

Psychosomatic Correlations in Modern Medicine: An Innovative Related to Anxiety Level



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Abstract— Background: Modern studies in the field of psychosomatic causes of diseases are directed towards the psychophysiological approach in the consideration of neurological, somatic and borderline mental disorders. These works affect interdisciplinary clinical and experimental studies of personal characteristics, emotional states, psychophysiological and neurochemical parameters in stress situations, as well as in somatic and mental diseases.

In this framework, a comparative study of the psychosomatic correlations of patients of the surgical profile of the gynecology and neurosurgery departments of the State Budgetary Healthcare Institution Stavropol Regional Clinical Hospital was conducted for the first time.

Objective: Research of the anxiety level of patients in the surgical profile of the gynecology and neurosurgery departments. Approbation of the author's Bird projective methodology (Abakarova E.G., 2014), which allows determining the relationship between psychological conflict and the place of its bodily response.

Methods: Spielberger-Khanin's anxiety level self-esteem scale, "Health, Activity, Mood" questionnaire, Ya. Strelau's temperament test questionnaire, Bird projective test (E.G. Abakarova). The data obtained were subjected to mathematical processing of the reliability of the results using Student's t-test.

Findings: The findings of a pilot study of psychosomatic correlations of patients of the surgical profile of the gynecology and neurosurgery departments allowed the authors to obtain sound and reliable conclusions and assessments in interpreting the levels of mental and dynamic processes. Studies on the Spielberger-Khanin's anxiety level scale of revealed high indicators of situational and personal anxiety in both groups. The reaction of each individual person to a stressful situation (surgical intervention) arises from its individual and typological features and is not specific. The state of anxiety is characterized by subjective experiences and emotions: tension, anxiety, concern, nervousness. This condition occurs as an emotional reaction to a stressful situation and may be different in intensity and dynamism in terms of time.

Analysis and interpretation of psychosomatic and ornithomorphic correlations among patients of gynecology and neurosurgery departments depends on the class of the disease (according to ICD-10), the characteristics of the course of the

disease, the method of its formation (psychological trauma, physical trauma or other nosology) and formation, as well as individual typological personality characteristics.

Conclusions: It was established that the level of personal and situational anxiety in patients with surgical profiles in both groups was significantly higher than in healthy individuals ($r < 0.05$).

The psycho-emotional condition of the patients of the gynecological department does not correspond to the real physical state and assessment of their health, which may indicate deep psychological and possible psychosomatic causes.

Projective techniques allow to identify the relationship of the primary psychological conflict with the place of its localization in the human body in strict dependence on individual differences, and not on the nature of the conflict itself. It has been established that the personal profile of patients of the gynecological department correlates with choleric psycho-type, the personal profile of patients of the neurosurgical department - with the sanguine one.

Keywords: psychosomatics, anxiety, dynamic properties of nervous processes, temperament, inhibition level, Bird projective technique.

I. INTRODUCTION

In modern medicine, psychosomatic correlations is the most difficult research area. To understand the psychosomatic problem, most experts refer to the wording of the conversion hysteria of Z. Freud. In his opinion, severe emotional states that the subject cannot accept and endure are superseded out of consciousness. There is a conversion, in which the natural bodily expression is transformed into a symbolic form through the violation of somatic functions. In this case, the somatic symptoms were viewed as an archaic call for help, which was expressed in non-verbal form.

The complexity and diversity of clinical practice has shown that this approach is quite simplistic. Studies in this area have shown that conversion symptoms are manifested through the neurological system, which is controlled by our consciousness (skeletal muscles, sense organs). This allowed formulating a new concept of "somatization". This phenomenon was originally considered as an Ego defense mechanism. Later, the concept of somatization was used as a theoretical construct to describe the development of psychosomatic disorders. The basis of this construct was the understanding that the genesis of any psychosomatic disorders has a stable relationship between mental stress and the somatic sphere.

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Conductive systems are: nervous, vegetative, endocrine. At the same time, the question of what specific psychobiological processes occur in this case remained a mystery [3].

The problem of the relationship of somatic diseases with mental disorders is still unresolved. Meanwhile, F. Dunbar was able to theoretically generalize the connection of certain somatic diseases with personality traits, as well as their stability in certain personality types [10]. Studies in this direction revealed a stable relationship of repeated injuries in the history of patients with the presence of such manifestations in behavior as aggression, impulsivity, protest together with poor education. In patients with cardiovascular diseases, stable personality traits were: ambition, perseverance, dissatisfaction with their social status.

In our study, we rely on the works by F.G. Alexander, in which for the first time it was suggested that there is a close relationship between the biological predisposition to certain somatic disorders and psycho-traumatic effects of a chronic nature. Moreover, the psychotrauma differed in its specificity [2].

A concept by F.G. Alexander was confirmed only partially. The difficulty of determining stable relationships depends on a wide range of psychopathological and pathophysiological processes that form the basis of the pathogenesis of somatic disorders. This fact determined a limited subtype of organic diseases that are significantly affected by psychological and psychopathological factors. These include myocardial infarction in the elderly [13], hypertension [3], neurodermatitis [12], thyrotoxicosis [8], bronchial asthma [7], and functional gastroenterological disorders. In a number of other psychosomatic disorders, it was not possible to reveal a direct correlation between the nosological form and maladaptive forms of behavior. From this followed the conclusion that the search for stable links between mental reactions and somatic disorders has no prospects.

Russian scientists relied on the concept of disguised depressions and depressive equivalents [4]. Within the framework of this concept, disguised mental disorders are understood as psychopathological states of the "incomplete" form. To some extent, they are close to circular psychosis and schizophrenia. A violation of bodily sensitivity (senesthopathy), a violation of the perception of one's body and the presence of bodily hallucinations in history were considered as the most important features of the disorders described above. Some scientists included senestalgia, synaesthesia, hyperpathia, anesthesia, phantom pain, bodily fantasies in this category of symptoms [5].

As a result, somatization began to be described as a psychopathological phenomenon, which is caused by various psycho-physiological processes. It manifests itself through the indirect attraction of the attention of others to psychological or interpersonal problems, which is expressed in somatic suffering or unexplained somatic complaints [11]. Such forms of the body's reaction were identified as a separate group of somatomorphic complaints, which made up a rather large group. Modern research in this area is directed towards the psychophysiological approach in the diagnosis and assessment of neurological, somatic and mental disorders [9].

This approach covers interdisciplinary clinical and experimental studies of personality traits, emotional state, psychophysiological, neurochemical data under conditions of stress and somatic disorders. In line with this direction, this study was organized, which will allow studying the psychopathological criteria in the description of individual forms of somatic pathology.

II. LITERATURE REVIEW

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III. METHODS

The study involved 79 patients of the gynecological department with the following diagnoses: ectopic pregnancy, endometrial polyp, uterine body hyperplasia, ovarian cyst, uterine myoma, uterine adenomyosis, Bartholin gland abscess; and 103 patients of the neurosurgical department with the following diagnoses: brain cholesteatoma, internal brain hydrocephalus, spinal canal bone stenosis, subarachnoid hemorrhage of the brain, lumbosacral spinal disc herniation, cerebral aneurysm, vertebral plastics, jaw bone ameloblastoma, brain tumor, spinal hemangioma. Patients were in inpatient treatment at the State Budgetary Healthcare Institution Stavropol Regional Clinical Hospital. The surveyed groups included 95 men and 87 women aged from 22 to 56 years. Psychosomatic features of the patients were diagnosed according to the following tests: reactive and personal anxiety (Spielberger-Khanin's anxiety level self-esteem scale, "Health, Activity, Mood" questionnaire, Ya. Strelau's temperament test questionnaire, Bird projective test (E.G. Abakarova). Testing was carried out in the period of inpatient treatment of patients at the State Budgetary Healthcare Institution Stavropol Regional Clinical Hospital. The data obtained were subjected to mathematical processing of the reliability of the results using Student's t-test.

IV. RESULTS

Diagnostics of the level of anxiety in both groups revealed high rates of situational and personal anxiety. It is worth noting that the level of situational and personal anxiety exceeded the marginal values of the norm, while no significant differences were found between the indicators of the gynecological department and neurosurgical department groups.

Table 1. Anxiety level of the patients of gynecological department and neurosurgical department

Scale	Group				r
	Gynecological department		Neurosurgical department		
	Average value	Standard deviation (σ)	Average value	Standard deviation (σ)	
Situational anxiety	5.2	16.5	50.1	5.6	0.133
Personal anxiety	53.7	7.8	52.7	7.6	0.295
r (SA/PA)	0.287		0.156		

Note: * - $r < 0,05$

This trend confirms previous studies, which talk about the high anxiety of patients at all stages of surgical treatment. At the same time, unlike the therapeutic pathology, in which the state of a long-term chronic disease becomes pathogenic for mental activity, the importance of psychological surgical stress (preoperative and postoperative) is noted within the framework of surgical pathology.

An additional indicator for further examination is the level of the standard deviation of situational anxiety in the neurosurgical department group. The wide range suggests the need for additional study of various forms of response in

patients of the neurosurgical department. The nature of such a wide range of reactions is certain strategies for coping with stress during treatment and before surgery.

The "Health, Activity, Mood" questionnaire demonstrated significant differences in the functional status of gynecological department and neurosurgical department patients (Table 2). Women from the gynecological department showed data that are close to or within the normal range: health - 5.4; activity - 5.0; mood - 5.1.

Table 2. Surgical assessment of the functional condition of the gynecological department and neurosurgical department patients

Scale	Group				r
	Gynecological department		Neurosurgical department		
	Average value	Standard deviation (σ)	Average value	Standard deviation (σ)	
1. Health	4.94	1.23	4.00	1.15	0.042*
p (1/2)	0.254		0.217		
2. Activity	4.82	0.96	4.08	1.36	0.076
p (2/3)	0.058*		0.017*		
3.Mood	5.18	1.18	4.93	1.00	0.312
r (1/3)	0.063		0.037*		

Note: * - $r \leq 0,05$

Such high indicators are characteristic of healthy people who have no painful complaints. The revealed dissonance of the real physical condition and the assessment of one's health can be interpreted as an inadequate assessment of one's health and psychological conditions of the patients of the gynecological department. This indicates the deep psychological causes of such psychosomatic conditions and the need for careful psychological diagnosis and follow-up of such patients. This indicator of gynecological department is significantly higher ($r < 0.042$) of the same indicator in patients of the neurosurgical department.

The most realistic picture of the psycho-emotional state is reflected in the results of the technique in patients of the neurosurgical department. With a sufficiently high mood, health and activity were significantly reduced ($r = 0.017 - 0.037$). This ratio indicates physical fatigue and asthenia, which is part of the disease condition of patients who underwent surgery and are in inpatient treatment.

The test results on the Ya. Strelau's temperament test questionnaire presented in the Table (Tab. 3) indicate significant differences among patients of the two groups. In patients of the gynecological department, the arousal of the central nervous system and balance in the course of the disease are within the normal range. According to the interpretation of the methodology, people with such indicators are characterized as balanced, able to control their feelings and actions. However, the high prevalence of inhibition processes ($r < 0.047$) may determine the definition of behavior in which the stimuli are easily extinguished and composure may be present in the behavior associated with the inability to respond according to the situation. Comparison of the listed qualities of a person is similar in its structure with victimized individuals, in whom the imbalance of nervous processes is directed towards inhibition, and there is a tendency to inadequate impulsive actions in situations requiring the omission of activity. For such individuals, the transition to new skills is difficult, and they often avoid new situations.

Table 3. The main dynamic processes of the central nervous system of the gynecological department and neurosurgical department patients

Scale	Group				r
	Gynecological department		Neurosurgical department		
	Average value	Standard deviation (σ)	Average value	Standard deviation (σ)	
1. Arousal	46.0	14.9	49.0	7.2	0.290
<i>r</i> (1/2)	0.047*		<0.001*		
2. Inhibition	53.3	17.3	64.6	6.8	0.049*
<i>r</i> (2/3)	0.072		<0.001*		
3. Mobility of nervous processes	56.8	13.8	60.4	11.4	0.271
<i>r</i> (1/3)	0.003*		<0.001*		
4. Mental ballast by the strength (A)	0.862		0.759		

Note: * - $r \leq 0,05$, $A = 0,85-1,15$ (norm)

In patients of the neurosurgical department group, all indicators are outside the normal range. Moreover, the prevalence of inhibition and mobility of nervous processes was significantly expressed. In patients of this group, a high rate of switching of nerve processes from arousal to inhibition (with a predominance of inhibitory processes), fast switching, a tendency towards decisiveness and courage in behavioral reactions are noted. But due to the lack of a physical and psychological resource for an adequate response, there is a lack of mental ballast by strength with a lack of arousal processes.

When ranking drawing material in accordance with ornithonyms and the authors put forward the assumption that certain species of birds (a certain type of temperament) will prevail in each of the studied patient groups, and the following results were obtained. In the patients of the gynecological department, the following were drawn: waterfowl - 54%, birds of prey - 11%, pigeons (or poultry who cannot swim) - 35%; in patients of the neurosurgical group: birds of prey - 63%, waterfowl - 4%, pigeons (or poultry who cannot swim) - 20%, crows - 13%.

The predominance of waterfowls in the drawings of patients of the gynecology department confirmed earlier the assumption that women depicting these birds are more at risk of gynecological diseases of various etiologies. The obtained data were compared with previous studies of the correlation of images of birds with four types of temperament [1, 9]. It turned out that the predominant type of temperament among patients of the gynecology department is choleric, and among patients of the neurosurgery department - sanguine. It is noteworthy that both temperaments belong to extrovert types, with an individual psychological orientation to the world of external objects.

The women of the gynecology department, who painted waterfowls, are able to switch from one activity to another, which affects a sharp change in mood, short temper, impatience, emotional breakdowns and difficult communication with other people. Patients of the neurosurgical department who painted birds of prey are distinguished by good performance, ease of communication and an emotional response to the events taking place (in some cases, emotions are superficial and not deep), they relatively easily overcome failures and need to change their

impressions. Patients in both groups have a strong nervous system with an out-of-limit inhibition for their types, which indicates a violation of the protective mechanisms of this category of persons, which is manifested in various inhibitory conditioned reactions, unusual for their type of higher nervous activity, such as extinction and differentiation.

V. DISCUSSION

A pilot study of psychosomatic correlations among patients of the gynecological and neurosurgical departments proves the difference in the structure of the course of mental and dynamic processes in the work of the central nervous system. The results of the study of the anxiety level revealed high rates of situational and personal anxiety in both groups. However, additional analysis of the reaction to a stressful situation in women suffering from gynecological diseases is necessary. In the same conditions, patients present quite different forms of coping with the disease, which distinguishes them from patients of the neurosurgical department. State of health and mood do not correspond to the real condition of the patients ("I feel healthy"). Such a dissonance of a real physical condition and health can be interpreted as an inadequate assessment of one's health and psychological condition. This fact can be expressed in the psychological desire to control their feelings and actions, and a significantly high prevalence of inhibition processes ($r < 0.047$) may indicate an inability to respond according to the situation.

Emotional intelligence is equally underdeveloped in both groups: a very low level of emotional awareness, insufficiently developed self-motivation, ability to cope, control their emotions and recognize other people's emotions (signs of alexithymia). It can be assumed that the level of emotional intelligence is directly dependent on somatic or concomitant diseases. Therefore, to assess the emotional

response at the physiological level, it is planned to conduct additional studies of visual-motor reactions in patients.

The results of the analysis and interpretation of the drawings of the Bird projective test among patients of the gynecological and neurosurgical departments prove that the bird depicted after the instruction "Draw a bird" is clearly related to the projection of itself in all bodily senses and relationships. The described projections are updated and represented in the body image. A painted bird is a man himself, with his somatic and psychosomatic constructs with a field surrounding him on paper, reflecting his reality. The somatic fixedness of our desires, conflicts, compensation and psychosomatic disorders is confirmed in the phenomenon of self-projection of the picture.

At the same time, it should be noted that the data obtained using projective techniques should not be taken as final. They only help to find ways for further research, to penetrate difficult-to-be objectified personality traits that escape with the traditional organization of the experiment and are not always quantifiable.

An important diagnostic criterion during the implementation of the Bird projective test is chosen, significant for the testee part of the bird. It was in the drawing of individual parts on the body of the bird, certain hatching and the highlighting of significant signs that the projection of zones of "stress" in the external image of the bird was found. Graphically allocated zones of "stress" were compared with the sites of localization of the disease or injury on the respondent's body.

According to the projective technique, the main parts of the human body correspond to the parts of the bird in the figure. In this case: the bird's head corresponds to the human head, the bird's neck to the human's neck, the bird's wings to the human's hands, the bird's paws to the human's legs, the bird's carcass to the human's body, the bird's tail to the pelvic organs and/or lower spine of the person.

According to the results of the post-drawing analysis, patients with gynecological diseases highlighted the operated area on the image of the bird in the tail area, or rarely under the wing (*the pictures of patients coincide with the ornithomorphic symbols of female birds with similar gynecological diseases*).

In the bird drawings of patients of the neurosurgery department, the head area was significantly highlighted (*operated or injured*): there were additional traced details on the heads of the depicted birds (feathers, tufts, decorations), as well as distinct corrections and pronounced boundaries of the upper part of the bird's head. Unconsciously, the respondents grasped and painted parts of the bird's body in such a way that the facts of both mental and somatic dysfunctions were clearly manifested in the style of the image, in the character of drawing details and in the drawing of the pictures.

After analyzing the test data, the graphic and descriptive results were compared with the medical history of the test person. An additional patient survey was conducted to determine the psychosomatic nature of diseases and injuries. At the third stage of projective testing, the birds were distributed according to the types of temperament in accordance with the author's orimorphic table.

VI. CONCLUSION

Thus, the interpretation of psychosomatic correlations depends on the class of the disease (according to ICD-10), the characteristics of the course of the disease, the method of its formation (psychotrauma, physical trauma or other nosology) and formation, as well as individual typological properties of the individual. In cases of gynecological diseases, we assume that women with a victimized personality type will be more susceptible to these diseases than the rest.

Approbation of the projective technique has revealed psychosomatic disorders of chronic genesis. To date, several groups of psychosomatic disorders identified using this technique can be distinguished among the data obtained: limb injuries, diseases of the musculoskeletal system, craniocerebral injuries, and diseases of the pelvic organs. Taking into account the typological features of the patient's personality, it is possible to take timely preventive measures and individualize ways to correct the growing emotional tension with the help of special preventive programs to accompany patients at various stages of treatment.

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