4.4
Atenolol		97.1	53.0±3.0	153.3±2.3	98.5+1.1	130.6±1.9	84.4+1.6	14.8±4.1	14.3±4.1
Atenobene		2.9	75.0±25.0	149.5±0.5	98.5±1.5	122.5±2.5*	82.5±2.5	18.1±22.2	16.2±21.3
Propranolol									
	27.1		60.0±5.2	164.0±7.0	97.0±3.3	139.0±4.8	87.5±2.0	15.2±8.2	9.8 ±6.8
Obsidian		53.8	60.0±11.5	166.7±12.0	106.7±6.7	146.7±8.8	93.3±3.3	12.0±14.5	12.6±14.8
Anaprilin		46.2	60.0±6.2	162.9±9.2	92.9±2.9*	135.7±5.7	85.0±1.9*	16.7±10.3	8.5±7.7

*P<0.05 in accordance with the Newman-Keyles criterion. ACEF: Agriculture Commercialization Equity Fund, SBP: Systolic blood pressure, DBP: Diastolic blood pressure

Table 5: Structure and performance of calcium antagonists to be administered as antihypertensive monotherapy

The name of the drug	Part of appointments, %		Average daily dose (mg/day)	The original level of blood pressure (mm Hg)		Atomic-level reached (mm Hg)		Decrease in blood pressure, %	
	In the group	In a subgroup		SBP	DBP	SBP	DBP	SBP	DBP
Verapamil									
	51.4		92.2±8.6	165.8±4.9	95.0±3.1	139.4±3.4	83.3±1.4	15.9±6.2	12.3±5.6
Verapamil		72.2	92.9±10	169.3±5.5	93.6±3.9	141.4±4	81.4±1	16.5±7.1	13±6.5
Isoptin		27.8	90±19.1	153.8±9	100±3.5	132.5±4.8	90±4.1	13.9±13.1	10±11.3
Nifedipine									
	42.9		24.1±2.4	162.1±4.7	100.6±2.2	137.4±3	84.1±2.1	15.2±6.3	16.4±6.4
Phenigidine		26.7	27.5±6.3	167.5±7.5	98.8±8.3	137.5±2.5	78.8±3.2	17.9±14.5	20.5±15.2
Corinfar		21	33.3+8.8	160±17.3	99.3±0.6	136.7±7.6	88.3±1.4	14.6±15.8	11.7±12.1
Cordafen		19	23.3±3.3	156.7±3.3	103.3+6.7	136.7±3.3	83.3±3.3	12.8+14.9	19.4±17.7
Cordafleks		13.3	15.0±5.0	140.0±10	102.5±2.5	125.0±15.0	80.0±10.0	10.7±17.9	20±23.1
Nifedipine		6.8	20.0±0.0	165±2.9	105±2.9	153.3±3.3	93.3±6.7	7.1±11.5	11.1±14.1
Adalat-osmo		6.6	20.0±0.0	158.5±1.5	98.5±1.5	122.5±2.5	79.5±0.5	22.7±24.2	19.4±22.8
Cordipin		6.6	20.0±0.0	194.5±5.5	92.5±5.5	131.5±1.5	81.5±1.5	35±47.7	11.1±31.4
Diltiazem									
	5.7		140±40	155±5	107.5±2.5	145.0±15.0	90.0±0.0	6.5±14.2	16.3±21.3
Diltiazem		100	140±40	155±5	107.5±2.5	145.0±15.0	90.0±0.0	6.5±14.2	16.3±21.3

*P<0.05 in accordance with the Newman-Keyles criterion. ACEF: Agriculture Commercialization Equity Fund, SBP: Systolic blood pressure, DBP: Diastolic blood pressure

Trade names of drugs, in this case, are presented to reduce their prevalence. The study of their antihypertensive activity showed that the most pronounced effect was observed in the drug with the trade name adalat-osmo, against the background of which the lowest level of SBP was achieved. However, this difference was not statistically significant. In addition, multiple statistical comparisons between subgroups of nifedipine preparations with different trade names revealed no significant differences in the rates of antihypertensive activity expressed not only in mm Hg but also represented as a percentage reduction in BP.

Analysis of the severity of the hypotensive effect of diltiazem showed that patients who used it had an increased level of mean baseline and average achieved DBP. However, analysis of variance and multiple cross-group comparisons using the Newman-Keyles test did not confirm the statistical significance of these differences compared to similar indicators of other groups.

When comparing of the percentage decrease in BP, it is necessary to note large values, standard error of the mean (± m), which was calculated for relative values. In this case, it reflects not so much the heterogeneity of the compared indicator as it indicates the small number of the compared groups.

This statement is also true for indicators of achievement of target levels of BP, the comparison of which also revealed no significant differences.

The exception was the preparation with the commercial name of nifedipine, the use of which in patients was not accompanied by the achievement of the target level of the SBP [Figure 4].

Central action drugs were represented by methyldopa, clofeline, and reserpine. The appointment of methyldopa (dopegite) was carried out against the background of high initial BP, the values of which, however, were not significantly different from similar indicators of other groups. However, the achieved SBP level with the use of this drug was significantly ($P < 0.05$) lower. This was also reflected in the percentage decrease in BP, which among the other drugs of central action were highest in methyldopa [Table 6].

The study of the uses of combination drugs in antihypertensive monotherapy revealed the dominance of a reserpine-containing drug with the commercial name Adelfan-Ezidrex. Further, the decreasing prevalence was followed by caposide, enap-N, andipal, viscaldix, and cristepin. The study of baseline BP values in patients of these groups revealed the heterogeneity of the compared indicators.

For the help of a large number of group portions, it was shown that they had a lower value for SBP in patients and they took andipal. Significantly turn around ($P < 0.05$) for the sake of reporting the number of cases before the illness was ill for viscaldix, the number was changed

to the higher value; for some average SBP values, the maximum was in the 7th group of drugs [Table 7]. The highest number of dates DBP for all specified groups is not small enough of the available values.

Reached SBP and DBP in the parent groups, the patients were tried on monotherapy with combined drugs; they also did not significantly. Statistically significant indicators of boules appeared when there were more indicators of hypotensive activity of these drugs. The smallest value is the indicator in the group with the designated Andipal. However, through the great value of the standard milestone of the middle value, which was awarded for the old values, the price was not significant.

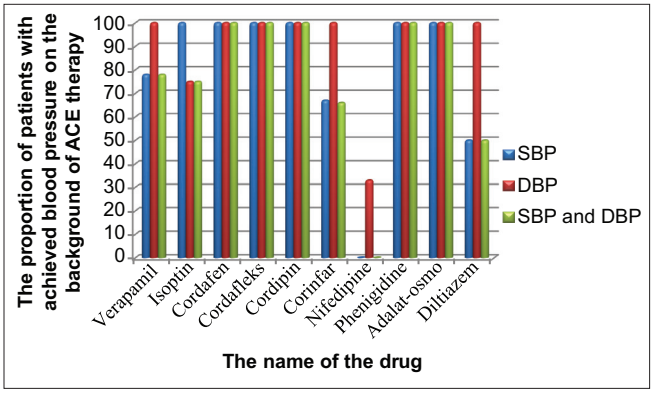

Figure 4: Achievement of target blood pressure levels against the background of calcium antagonists

DISCUSSION AND CONCLUSION

Thus, in our pharmacoepidemiological study, it has been shown that antihypertensive monotherapy is most often performed for younger patients with initially lower BP. The use of two or three or more antihypertensive drugs is common in elderly patients with initially high BP.

Particularly noteworthy is the fact that the study sample used widely outdated, potentially dangerous drugs, which include reserpine-containing drugs and short-acting drugs, mainly nifedipine generics. At the same time, there were virtually no prescriptions for such beta-blockers as carvedilol, as well as prolonged calcium antagonists.

Low doses of antihypertensive drugs are usually prescribed for older patients, which is well-founded. However, in almost half of the patients studied, the target BP level was not reached.

The generic prevalence of antihypertensive drugs is shown to be prevalent in all groups. They are most widely represented by drug enalapril and nifedipine.

The data obtained as a result of a retrospective descriptive pharmacoepidemiological study are necessary for the further pharmacoeconomic study of antihypertensive drugs; however, they are not sufficient, since they only take into account the specifics of different alternatives and their therapeutic

Table 6: Structure and efficacy indexes of central action drugs prescribed as antihypertensive monotherapy

The name of the drug	Part of appointments, %	The original level of blood pressure (mm Hg)		Atomic-level reached (mm Hg)		Decrease in blood pressure, %	
		SBP	DBP	SBP	DBP	SBP	DBP
		175.1±5.6	**96.6±2.4**	**154.2±4.8**	**87.4±2.1**	**11.9±6.2**	**9.5±5.6**
Clofeline	57.1	173.8±4.6	93.8±1.8	165.6±4.4	90±3.3	4.7±5.5	4.1±5.1
Methyldopa (dopegite)	28.6	188.8±115.3	105±6.1	133.8±2.4*	81.8±1.2	29.1±17.2	22.1±15.7
Reserpine	14.3	153.5±3.5	91.5±1.5	149.5±10.5	88.5±1.5	2.6±9.2	3.3±10.3

*P<0.05 in accordance with the Newman-Keyles criterion. SBP: Systolic blood pressure, DBP: Diastolic blood pressure

Table 7: The structure and efficacy indicators of combination drugs prescribed as antihypertensive therapy

The name of the drug	Part of appointments. %	The original level of blood pressure (mm Hg)		Atomic-level reached (mm Hg)		Decrease in blood pressure. %	
		SBP	DBP	SBP	DBP	SBP	DBP
		173±3.1	**96.9±2.3**	**149±2.4**	**88.9±1.3**	**13.9±3.2**	**8.3±2.5**
Adelfan	53.4	174.8±3.4	93.9±3.3	154.5±3.7	89.5±2.1	11.6±4.1	4.7±2.7
Caposide	12.1	174.3±5.7	100.7±1.7	142.9±5.2	88.6±4.0	18.0±±10.7	12.0±9.0
Enap-N	10.3	170±6.8	93.3±4.9	148.3±8.3	88.3±3.1	12.8±10.1	5.4±6.8
Andipal	8.6	146.0±5.1*	94.0±6.0	144.0±8.7	92.0±2.0	1.4±3.9	2.1±4.8
Viscaldix	8.6	197±17.2	107±7.7	132±5.8	82.0±2.0	33.0±15.7	23.4±14.1
Cristepin	6.9	170±19.6	110±17.3	142.5±2.5	90±4.1	16.2±13.9	18.2±14.6

*P<0.05 in accordance with the Newman-Keyles criterion. SBP: Systolic blood pressure, DBP: Diastolic blood pressure

(objective) relevance does not reflect the subjective value of these interventions and patient satisfaction with treatment, which is especially important to take into account in the choice of drugs with comparable clinical this efficiency.

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