Overweight and obesity: a neuropsychological aspect of the problem and opportunities bioresonance therapy

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Excessive body weight and obesity: neuropsychological aspect of the problem and possibilities of bioresonance therapy

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RESUME

Actual questions of patient examination with excessive body weight and obesity from positions of modern directions of medical psychology are considered. Analysis of psychosomatic and pathopsychological mechanisms, neuropsychological aspect of the problem is presented. Mechanisms of endocrine regulation are described from positions of clinical psychology and psychoneurology, modern methods for diagnosis of nervous system condition and psychical activity of patients with disturbances of neurohumoral exchange are considered. Analysis of possibilities for therapy of patients with excessive body weight and obesity with bioresonance therapy is given.

Keywords: excessive body weight, obesity, neuropsychology, patopsychology, psychosomatic, endocrine disturbances, bioresonance therapy.

SUMMARY

The article discusses topical issues of examination of patients with overweight and obesity from the point of view of modern trends in medical psychology. The analysis of the psychosomatic and pathopsychological mechanisms of pathology is carried out, the neuropsychological aspect of the problem is presented in detail. From the standpoint of clinical psychology and psychoneurology, the mechanisms of endocrine regulation are described, modern diagnostic methods for studying the state of the nervous system and mental activity in patients with disorders of neurohumoral metabolism are considered. The analysis of the possibilities of treating patients with overweight and obesity by the method of bioresonance therapy is carried out.

Key words: overweight, obesity, neuropsychology, pathopsychology, psychosomatics, endocrine disorders, bioresonance therapy.

The problem of overweight and obesity is one of the most urgent at the present stage of development of medicine [2, 12, 13]. The relevance and need for a detailed study of this problem are associated with the fact that, according to the conclusion of WHO experts, today there are 300 million obese people and 750 million overweight people in the world [12]. In Russia, about 30% of people of working age, that is, on average, every third person is obese and 25% are overweight [12]. Almost universally, women are more likely to be obese than men. In Russian cities, according to epidemiological studies of the last decade, 10-20% of men and 30-40% of women of working age suffer from obesity [13].

Considering this problem, first of all, it is necessary to define the concepts of overweight and obesity, as well as the proposed indices for the corresponding calculations. In other words, what exactly do scientists and clinicians today mean by the terms "overweight" and "obesity"?

Currently, according to the recommendation of the World Health Organization, overweight and obesity, depending on the degree, are classified using the body mass index (BMI). Body mass index is calculated by the formula: human body weight (kg) divided by the height, expressed in meters and squared (m^2). The classification of obesity is given in table. 1 [13].

As you can see from the table, by calculating the patient's BMI, you can immediately determine whether the mass is

the body is normal, overweight or obese.

Table 1

Classification of obesity and the degree of risk of developing concomitant diseases (by the report of the WHO Obesity Committee, 1997)

Obesity rate	BMI, kg / m2	Risk of comorbidities
Norm	18.5-24.9	Usual
Overweight	25.0-29.9	Elevated
Obesity 1st degree	30.0-34.9	High
Obesity grade 2	35.0-39.9	Very tall
Obesity grade 3	≥ 40	Extremely high

In addition, the table indicates that overweight and obesity contribute to the onset and development of many diseases. According to the literature [2, 12, 13], these diseases include, first of all, type 2 diabetes mellitus, atherosclerosis, arterial hypertension, ischemic heart disease. Obesity reduces life expectancy by an average of 3-5 years with a slight excess of body weight, up to 15 years - with severe obesity. In fact, in two out of three cases, a person's death occurs from a disease associated with lipid metabolism disorders and obesity [13].

Considering the further presentation of the material from the point of view of the neuropsychological aspect of the problem of overweight and obesity, two points deserve special attention.

First, the following classification of obesity according to the etiological principle is important for the study of various mechanisms of the formation of overweight and obesity [13]. Depending on the etiology, primary and secondary forms of obesity are distinguished [13].

Classification of obesity D.Ya. Shurygin, P.O. Vyazitsky, K.A. Sidorova

1. Primary obesity:
1) alimentary-constitutional;
2) neuroendocrine:
   a) hypothalamic-pituitary obesity;
   b) adiposogenital dystrophy (in children and adolescents).
2. Secondary (symptomatic) obesity:
1) cerebral;
2) endocrine:
   a) hypothyroid;
   b) hypo-ovarian;
   c) climacteric;
   d) adrenal.

Primary obesity accounts for 90–95% of all obesity cases [13]. Secondly, according to the results of our studies, confirmed by numerous literature data, it is known that acute and chronic emotional stress occupies a significant place among the etiological factors of obesity [2, 6, 7, 8, 11, 12, 13]. Proponents of the psychosomatic theory of obesity believe that eating style is a reflection of a person's affective needs and state of mind. In obese patients, the normal regulation of the centers of hunger and satiety is impaired. Appetite in such patients is not provoked by hunger, but by external stimuli and various forms of poor health. Eating food helps them cope with depression, stress, and achieve a state of psychological comfort [6, 7, 13].

Based on the foregoing, it becomes obvious that the problem of overweight and obesity is not just extremely relevant and important for scientific development and practical clinical research. This problem is multifaceted, both in the medical (from the point of view of studying the etiological and pathogenetic mechanisms of pathology) and socially. That is why the study of this problem is carried out not only by specialists of various medical fields (endocrinologists, gastroenterologists, neurologists, psychologists and

others), but also scientists - sociologists.

Given the fact that primary obesity accounts for 90–95% of all cases of obesity [13], as mentioned above, before proceeding to consider the neuropsychological aspect of the problem of overweight and obesity, it is necessary to dwell on the main mechanisms of neuroendocrine and, especially, hypothalamic-pituitary regulation of metabolic processes in the body.

The main elements of the endocrine functional system are: 1. Endocrine glands, secreting hormones;

2. Hormones and their transport routes;

3. Relevant target organs (or target tissues) responsible for the action of hormones and providing cells with normal receptor and post-receptor mechanisms [13].

The hypothalamus is the most important endocrine gland and the highest vegetative center, which carries out a complex integration of the functions of various internal systems and the integral activity of the body.

Anatomically, the hypothalamus occupies the basal part of the diencephalon - it is located under the optic hillock (thalamus), forming the bottom of the third ventricle. The hypothalamus is associated with the cerebral cortex, reticular formation, subcortical formations, the optic hillock, brain stem, cerebellum and spinal cord. Therefore, there is practically no function in the body that does not depend on the hypothalamus: it plays an essential role in maintaining the optimal level of metabolism (protein, fat, carbohydrate, water, mineral) and energy, in the regulation of the body's temperature balance, the activity of all systems: digestive , cardiovascular, excretory, respiratory, and most importantly - endocrine.

It is the region of the hypothalamus that provides control of another important endocrine gland, the pituitary gland, by the production of a special secret by numerous neurosecretory cells of the hypothalamus - hypothalamic neurohormones. It is in the hypothalamus that the so-called pituitary hormones are produced.

Thus, the hypothalamus carries out a complex integration of the work of the pituitary gland, and then the next stage of endocrine regulation - the adrenal glands.

It is important to note that the nervous control of the anterior pituitary gland is carried out through two-level regulation. The first level provides an area of the hypothalamus that controls the basal tropic and neurohypophyseal secretions. The second, higher level of regulation is carried out by other hypothalamic and extrahypothalamic regions of the brain (hippocampus, anterior thalamus, midbrain, etc.), which are involved in stimulating (or suppressing) the function of the pituitary gland.

Thus, the hypothalamus is the main regulatory structure that transforms information coming along the nerve pathways from the overlying parts of the central nervous system. The neurons of the hypothalamus have numerous contacts with the overlying parts of the central nervous system, coordinating their functions and influencing behavioral responses [13].

The function of the cells of the anterior lobe of the pituitary gland (adenohypophysis) is under regulatory control, in particular, of hypothalamic hormones that enhance (releasing hormones, liberins) or inhibit (statins) the secretory activity of individual pituitary cells. In this case, peripheral target organs (through negative or positive feedback) also affect the secretion of pituitary hormones.

Thus, the hypothalamic-pituitary-adrenal regulation functions peripheral target organs is a complex mechanism, the disorder of which disrupts the entire hormonal background of the body and causes pathology in various organs, tissues and systems [2, 5, 6, 12, 13].

In addition, feeding behavior is controlled by the nuclei of the ventromedial and ventrolateral hypothalamus, through direct and reverse signaling interactions between the hypothalamus and adipose tissue. The center of hunger is located in the ventrolateral part of the hypothalamus, and the center of satiety is located in the ventromedial part. In addition to the nuclei of the hypothalamus, other parts of the central nervous system are also involved in the regulation of eating behavior [12]. In the early stages, obesity most often occurs due to overeating, when the adaptation of the saturation center of the hypothalamus to higher levels of glucose and insulin gradually develops. As a consequence of this, the sensitivity of this

center to stimulating influences, which entails insufficient inhibition of the hunger center when taking a large amount of food [12]. In turn, overeating is often a reaction to stress, depressed mood (as mentioned above). Therefore, complex chains of violation of the coordinative correct work in the hypothalamus-pituitary-adrenal glands-target organs in overweight and obesity will be considered below, after defining a number of important provisions and concepts that characterize the processes of stress factors influence on endocrine regulation.

Summarizing what has been said, without dwelling in detail on the most complex neurohumoral mechanisms and features of neurotransmitter metabolism, it is important to note the following. Endocrine regulation in the body is a complex multilevel mechanism, the highest link of which is the hypothalamus, and the existing coordination chain of the hypothalamus-pituitary-adrenal glands-organs (tissues) -target, working in the form of direct and feedback, is the main one in the regulation of all types of metabolism. It is obvious that a violation at any level of existing endocrine relationships, regardless of the etiology of these disorders (organic, vascular, infectious, associated with exposure to stress or other factors) causes metabolic disorders and malfunction of many organs and systems. This statement is also valid in relation to those types of exchange,

Before proceeding to the analysis of the reasons causing the failure of the central regulatory mechanisms, cortical and subcortical structures, it is necessary to dwell on some concepts and terms that are important for a correct understanding of the further material.

Psychology (psyche - soul and logos - science) is one of the main sciences about man. It originated in ancient Greece, at the turn of the 7th-6th centuries BC, when people first began to ask questions about the meaning, functions and abilities of the soul [8].

In terms of focus, psychological research is divided into general (aimed at identifying general patterns) and private (aimed at studying the characteristics of a particular patient). In accordance with this, general and specific clinical psychology are distinguished [3].

Neuropsychology is a branch of clinical psychology, formed at the intersection of psychology, neurosurgery, neurology and physiology, which studies the cerebral basis of mental processes and their relationship with individual systems of the brain [3, 6, 11].

The founder of neuropsychology is A.R. Luria, who, together with L.S. Vygotsky owns the concept of systemic dynamic localization of mental processes and functions [3, 6, 8, 11].

For a correct understanding of the neuropsychological aspect of the problem of overweight and obesity, it is necessary to emphasize that specific sections of medical psychology find practical application of knowledge in relevant clinics: in a psychiatric clinic - pathopsychology; in a somatic clinic - psychosomatics; in a neurological clinic - neuropsychology [3]. Obviously, this division is very arbitrary.

For example, in a patient with overweight, during an experimental psychological study, mental disorders are revealed in the form of disorders of the emotional-volitional sphere (the presence of significant experiences in connection with a conflict situation in the family or at work). At the same time, during an electroencephalographic study, a pronounced dysfunction of diencephalic structures is determined, and in the somatic sphere, in addition to overweight, biliary dyskinesia and chronic cholecystitis are noted. At the same time, with repeated stressful situations in the family or conflicts at work, the patient may have an eating disorder, for example, bulimia, when a person "seizes" stress. Such nutrition will aggravate the course of somatic pathology, and exacerbation, for example, chronic cholecystitis by the type of feedback will negatively affect the nervous system and mental activity, aggravating the already existing neurosomatic disorders. It is extremely difficult to differentiate neuropsychological, pathopsychological and psychosomatic disorders.

Thus, there is an inextricable connection between neuropsychology, firstly, with various areas of clinical psychology (pathopsychology, psychosomatic, psychotherapeutic areas), and secondly, with other disciplines - neurology, psychiatry, therapy, endocrinology.

Considering the problem of overweight and obesity, it is necessary to analyze these

interrelationships, since they are constituent etiopathogenetic links of a single pathology. For this, it is important to dwell in more detail on the neuropsychological aspect, since this is the immediate topic of this work, and, briefly, on other important areas of examination and treatment of overweight patients.

1. Neuropsychological aspect

One of the main investigated problems of neuropsychology is the problem of localization of mental functions [3, 6, 11]. The founder of neuropsychology A.R. Luria developed a general structural and functional model of the brain, according to which the entire brain can be divided into three main blocks.

The first block is the block regulating the level of general and selective activation of the brain, or the so-called energy block. It includes:

- the reticular formation of the trunk;
- diencephalic divisions;
- nonspecific structures of the midbrain;
- the limbic system;
- mediobasal parts of the cortex of the frontal and temporal lobes.

The second block is a block for receiving, processing and storing exteroceptive information. This block includes the central parts of the main analyzing systems, the cortical zones of which are located in the occipital, parietal and temporal lobes of the brain.

The third block is a block of programming, regulation and control over the course of mental activity. It consists of the motor, premotor, and prefrontal sections of the cerebral cortex [3].

In a healthy person, any type of mental activity is realized with the participation of all three brain blocks, each of which provides its own aspect of mental activity [11].

From this concept it follows that there are three main types of mental disorders associated, respectively, with one of the brain blocks. This concept gives an idea of the integral nature of the cerebral mechanisms of mental processes, of the participation in their implementation of the whole brain as a single integral, but differentiated system [11].

The connecting concept between mental functions and the working brain is the so-called neuropsychological factor - the principle of the physiological activity of a certain brain structure [3].

The neuropsychological factor is one of the key concepts of neuropsychology.

A.R. Luria introduced into neuropsychology the so-called factor criterion for assessing violations of higher mental functions (or neuropsychological symptoms) [11].

Neuropsychological symptom - a violation of mental functions as a result of local brain lesions.

The confluence of neuropsychological symptoms associated with the loss of one or more factors is a neuropsychological syndrome [3].

A correct understanding of these basic terms in neuropsychology is important for presenting the practical application of neuropsychology in patients with various pathologies, in this case, in patients with overweight and obesity.

The use of the above in practice is based on on the volume, what analysis neuropsychological symptoms is called syndromic analysis, the main purpose of which is to find a common factor that fully explains the appearance of various neuropsychological symptoms [3].

Syndromic analysis includes the following stages: first, the signs of pathology of various mental functions are determined, and then the qualification of symptoms occurs [3, 6].

When examining patients with overweight and obesity, the most significant for a doctor will be neuropsychological syndromes associated with damage to the deep subcortical structures of the cerebral hemispheres. First of all, in such patients, syndromes of damage to the median nonspecific structures of the brain are noted. The defeat of these structures causes disruption of the work of the so-called modal-nonspecific factors. This means, for example, that memory impairments do not depend on the modality of the memorized material, that is, they are

modal-nonspecific character. Short-term memory suffers predominantly, while long-term memory (for example, professional) is preserved. Disturbances of attention are manifested in the form of general absent-mindedness, difficulty concentrating, easy distraction, that is, they are also modal-nonspecific in nature. In patients with overweight and obesity, attention is drawn to disturbances in the emotional-volitional sphere: emotional excitability and lability, outbursts of negativism, anger, or vice versa - melancholy, sadness, melancholy. Volitional efforts aimed at limiting oneself in the usual mechanism of "seizing" psychological discomfort are, in the overwhelming majority of cases, useless. The choice in this case is "made" by the subconscious, and this choice is obvious - in favor of attraction, that is, the formed mechanism of dependence on food takes upward,

2. Pathopsychological aspect

Pathopsychology studies disorders of mental activity, patterns of mental breakdown in comparison with the norm [3], in terms of general and clinical psychology and using psychological methods [3, 9]. In patients with overweight and obesity, volitional disorders are often noted, namely, impaired drives - increased craving for food - bulimia and, often in an effort to "lose weight" - a sharp restriction of food intake up to complete disgust for it - anorexia.

Bulimia - (from the Greek - bus - bull + limos - hunger, hunger "wolf") - pathological, sharply increased feeling of hunger, often accompanied by general weakness and abdominal pain [7].

Anorexia - (an - particle, meaning the absence of a sign or quality, + orex - desire to eat, appetite) - loss of hunger, lack of appetite in the presence of a physiological need for nutrition [7]. In the presented work, we are talking only about the psychiatric aspect of the problem, since these disorders can occur in a wide variety of pathologies.

Currently, a number of scientists distinguish between anorexia nervosa and bulimia as two different diseases, but long-term study of this pathology has shown that anorexia and bulimia - these are two stages of one disease, which replace each other [7], when patients sharply limit themselves for some time in food, and then cannot refrain from absorbing a very large amount of food. One of the clinical varieties of anorexia nervosa is the desire of patients to achieve the desired weight by inducing artificial vomiting after bouts of bulimia [7].

Pathopsychological research reveals severe disturbances in the emotional-volitional sphere in such patients.

3. Psychosomatic aspect

The soul and body of a person constitute an indissoluble unity. Therefore, psychological ill-being often becomes the cause of bodily ailments, and diseases of the body affect the psyche [10]. Patients with diseases "on the basis of nerves" now account for one third of the entire contingent of patients [10], and a significant part of the so-called "diseases of civilization" is represented by psychosomatic disorders [6].

Psychosomatic disorders are divided into two groups - "large" psychosomatic diseases, which include ischemic heart disease, hypertension, stomach and duodenal ulcer, bronchial asthma, and "minor" psychosomatic disorders - neurotic disorders of internal organs, or the so-called organ neuroses [6]. However, today this classification has been expanded - in addition to the named traditional psychosomatic diseases, the same group of disorders includes eating disorders, sleep disorders, psychogenic disorders of the functions of internal organs, hysterical, hypochondriac and depressive symptoms [10].

In the pathogenesis of endocrine regulation disorders and the occurrence of overweight, not only psychosomatic mechanisms play a role - mental trauma suffered, conflict situations in the family, at work. The neurosomatic links of pathogenesis are also extremely important - residual organic lesions of the central nervous system, vascular disorders, post-traumatic disorders and the consequences of neuroinfections. We must not forget that today many neuroinfections have an atypical clinical picture and often proceed under the guise of toxic flu or

severe ARVI.

It is very difficult to clearly differentiate neuro- and psychosomatic disorders, while it must be remembered that, according to the principle of feedback, there are also somatoneurological and somatopsychic disorders. Therefore, in patients with overweight and obesity, it is advisable to talk about a single structure of neuropsychosomatic disorders and the need for a comprehensive examination and complex therapy, which will be discussed later.

In overweight and obese patients, in most cases, the disease begins after a mental trauma or exposure to a long-term traumatic situation. However, at the same time, there are often complaints of headache, dizziness, mood swings, sleep disorders, that is, there are pathological disorders on the part of the nervous system. Episodes of overeating increase in difficult circumstances and weaken in happy ones, while overeating entails two groups of negative consequences. Firstly, these are disorders of the internal organs - the disorderly and abundant absorption of food causes disruption of the functions of the stomach, gallbladder and biliary tract, intestines, and pancreas. Secondly, with overeating and the subsequent rapid set of extra pounds, the state of both the psychological sphere (especially in women there is dissatisfaction with themselves, despondency, depressive mood) and the neuropsychiatric sphere (sleep disturbances, headache, emotional lability). After a certain period of time, with the next decision to "pull yourself together", overeating is replaced by strict diets of various contents and different durations, but with the same result - a breakdown occurs,

aggravating psychological discomfort, and the vicious circle is re-started.

In summary, it is important to note two main findings.

1. Neuropsychology, pathopsychology and psychosomatics are closely related sections of a unified science - medical psychology [3]. Depending on the object of application, each of these sections has its own specifics. Neuropsychology finds practical application in the neurological clinic and studies the cerebral basis of mental processes and their connection with individual systems of the brain [6]. Pathopsychology studies disorders of mental activity using the concepts of general and clinical psychology and psychological methods [3, 9]. Psychosomatics studies how changes in the psyche affect the occurrence of somatic diseases. In patients with overweight and obesity, the above aspects - neuropsychological, pathopsychological and psychosomatic are closely interrelated. Which of these aspects prevails in the etiopathogenesis of the onset and development of pathology in a given patient is always decided individually. At the same time, it is obvious that a plan of examination and, accordingly, treatment is developed strictly individually for each patient. Since this work is devoted to the problems of neuropsychology, without diminishing the role of other aspects of the problem and the importance of their close relationship, further presentation of the material will be presented from the point of view of a more detailed study of the neurological sphere.

2. As noted above, an experimental psychological study of patients with being overweight and obese is extremely important. However, it is necessary to take into account the essential role of a detailed study of the neuropsychiatric and somatic sphere, using, of course, modern medical advances in the field of laboratory and instrumental diagnostics.

A comprehensive study of the neuropsychiatric sphere of patients with overweight and obesity includes a detailed history taking, an analysis of the neuropsychiatric status, instrumental examinations (the need for which is always assessed by a doctor strictly individually) and an experimental psychological study.

At a neurologist's appointment, overweight and obese patients usually complain of recurrent headaches, mood swings, and sleep disturbances.

When collecting anamnesis, it is necessary to pay attention to the presence of past diseases, primarily of an infectious nature, and craniocerebral trauma. As noted above, today there is an atypical, sometimes "erased" course of neuroinfections, which are often diagnosed as influenza or severe ARVI. At the same time, often transferred neuroinfections, and

Traumatic brain injury, even mild concussion, is one of the etiologically significant mechanisms in the pathogenesis of obesity. Of course, we must not forget about such an important causal factor in the etiopathogenesis of obesity as psychotrauma. It is not at all necessary that the traumatic situation be difficult in the form of tragic life events (grief, loss of a loved one, divorce), often long-term conflict situations in the family, at work, in the relationship "children-parents" lead to the above-mentioned disorders of central regulation and endocrine shift, resulting in the development of excess body weight. Here, a significant help to a neurologist and a neuropsychiatrist is provided by conducting an experimental psychological study, which makes it possible to identify conflict zones and significant experiences of the patient.

In the neurological status of patients suffering from overweight and obesity, in most cases, no significant pathology is observed. Possible mild focal microsymptomatics of a residual organic nature, a slight revitalization of tendon reflexes and an expansion of reflexogenic zones.

At the same time, instrumental studies of the neurological sphere can be quite informative.

Of course, when working with patients with overweight and obesity, as well as, however, when examining patients with other forms of pathology by a neurologist, it is necessary and important to carry out a full complex of neurological research. This complex includes:

1. Computed tomography (CT) and (or) according to indications magnetic resonance imaging (MRI) - to exclude the volumetric processes of the brain - tumors, vascular malformations, cystic formation, which can be one of the causes of excess body weight.
2. Examination of the fundus (also to exclude congestion in the fundus, having place in the volumetric processes of the brain, and, in addition, to determine the state of the arteries and veins of the fundus). It must be remembered that the picture of the fundus vessels is the most important objective criterion for assessing the vascular blood flow of the brain.

Without diminishing the importance and necessity of the above mentioned examinations, one should dwell in detail on the following two points of neurological research, which are highly informative for determining the etiopathogenesis of disorders in patients with overweight and obesity. These include:

3. Electroencephalography (EEG). When conducting an EEG study of patients with excessive body weight and obesity in most cases reveals dysfunction of the median structures of the brain. The concept of "midline brain structures" in electroencephalography includes the formation of the medulla oblongata, pons, midbrain, thalamus and hypothalamus, as well as some parts of the mediobasal formations included in the so-called limbic system (hippocampus, tonsil, orbital cortex, anterior cingulate gyrus) [5, 15, 16]. It is no coincidence that at the beginning of the work, special attention was paid to the role of the hypothalamus, diencephalic structures in neuroendocrine regulation in the body. The numerous clinical studies carried out by the author indicate that in patients with overweight and obesity, in the vast majority of cases, the EEG shows manifestations of dysfunction of the hypothalamic structures and limbic-reticular parts of the brain. These structures can be involved in the pathological process, in particular, with impaired blood circulation in the system of vertebrobasilar arteries feeding the corresponding parts of the brain [5, 16]. That is why, in order to examine the state of the cerebral vessels, along with the examination of the fundus, it is necessary to conduct a Doppler study, which has a high information content.

4. Doppler study, or ultrasound (Doppler ultrasound) gives the ability to assess the state of both arterial and venous blood flow (presence of arterial spasm, depletion of arterial blood flow, manifestations of venous stasis, decreased venous tone, venous dilation). That is, in other words, it is the ultrasound scan that makes it possible to reliably assess pathological changes in the blood supply to the corresponding parts of the brain.
5. Additional help in the study of the state of the vessels of the brain can provide a rheoencephalographic study (REG).
6. If necessary, not only to assess the patency of blood vessels, but also to establish the cause

obstructions of patency (stenosis, the presence of blood clots, plaques) use ultrasonic duplex scanning of blood vessels (UZDS).

When conducting a study of the somatic sphere, an examination plan is drawn up individually for each patient on the basis of the complaints presented and the anamnesis data - the need to consult a therapist, endocrinologist is assessed, and a plan of appropriate laboratory and instrumental studies is developed.

When talking about the endocrinology of overweight and obese patients, it is important to remember the following. A significant part of the patients of this group are observed by an endocrinologist for hypothyroidism. It is necessary to dwell on this in more detail.

Hypothyroidism is a clinical syndrome caused by a prolonged and persistent deficiency of thyroid hormones in the body or a decrease in their tissue effects [13]. By pathogenesis, hypothyroidism is classified into primary (thyrogenic), secondary (pituitary) and tertiary (hypothalamic) [13]. The cause of secondary hypothyroidism is a decrease in the volume of functioning pituitary tissue due to autoimmune, vascular and other pathological processes [13]. This point of view is also valid in relation to the hypothalamus - a violation of the blood supply to these brain structures can be the cause of impaired secretion of both pituitary hormones and thyroid hormones. In the clinical picture of hypothyroidism, regardless of the pathogenesis, in addition to general weakness, drowsiness, decreased performance, there is a gradual increase in excess body weight, although appetite often remains normal. Therefore, at the beginning of the work, the mechanisms of neurohumoral connections and, in particular, the production of releasing hormones were considered in such detail. In turn, primary hypothyroidism (constituting 0.2–1% in the population [13]), by the type of feedback, also causes dysfunctions of both the pituitary gland and the hypothalamus. Based on this, it is clear that, depending on the type of existing disorders, each patient with overweight and obesity needs individual observation by an endocrinologist and appropriate correction of existing disorders. by the type of feedback, it also causes a violation of the functions of both the pituitary gland and the hypothalamus. Based on this, it is clear that, depending on the type of existing disorders, each patient with overweight and obesity needs individual observation by an endocrinologist and appropriate correction of existing disorders. by the type of feedback, it also causes a violation of the functions of both the pituitary gland and the hypothalamus. Based on this, it is clear that, depending on the type of existing disorders, each patient with overweight and obesity needs individual observation by an endocrinologist and appropriate correction of existing disorders.

Thus, summing up what has been said, we can formulate the following conclusion. The formation of overweight and obesity in many cases is associated with dysfunction of the midline structures of the brain. Violations of diencephalic regulation of metabolism and, above all, hypothalamic-pituitary regulation, leading to the formation of overweight and obesity, are clearly diagnosed during a comprehensive examination, including, among other things, a detailed analysis of the neuropsychiatric sphere and mental activity of the patient.

In this case, neuropsychological research is carried out with the aim of describing disorders or features of the course of higher mental functions (HMF), emotional-personal sphere (ELS) to determine those factors that underlie them (modal-specific, modal-nonspecific, associative, etc.) [eleven].

The informative value of various research methods in a comprehensive examination of patients with overweight and obesity are presented in table. 2.

table 2

Informative value of various research methods in a comprehensive examination overweight and obese patients

The ongoing research	Research results
Neurological examination	Residual-organic microsymptomatics in the form of horizontal small-amplitude nystagmus, tremor of the tongue, mild ataxia in the sensitized Romberg position. Possible hyperreflexia with mild anisoreflexia, expansion of reflexogenic zones. The manifestations of vegetative neurosis are often expressed: increased humidity of the palms and feet, persistent red dermographism.
Fundus examination	Manifestations of venous stasis and indirect signs of intracranial hypertension
Electroencephalography (EEG)	Dysfunction of hypothalamic structures, dysfunction of the structures of the limbic-reticular complex, manifested in the form of bilaterally synchronous bursts of theta-delta waves or generalized activity of theta waves in all leads, which increases during functional tests.
Doppler ultrasound (USDG)	Depletion of arterial blood flow, manifestation of arterial spasm, manifestations of venous stasis, dilatation of veins, indirect signs of intracranial hypertension.
Study somatic sphere	Pathology of the gastrointestinal tract is often revealed in the form of chronic gastroduodenitis, biliary dyskinesia, chronic cholecystitis, reactive pancreatitis, and atonic colitis.
Endocrinological study	Diagnosed with secondary (pituitary), more often tertiary (hypothalamic), hypothyroidism.
Neuropsychological study	1. Neurodynamic disorders (that is, a violation of the dynamic aspect) of all higher mental functions in the form of a decrease in their speed, productivity, uneven efficiency of task performance. This group of dynamic disorders also includes modal-nonspecific attention disorders in the form of general absent-mindedness, difficulty concentrating, and easy distraction [11]. 2. Memory impairment, which are also modal-nonspecific, short-term memory predominantly suffers while long-term memory is preserved [6, 11]. Violation of emotional processes. 3. Emotional disturbances are manifested in the form of emotional excitability, increased reactivity, outbursts of anger and negativism [8, 11].

In conclusion, it should be noted that the choice of methods for neuropsychological research is also made purely individually, depending on the existing complaints and the clinical picture of the disease. The most commonly used methods are for assessing intellectual and mnestic functions (various types of memory) (memorizing ten words, a pictogram), sensorimotor sphere and attention (proofreading test, Kraepelin score, Seguin boards), if it is necessary to conduct differential diagnostics with mental pathology, the study of thinking (Vygotsky-Sakharov method). Special attention is paid to the study of the emotional-volitional sphere (methods of "choice of values", "level of aspirations", the method of self-assessment according to Dembo-Rubinstein). A detailed description of the techniques is presented in the relevant manuals [9].

For a neuropsychological study of overweight and obese patients, the following are quite informative:

1. Research methodology of the emotional and personal sphere (Spielberger-Khanin questionnaire to assess situational anxiety). The self-assessment scales of the Spielberger-Khanin questionnaire make it possible to differentially measure anxiety both as a personal property (personal anxiety) and as a state (situational anxiety).

2. Zung's depressed mood scale, which characterizes manifestations not only decreased mood, but also subdepression [11].

3. Also, in neuropsychological research of the emotional-personal sphere, it is often use a questionnaire to assess emotionality. The questionnaire tests emotionality as a personality trait, that is, the stable tendency and ability of an individual to experience the four basic emotions: sadness, anger, fear and joy. It is aimed at identifying the most frequent emotional experiences for the patient [11]. It should be noted that in patients with overweight and obesity against the background of dysfunction of the median structures of the brain, the emotional and personal sphere is disturbed in different ways: from its complete preservation to gross defects in emotional and personal relationships [11].

Thus, summing up the above stated, we can draw the main conclusion. Higher

the hypothalamus is the vegetative center that carries out the most complex integration of various internal systems, primarily the endocrine system, as well as the activity of the body as a whole, including all types of metabolism. One of the reasons underlying the formation of overweight and obesity is dysfunction of the hypothalamic structures of the brain of various etiologies - vascular, post-traumatic, infectious, and a number of others. A stress factor is one of the trigger mechanisms for disrupting the work of the mid-brain regions. Neuropsychological research makes it possible to identify the existing disorders of the emotional and personal sphere in violation of the work of the median structures of the brain.

Before moving on to the treatment of patients with overweight and obesity, it is necessary to emphasize once again that in this work, the main direction of research into the causes of overweight and obesity was the study of the neuropsychological sphere and the neuropsychological aspect of the problem. As noted above, the complex and multifaceted etiopathogenesis of the formation of overweight and obesity involves the study of this problem from the point of view of various medical sciences - endocrinology, gastroenterology and a number of others, which, of course, is of interest for independent scientific research. It is important to remember that the examination of patients with overweight and obesity should always be comprehensive and purely individual. This provides the doctor with the opportunity to focus on precisely those aspects

A comprehensive examination of overweight and obese patients is necessary not only for a correct understanding of the causes of the pathology in a given patient, but mainly for the development of adequate, effective therapy tactics aimed at correcting precisely those disorders that were identified during the examination.

One of the modern approaches to the treatment of patients with overweight and obesity is the method of bioresonance therapy (BRT) - a physical method of exposure using electrical vibrations, electromagnetic fields and human radiation [4]. Depending on the type of applied therapeutic effect, BRT can be endogenous and exogenous [4].

With endogenous BRT, the therapeutic effect is carried out by the patient's own weak electromagnetic oscillations, which are removed from the patient's body, processed by the BRT apparatus and returned to the body [4]. The high efficiency of therapy is due to the fact that such an effect is maximally individualized [1, 4].

With exogenous BRT, the therapeutic effect on the patient is carried out by external electrical or electromagnetic signals [4]. Modern exogenous BRT includes: resonance frequency therapy, induction therapy and exogenous BRT with fixed frequencies [4].

In the treatment of patients with overweight and obesity, both endogenous and exogenous BRT are used.

The direction of BRT is determined on the basis of clinical and anamnestic data and the results of laboratory and instrumental studies. At the same time, when choosing the modes of bioresonance therapy, the spectrum of the corresponding frequencies, for assessing the possibility of using induction programs of brain rhythms, the use of electropuncture methods, such as, for example, the vegetative resonance test (ART) "IMEDIS-TEST" and the method of R. Voll [1 , 14].

The author of the article, in the treatment of patients with overweight and obesity, courses of endogenous BRT and exogenous BRT are carried out on a device manufactured by LLC "CIMS" IMEDIS "" IMEDIS-EXPERT "(registration certificate No. FSR 2010/08232).

The course of endogenous BRT usually includes 10-12 sessions carried out with an interval of 14-16 days. At the same time, 3-4 such courses are held per year, more often with a break for the summer months.

To carry out endogenous BRT in the treatment of patients with overweight and obesity, the following operating modes of the "IMEDIS-

EXPERT":

1. Organotropic endogenous BRT along all meridians [4].

2. Organotropic endogenous BRT along the selected meridians. Most often they include meridians of endocrinology, nervous degeneration, fatty degeneration, gallbladder meridian, heart and kidney meridians.

3. Endogenous BRT according to the activity of the circadian rhythm in the "golden section" mode. At carrying out this BRT mode, the effectiveness of the use of homeopathic preparations and organopreparations during the session was noted, the selection of which is carried out by testing using electropuncture methods. The greatest efficiency was noted when using in the BRT process complex preparations "Flower infusions of Dr. Bach" (remedies for fear, loneliness, in case of disappointment), as well as drainage means "OHOM", preparations of the company "Dr. Reckeweg "," Heel ", organopreparations of the" Weleda "company.

4. Endogenous BRT in the frequency modulation mode (the frequency range is selected individually), while the most effective for patients with overweight and obesity are the frequencies that normalize the hypothalamic-pituitary connections, the function of the thyroid gland, liver, pancreas, the frequency of sedative, antiphobic effects, as well as the frequency of diencephalic regulation.

Clinical observations conducted by the author indicate that the use of exogenous BRT in the treatment of patients with overweight and obesity is also an effective method. Most commonly used:

a) Exogenous BRT using induction programs of brain rhythms. Most often, a good therapeutic effect is provided by the use of such induction programs as the "Rest program", "Endocrine regulation program", "Depression program", "Cerebral program".

b) Exogenous BRT with fixed frequencies. The selection of frequencies that have a positive therapeutic effect is also carried out according to the results of preliminary testing by the ART method "IMEDIS-TEST" or by the method of R. Voll. The greatest efficiency is observed when using the frequencies of diencephalic regulation and normalization of endocrine relationships.

In most cases, a good therapeutic effect is provided by a combination of bioresonance therapy (both endogenous and exogenous) with acupuncture (IRT), homeopathic medicines, allopathic medicines, massage. At the same time, it is extremely important to note that the complex individual approach used at the diagnostic stage (which was mentioned above) is also important in the development of the tactics of the therapy. When carrying out therapeutic measures, it is necessary to take into account the individual characteristics of the organism: psychological status, the state of various systems and organs, data from diagnostic studies. At the same time, it is important to remember the close relationship of the most complex mechanisms of etiopathogenesis, the violation of which led in each case to the formation of overweight and obesity. Taking these mechanisms into account, a therapy regimen is being developed. For example, it is obvious that dietary restrictions will not lead to an improvement in the functioning of the endocrine system. At the same time, therapeutic measures aimed at normalizing the work of the hypothalamic region of the brain will be less effective in the absence of nutritional correction.

However, this correction must be competent and, again, individual. So, for example, when prescribing a drinking regimen, it is necessary to monitor the state of the cardiovascular system and kidneys, as well as the state of water-electrolyte metabolism. The intake of nutrients and water should be balanced, cases of kidney pathology up to renal failure with an excess of protein products, heart failure with excessive consumption of water are known. Without dwelling on the numerous violations of organs and systems of the body as a result of all kinds of diets, it is important to note that when correcting nutrition, it is important to take into account all the individual characteristics of the body, including gender, age, working conditions and rhythm of life.

Of course, the neuropsychological aspect of the problem is, as already noted, extremely important.

Based on this, it is clear that the coordinated work of the therapist, endocrinologist, neuropsychologist and other specialists (depending on the clinical case), work on the basis of an individual integrated approach both at the stage of diagnosis and at the stage of therapy, is the key to successful treatment and the achievement of a stable therapeutic effect in overweight and obese patients.

How show carried out by the author clinical observation, study of the neuropsychological aspect of the occurrence of overweight and obesity is important and necessary for a correct understanding of the entire complex mechanism of existing disorders and for timely reliable diagnosis. This is the basis for the appointment of adequate therapy aimed at correcting the main links of existing disorders. At the same time, in the complex of ongoing therapeutic measures, endogenous and exogenous bioresonance therapy is one of the effective ways to normalize the central mechanisms of metabolic regulation, the function of internal organs and the psychological state of patients.

In conclusion, it should be noted that the problem of overweight and obesity is complex and multifaceted, while the study of both individual aspects of this pathology, from the point of view of various areas of medical science, and the entire problem as a whole, is important, interesting and necessary at the present stage. development of medicine.

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