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ANALYSIS OF THE APPLICATION OF ADDITIONAL CORRECTION METHODS OF INSUFFICIENT ADHERENCE TO TREATMENT IN PATIENTS WITH RESISTANT AND PSEUDO-RESISTANT ARTERIAL HYPERTENSION

V. Zbitnieva

Odessa National Medical University, Ukraine

Department of general practice and medical rehabilitation

viktoriazbitneva@gmail.com

Abstract

The article considers the results of the use of home blood pressure monitoring and telephone consultations (visits) on the background of the optimization of antihypertensive therapy in patients with resistant and pseudo-resistant arterial hypertension.

Keywords: resistant hypertension, pseudo-resistant hypertension, adherence to treatment

Introduction

Nowadays the prevalence of arterial hypertension in Ukraine is 35 % of the adult population [1]. According to some studies, in 5-18 % of patients with hypertension disease manifests as resistant hypertension [1, 2]. The structure of resistant hypertension in 90-95 % is represented by a pseudo-resistant hypertension [1, 3]. The main reasons of a pseudo-resistant hypertension are lack of adherence to treatment and ineffective antihypertensive

therapy [2, 3]. At the same time, it is convincingly proved that increased blood pressure above the target level ($> 140/90$ mm Hg) is a major risk factor for cardiovascular disease [2].

WHO experts in 2003 proposed a list of measures that can be applied to improve adherence in patients with hypertension [4]. Among them - the patient education: provide information on the disease, its impact on quality of life; clarification on regimens of drugs, their effects and side effects; discuss with the patient possible use of self-control; the use of the most simple regimen of medicines; development and support of the regime, aimed at promoting continuous medication [4, 5]. It is considered appropriate to develop and use a system of reminders — as periodically consultations and surveys to increase the motivation; establishing communication between the dose intakes once a day and everyday activity; involvement in the treatment process of the environment of the patient [6, 7].

According to some published data, involvement of the patient in the process of blood pressure control (regular self-measurement of blood pressure at home and keeping a diary) improves adherence to treatment and involvement of family members of the patient allows to increase the effectiveness of the control of risk factors associated with the lifestyle of the patient [7,8]. However, the results of published studies are mixed. A study conducted in the UK found no link between self-monitoring of blood pressure at home and adherence to treatment [9].

In this regard, it is relevant to assess the effectiveness of the different correcting methods of insufficient adherence to treatment in patients with resistant and pseudo-resistant arterial hypertension.

The aim of the work is to evaluate the effectiveness of additional correction methods of insufficient adherence to treatment, namely implementation of the home blood pressure monitoring by patients with writing diaries of self-control and the method of telephone consultation (visits), in patients with resistant and pseudo-resistant arterial hypertension on the background of the antihypertensive therapy optimization in the family doctor practice.

Materials and methods of research

Study included 120 patients (men - 68 (56.7%), women - 52 (43.3%), average age - $51,6 \pm 2,2$ years) with essential arterial hypertension which in previous treatment with three or more antihypertensive drugs, one of which was a diuretic, did not achieve the level of blood pressure (BP) below 140/90 mm Hg. At first, all patients underwent the proposed by us method of differential diagnosis of pseudo-resistant and true resistant hypertension by the assessment of office BP and ECG, before and 3 hours after intake of three previously appointed antihypertensive drugs [10].

On the results of conducted differential diagnosis of resistant and pseudo-resistant hypertension, patients were divided into 4 groups:

I group (control) (n=30) - patients with pseudo-resistant hypertension with the conventional correction methods of insufficient adherence to treatment in the family doctor practice;

IA group (basic) (n=30) - patients with pseudo-resistant hypertension who underwent additional correction methods of insufficient adherence to treatment;

II group (control) (n=30) - patients with resistant hypertension with the conventional correction methods of insufficient adherence;

IIA group (basic) (n=30) - patients with resistant hypertension who underwent additional correction methods of insufficient adherence to treatment;

All groups of patients received three or more antihypertensive drugs at the average therapeutic doses. Conventional correcting methods of insufficient adherence to treatment in the family doctor practice included recommendations on lifestyle modification and issuing memos with information on the disease, its impact on quality of life, possible complications. Additional correction methods included the telephone consultation (visits) and the home blood pressure monitoring by patients with writing diaries of self-control. Method of the telephone consultation (visits) consisted of the standardized weekly phone calls to patients, during which patients were reminded of antihypertensive drugs intake, the family doctor learned about possible complications and blood pressure level and, if necessary, performed the correction of appointed antihypertensive therapy.

Patients before and after 1, 3 and 6 months of treatment were performed office BP measurement and studied adherence to treatment with the help of self-administered questionnaire the Morisky Medication Adherence Scale-4 (MMAS-4) that was evaluated the following way: 0-2 points – non-adherent to treatment; 3- insufficiently adherent to treatment; 4 points - adherent to treatment [11, 12].

Statistical processing of the obtained results was performed using the statistical analysis package Microsoft Excel 2010. The reliability of difference between the indicators was determined using T-student criterion. For a threshold level of statistical significance was taken $p < 0.05$.

Results and discussion

Analysis of patients' adherence to treatment, performed at the beginning of the study with the help of the Morisky Medication Adherence Scale-4 (MMAS-4), found that many

patients, not only with pseudo-resistant hypertension, but also with resistant hypertension, had low adherence to treatment (fig.1).

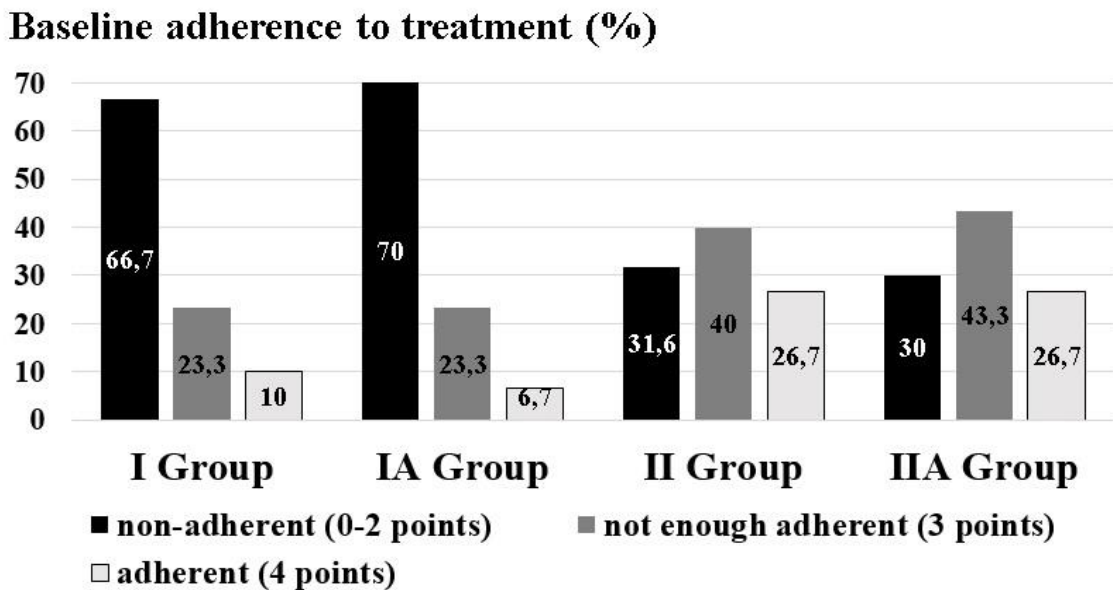


Figure 1. Baseline adherence to treatment observed at the beginning of the study in patients with resistant and pseudo-resistant arterial hypertension

The data obtained showed that the overwhelming majority of patients with pseudo-resistant arterial hypertension (I and IA groups) were non-adherent to treatment or adherence to treatment was insufficient – 55 patients (91.7%) of both I and IA groups. Although patients with resistant arterial hypertension (II and IIA group), compared to patients with pseudo-resistant, more often showed adherence to treatment, in most of them it was insufficient or was missing - 44 patients (73.3%) of both II and IIA groups.

After 1 month of monitoring with the use of different correction methods of insufficient adherence to treatment, adherence has improved significantly in all groups. In the I group - in 15 patients (50%), in comparison with baseline adherence - only in 3 patients (10%) ($p < 0.01$). In the IA group - in 17 patients (56.7%), in comparison with baseline adherence - only in 2 patients (10%) ($p < 0.001$). In the II group - in 18 patients (60%), in comparison with baseline adherence - in 8 patients (26.7%) ($p < 0.05$). In the IIA group - in 20 patients (66.7%), in comparison with baseline adherence - in 8 patients (26.7%) ($p < 0.01$) (fig.2).

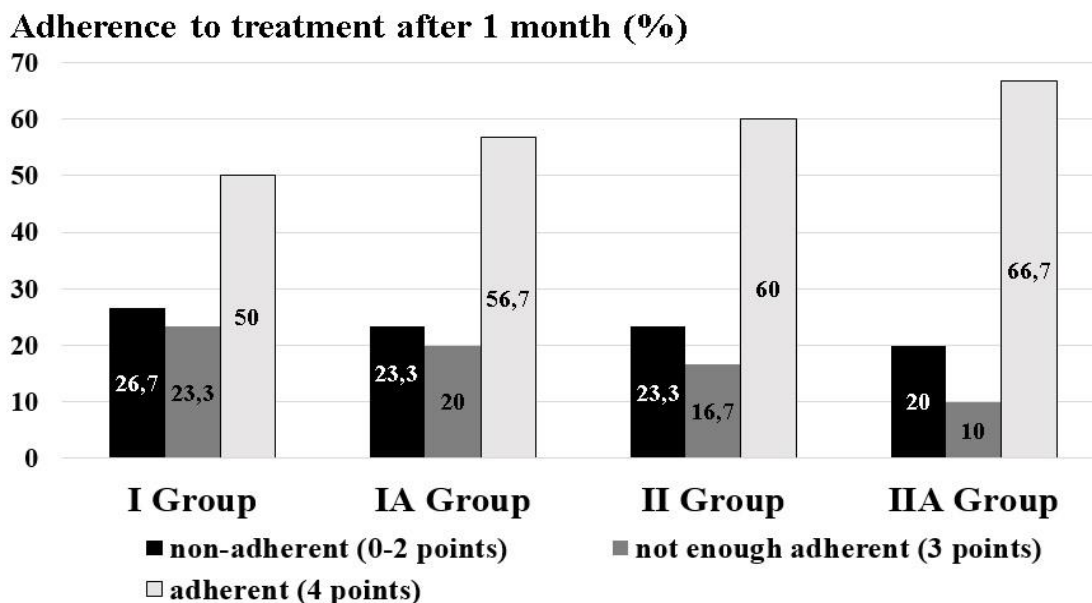


Figure 2. Adherence to treatment observed after 1 month of monitoring in patients with resistant and pseudo-resistant arterial hypertension

After 3 month of monitoring adherence to treatment in the I and II groups, in which were used conventional correction methods of insufficient adherence to treatment, slightly decreased. In the IA and IIA groups, in which were used additional correction methods of insufficient adherence, continued to grow (fig.3).

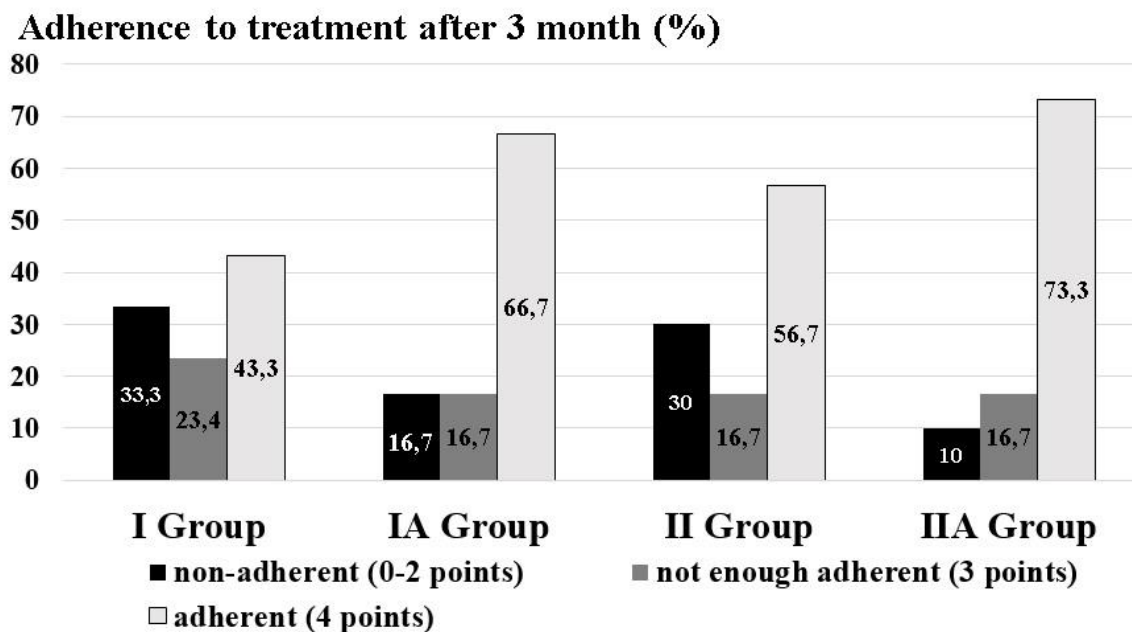


Figure 3. Adherence to treatment observed after 3 month of monitoring in patients with resistant and pseudo-resistant arterial hypertension

After 6 month of monitoring adherence to treatment in the I and II groups decreased significantly and almost reached the level as in the beginning of the study. In the IA and IIA groups adherence to treatment increased considerably (fig.4).

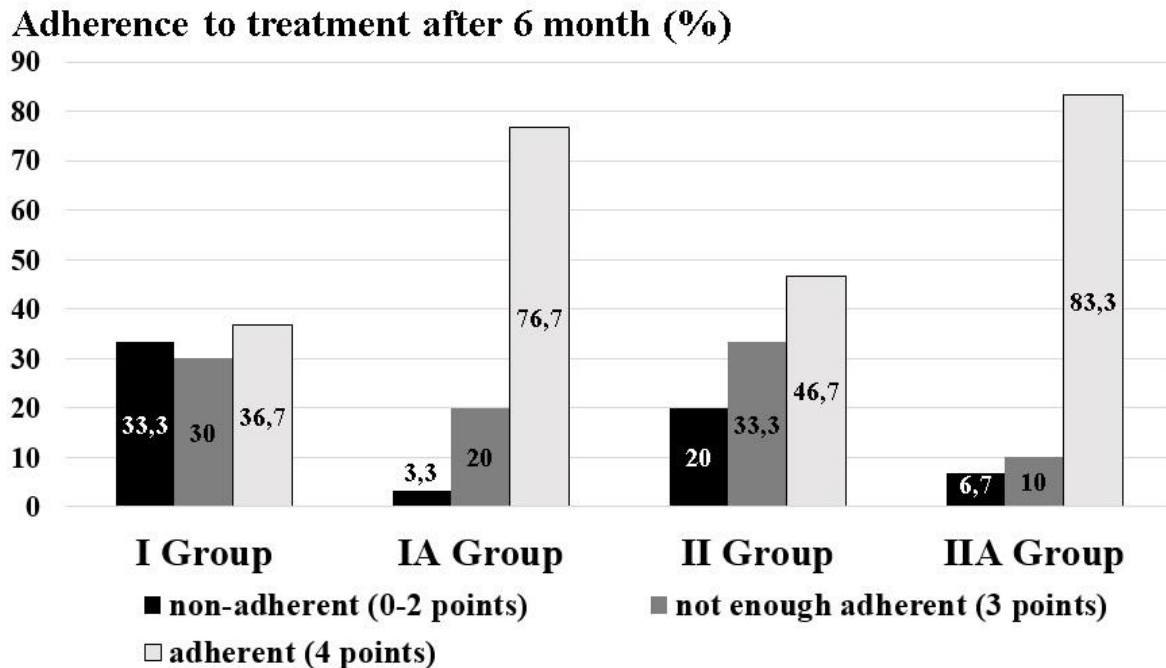


Figure 4. Adherence to treatment observed after 6 month of monitoring in patients with resistant and pseudo-resistant arterial hypertension

The use of additional correction methods of insufficient adherence to treatment allowed to increase adherence to treatment in patients with pseudo-resistant and resistant hypertension: in the IA group - in 23 patients (76.7%), in comparison with the I group - in 11 (36.7%) patients ($p < 0.01$), in the IIA group - in 25 patients (83.3%), in comparison with the II group - only in 14 (46.7%) patients ($p < 0.01$). Accordingly, the use of additional correction methods of insufficient adherence to treatment can significantly improve adherence in patients with resistant and pseudo-resistant hypertension.

At baseline of the study and after 1, 3 and 6 month of treatment was also evaluated average score of adherence. The obtained results showed that after 1 month of treatment in all groups, independently of the applied correction methods of insufficient adherence to treatment, adherence to treatment has improved considerably. Significant differences between groups were not observed: in the I group, after 1 months of treatment, average score of

adherence amounted $3,1 \pm 0,09$ points, compared to the IA group - $3,52 \pm 0,1$ points ($p > 0.05$); II and IIA groups - $3,4 \pm 0,1$ points and $3,58 \pm 0,08$ points respectively ($p > 0.4$) (fig.5).

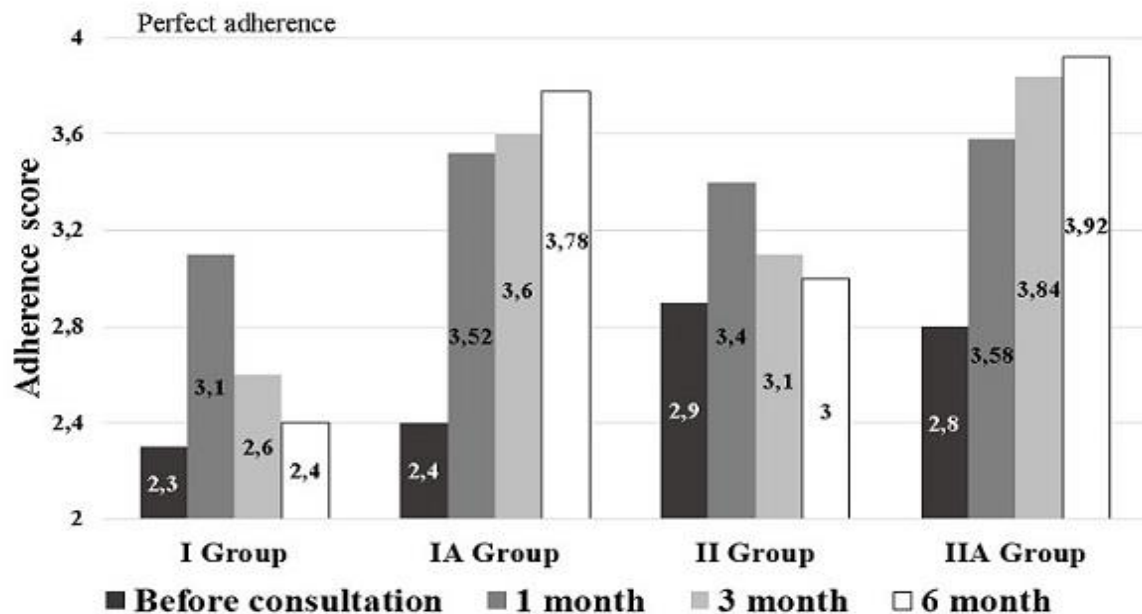


Figure 5. Changes of the average score of adherence to treatment observed during 6-month monitoring in patients with resistant and pseudo-resistant arterial hypertension

After 3 months of monitoring the average score of adherence decreased in the I and II groups, in which were used the conventional correction methods of insufficient adherence to treatment. Namely, in the I group average score of adherence amounted $2,6 \pm 0,07$ points, compared to the IA group - $3,6 \pm 0,09$ points ($p < 0.001$); II and IIA groups - $3,1 \pm 0,3$ points and $3,84 \pm 0,1$ points respectively ($p < 0.01$). After 6 months of monitoring, in the I and II groups adherence to treatment continued to decrease significantly: in the I group the average score of adherence was $2,4 \pm 0,1$ points compared to the IA group - $3,78 \pm 0,1$ points ($p < 0.001$); II and IIA groups - $3,0 \pm 0,2$ points and $3,92 \pm 0,07$ points respectively ($p < 0.01$). Thus, long-term results of the study indicate that the use of additional correction methods of insufficient adherence to treatment, namely implementation of the home blood pressure monitoring by patients with writing diaries of self-control and the method of telephone consultation (visits), allows to keep a high average score of adherence achieved in the treatment process.

Consequently, the use of additional correction methods of insufficient adherence to treatment in patients both with resistant and pseudo-resistant arterial hypertension can

significantly improve adherence to treatment and that allows to recommend these methods for the application in family doctor practice.

Conclusions:

1. Most patients, not only with pseudo-resistant arterial hypertension, but also resistant, were non-adherent to treatment or adherence to treatment was insufficient: in 91.7% of patients with pseudo-resistant hypertension, and in 73.3% of patients with resistant hypertension.

2. The use of additional correction methods of insufficient adherence to treatment, namely the home blood pressure monitoring by patients and the method of telephone consultation (visits), can significantly improve adherence to treatment in patients with resistant and pseudo-resistant hypertension.

3. Long-term results of the study indicate that the use of additional correction methods of insufficient adherence to treatment allows to keep a high average score of adherence achieved in the treatment process (in the I group - 2.4 ± 0.1 points in comparison with the IA group – 3.78 ± 0.1 points ($p < 0.001$) and in II and IIA groups, respectively 3.0 ± 0.2 points and 3.92 ± 0.07 points ($p < 0.01$)).

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