Personal Factors Determining the Sustainability of Compliance among Patients with Transient Ischemic Attack

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Abstract

The article is a summary of the results of a pilot phase of an ongoing study to determine the factors that affect the compliance of patients with a Transient Ischemic Attack (TIA). All patients, in addition to the standard comprehensive examination, which included taking anamnesis, recording blood pressure, biochemical tests and MRI, were asked to fill out the MMPI questionnaire (in the abbreviated version of Mini-Mult), as well as the PHQ-9 questionnaire, reflecting the level of depression and the modified Morisky-Green questionnaire, measuring the degree of compliance. Based on factor analysis, it was found that certain personal characteristics of patients predetermine the declarative or real nature of compliance peculiarly already at the stage of discharge from the hospital: patients with psychotic accentuation, as well as with neurotic accentuation, tend to declarative cooperation in the direction of preventing an acute vascular episode (stroke). The former - is due to distrust and a tendency to excitable reactions, and the latter is due to anxiety and the need for sympathy. The same patients who suffer from depression count on cooperation with medical personnel and paramedics (doctor, psychologist, social worker) and responsibly treat the developed conditions and rules of interaction.

***Keywords:** A Pilot Study; Compliance; Transient Ischemic Attack; Factor Analysis; Stroke Prevention*

Introduction

This article, is a continuation of the pilot stage of the study of adherence to preventive measures of acute vascular episodes among patients who have had a TIA. It presents the results of elucidating the determinants of acceptance of the idea of compliance after an episode of TIA and its actual condition [1]. The rather long preparatory stage of this study is due to the rather complex specificity of TIA, which is common at first glance, but a formidable harbinger of severe vascular diseases and above all, a stroke.

No matter how the Transient Ischemic Attack (TIA) is currently interpreted, either as a focal neurological dysfunction, often with visual impairment, presumably of an ischemic nature, regressing completely within 24 hours (as it is known, 2/3 of all TIAs, in general, lasts no more than an hour).

Or as a short-term episode of neurological dysfunction without obvious signs of acute infarction of brain regions, accompanied by focal spasm of cerebral vessels or retina, the fact remains that TIA causes almost 25% of acute ischemic strokes with an absolute risk of up to 15% per year [2].

Previously, we have already indicated what the dangerous specificity of this nosology is. The fact is that often a patient, having learned that he did not have a stroke and having received short-term treatment, which is often perceived by him as a palliative, neglects

the necessary preventive treatment measures, violating the compliance achieved at the stage of discharge from the hospital, thereby unwittingly contributing to the development threatening situation with acute vascular disease [1]. The worst thing is that, as noted in the specialized literature, once the "maximum regression" is fraught with the greatest risk of not just a recurrence of TIA, but a truly dangerous stroke with catastrophic consequences [3,5,8-11].

All this is aggravated by the fact that people of working age are actually at risk. This also brings in socio-economic consequences that may seriously change the context of life not only of the patient himself, but also of his family.

That is why the problem of compliance, i.e. adherence to prophylactic treatment aimed at reducing the risk of stroke, to preventing situations of acute vascular crisis, is of a great importance for working-age patients of who have got TIA. And here we meet with a paradox. On the one hand, the issue of compliance is quite clearly presented in the scientific and medical community and is completely understandable for clinicians. Over the past decade, this issue has not only collected a significant number of publications but has also been enriched by serious results of serious research. But the point is not so much even that the phenomenon of compliance is multifactorial (in some studies, the number of these factors is indicated as equal to 250). For example, some constellations of factors which contribute to the formation of compliance: these are the psychological characteristics of the patient, the specifics of a particular disease, the personal qualities of the doctor, and the characteristics of his/her interaction with the patient, and socio-demographic factors [5].

On the other hand, in real medical practice, the attending physician, upon discharge of a patient who has got a TIA, can only provide him with a list of prescriptions and recommendations. However, the circle of his responsibility no longer includes the further behavior of the patient, who, we recall, does not consider himself the patient. It is one thing when a patient with a discovered chronic disease is registered in a dispensary, as it happens, say, with chronicles of a psychiatric, pulmonary, or cardio-rheumatic profile. And it is quite different when it comes to practically healthy people, the responsibility for compliance with medical recommendations lies with them themselves.

It is well known to what extent people tend to declare socially positive attitudes and rules (commitment to a healthy lifestyle, following the doctor's prescriptions, fighting bad habits, etc.) and how little their real behavior corresponds to the declared promises and verbally expressed agreement with the doctor. In addition, socio-demographic factors play a major role in this situation, such as social status, level of education, degree, type of employment, marital status, profession, locality and area of residence, etc.

Meanwhile, a simple statement of the complexity of this problem cannot justify a high percentage of life-threatening vascular events after TIA, as well as a reference to the fact that only the patient himself is responsible for his health after leaving the hospital. Being formally correct from a legal point of view, this provision does not withstand criticism either from the point of view of the interests of society, from an ethical position, or taking into account the tasks and prospects of societal development.

Based on these positions, we attempted to find out the implicit (latent) personality traits (accentuations, disorders, mental states) which are most capable of leading to the risk of disruption of the achieved compliance with measures to prevent acute vascular conditions of patient, who have had a TIA.

Methods

Participants and procedure

This study is a fragment of a detailed long-term study of the problem of stroke prevention in a cohort of patients who underwent TIA and were discharged from the hospital with appropriate prescriptions and recommendations. This cohort of subjects included patients diagnosed with ITA who were hospitalized from September 2021 to February 2022. Taking into account the fact that such patients account

for from 3 to 5% of all those hospitalized in the neurology department, the study of the medical and psychological support for stroke prevention in patients of working age who have undergone TIA turns into a delicate matter. It is based not on statistics, but on personality-oriented purposeful medical and psychological work. This work involves a more thorough study of the personality characteristics of patients with a history of TIA, since, remaining left to themselves after discharge, they, as practice shows, under the influence of external circumstances, tend to violate the declared compliance, thereby increasing the risk of acute vascular disease.In addition, given the outbreak of hostilities in Ukraine, we were forced to take into account only the work with the subjects, which was recorded until the end of February. All patients, in addition to the standard comprehensive examination, which included taking an anamnesis, recording blood pressure, biochemical tests, and MRI, were asked to fill out the short version of MMPI questionnaire (Mini-Mult), as well as the PHQ -9 questionnaire, reflecting the level of depression and the modified Morisky-Green questionnaire, measuring the degree of compliance [6,7]. When discharged from the hospital, the doctor conducted a preventive conversation, which included the following items of duties: 1) purchase of a tonometer and measurement of blood pressure during the first 12 days after discharge and within 12 days, starting from the second month after discharge; 2) systematic intake of the recommended drug (usually from the category of statins) in the prescribed dosage; 3) conducting a lipidogram in the last week of the second month after discharge, and 4) agreeing to conduct a follow-up telephone interview based on the results of the implementation of these recommendations.

Compliance was taken as achieved in the case of an overall score of 5 on the scales. Scores below 5 were regarded as a lack of real adherence to treatment (in this case, prevention, and medical advice). As a result, 26 patients agreed to a delayed (two and four months after discharge) follow-up interview. Particular attention during the delayed interview was given to those patients who: a) stopped taking drugs and measuring blood pressure, and who had no complaints; b) who presented complaints relating to the deterioration of the general condition.

Statistics

As a starting material for subsequent calculations, a correlation matrix was constructed (N = 24), which represents the results of personality diagnostics in columns, and the patients in rows. Two patients dropped out of the selected cohort for reasons beyond our control. It was decided to factorize the obtained data to identify groups of factors that determine the behavior of patients at different stages of cooperation with the doctor.

The initial variables for factor analysis: diagnostic (basic) scales of the Mini-mult questionnaire; diagnostic results of the PHQ -9 questionnaire; compliance 1 (initial contract at the stage of discharge); compliance 2 (adherence to preventive measures after two months); age.

The indicators of the validity scales of the Mini-Mult Test were omitted since they were taken into account at the stage of selecting respondents for the experimental group. Since these scales help to reveal inaccurate answers, the patients with unreliable indicators were not included in the experimental group.

The factor analysis was carried out by principal component method followed by Varimax rotations with Kaiser normalization.

Those correlations were identified as significant, the value of which was not less than 0.500.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,515
Bartlett's Test of Sphericity	Approx. Chi-Square	105,006
	df	66
	Sig.	,002

The table above shows the relative suitability of the available data for factor analysis. The Kaiser-Meyer-Olkin (KMO) score is 0.515, which allows us to consider the factor analysis as generally applicable. (As you know, the results of this indicator can vary from 0 (the factor model is not applicable) to 1 (the factor model perfectly describes the data structure).

Total Variance Explained									
Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,214	26,779	26,779	3,214	26,779	26,779	2,604	21,699	21,699
2	2,306	19,216	45,996	2,306	19,216	45,996	2,500	20,834	42,533
3	1,664	13,867	59,863	1,664	13,867	59,863	1,998	16,653	59,186
4	1,356	11,302	71,165	1,356	11,302	71,165	1,437	11,978	71,165
5	,841	7,010	78,175						
6	,817	6,805	84,980						
7	,514	4,281	89,261						
8	,490	4,084	93,345						
9	,310	2,585	95,929						
10	,248	2,063	97,992						
11	,145	1,209	99,201						
12	,096	,799	100,000						
Extraction Method: Principal Component Analysis.									

Based on the results of the factor analysis, four factors were identified, explaining respectively 21.7%; 20.8%; 16.7%; 12.0% of the total variance. The total variance is 71.2%.

Rotated Component Matrix a				
	Component			
	1	2	3	4
hs	.031	.852	-,129	-,028
De	-,290	.772	.097	-,004
Hy	.352	.799	-,078	-,105
Pd	, 835	-, 122	-, 063	, 021
Well	, 615	-, 118	, 207	-, 366
Pt	, 738	, 520	-, 126	, 089
Sc	, 766	, 124	-, 334	, 019
Ma	, 190	-, 291	-, 110	, 686
PHQ_9	-, 051	-, 281	, 824	-, 117
Set.1	-, 239	.180	.662	-,049
Set 2	.079	-,068	.786	.449
Age	-,294	.157	.211	.771
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 5 iterations.				

As can be seen from the rotated matrix, the first (main) factor (informativeness 21.7%) is represented by the following scales:

- 4. Psychopathy (in psychological interpretation - the scale of impulsivity) - 0.835;

- 6. Paranoia (in psychological interpretation - a scale of rigidity) - 0.615;

- 7. Psychasthenia (in psychological interpretation - anxiety scale) - 0.738;

- 8. Schizophrenia (in the psychological interpretation - a scale of individualism) - 0.766.

According to the meaning of the scales, reflecting the "psychopathic" orientation of these scales, the main factor was named "Personal accentuation of the excitable-incredulous type".

The second (partial) factor (20.8% informativeness) collected the following scales:

- 1. Hypochondria (in psychological interpretation - a scale of neurotic overcontrol) - 0.852;

- 2. Depression (in the psychological interpretation - a scale of pessimism) - 0.772;

- 3. Hysteria (in psychological interpretation - the scale of emotional lability) - 0.799;

- 4. Psychasthenia (in psychological interpretation - anxiety scale) 0.520.

Taking into account the factor loadings and its substantive content (fixation on well-being, emotiveness, anxious expectation), this factor was named "Personal accentuation of the hypochondriacal-hysteroid type".

The third (partial) factor (16.7% information content) is represented by the following variables:

- 9. PHQ -9 - an indicator of the level of depression according to self-report -0.824;

- 10. Level of compliance at discharge - 0.662;

- 11. Delayed compliance level - 0.786;

As it is clear from the factor loads for the presented variables and their meaningful meaning, this factor reflects a set of loads related to the level of depression and the levels of delayed and initial compliance. This factor was named "The influence of subjectively felt depression on the stability of compliance".

The fourth partial factor (12.0% information content) includes two variables:

- 9. scale of mania (in psychological interpretation - the scale of optimism) - 0.686;

- 12. Variable "age" - 0.771.

Given the initial data (the initial table was not included in the text of the article to save space), as well as the weak, but distinct fullness of this factor, it can be called an "Age-related decrease in optimism".

Thus, the general picture of the behavior of patients who have undergone TIA, about their compliance - as an idea (at the stage of discharge) and as a condition of life (after a delayed time) is described by the following factors: 1. Personal accentuation of the excitable-

distrustful type (main factor) and three private ones: "Personal accentuation of the hypochondriacal-hysteroid type"; "Influence of subjectively felt depression on the persistence of compliance" and "Age-related decline in optimism".

Discussion

Let's consider the obtained results in more depth. In our opinion, the data obtained allow us to understand the range and psychological boundaries of achieving successful (persistent, not declarative) compliance with patients who have undergone TIA. First of all, attention is drawn to the fact that the stability of compliance is associated with subjectively felt depression of the patient himself. Although this factor is partial, while the main factor is "personal accentuation of an excitable-distrustful type", this undoubtedly indicates that compliance, which determines the patient's adherence to treatment and preventive measures, is undoubtedly an important component of prevention for a certain category of patients. In particular, for those who, according to their subjective feelings, suffer from a decrease in mood, depression, and depression, obviously due to either the transferred TIA or previous or concomitant life circumstances. Or, importantly, those that could provoke this vascular episode. We emphasize the moment of the subjectivity of sensations because, according to the initial data of the Mini-Mult-assessment, the second of the basic scales of the test, the depression scale, did not exceed the conditional limits of the normative range in any of the noted cases, and in some cases, it was even omitted, which can be interpreted as displacement anxiety. In other words, it is depressive symptoms that are suppressed or hidden, but subjectively quite noticeable, that are a significant predictor for understanding what type of patient compliance can be the most stable and fruitful in the prevention of acute vascular episodes in general and stroke in particular.

As for the main and second factors that reflect the personal accentuation of patients, then, in essence, if we coarsen the results obtained, according to the psychotic and neurotic types, firstly, it is significant that both of them only declare, but are not inclined to comply with the achieved compliance agreements. Secondly, the main factor characterizes the undoubted connection of TIA with a certain personal profile of the victims. And this fact will need to be taken into account in further psychological work with patients.

The fourth factor reflects the typological property of patients with the indicated diagnosis, the fact that transient ischemic attack affects people over the age of 40. Thus, this study at this stage allows us to establish one more aspect in the practically important work to ensure the prevention of stroke in patients who have undergone TIA: the type of personality accentuation and subjectively felt depression. Particular attention should be paid to the share of factor loads in both the main and characteristic factors. Their share in the variance shows that such a distribution of patients appears only under certain conditions. And, therefore, there are other determinants that affect adherence to preventive treatment. There is reason to believe that these are precisely the socio-demographic determinants with which this study is going to be enriched in the future.

Conclusion

1. This study gives ground for asserting that compliance in the processes of preventing acute and dangerous vascular episodes, in particular stroke in patients who have undergone TIA, is really in demand as an effective means and method of action both of a patient, even the former one, and of a doctor/psychologist/social worker.

2. It is certain personal properties of patients that predetermine the declarative or real nature of compliance already at the stage of discharge from the hospital. Patients with psychotic accentuation, as well as those with neurotic accentuation, are prone to declarative cooperation. in the direction of preventing an acute vascular episode (stroke). The first is due to distrust and a tendency to excitable reactions, the second to anxiety and the need for sympathy. Patients suffering from depression count on cooperation with medical personnel and paramedics (physician, psychologist, social worker) and are responsible for the conditions and rules of interaction with these professionals who help and ensure compliance among patients with TIA.

3.   It is necessary to include socio-demographic variables in the analysis at the next stage of the study to build a holistic indicative framework for ensuring effective stroke prevention working with outpatients.

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