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Anorexia nervosa: a new look at an old problem

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ABSTRACT

In Russia, according to Rosstat, approximately 2.5% of adolescents suffer from anorexia. In Moscow, according to 2015 data, at least 5% of young women suffered from anorexia; however, most experts believe that the true figures are much higher because only advanced cases are documented. The relevance of the problem of anorexia nervosa is associated with its potential threat to the lives of patients, eating disorders, concomitant mental diseases, and, in general, the deterioration of mental status. Despite the apparent simplicity of diagnosis, patients with advanced stages of anorexia nervosa that require long-term therapy are more likely to seek a doctor's help. Anorexia requires a comprehensive treatment approach, including psychopharmacotherapy, psychological influence, diet therapy, therapy of somatic pathology, and concomitant complications. All these aspects of treatment must be implemented simultaneously. The key to success is the constant monitoring of therapy by a psychiatrist. Malnutrition will result in the deterioration of general health, particularly in girls with menstrual disorders, complications associated with conception and gestation, and a difficult pregnancy. Thus, this condition must be considered from the point of view of psychiatry, obstetrics, and gynecology.

Keywords: anorexia nervosa; eating disorder; amenorrhea; oligomenorrhea.

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Нервная анорексия: новый взгляд на старую проблему

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АННОТАЦИЯ

В России, по данным Росстата, в 2015 г. примерно 2,5% подростков страдало анорексией, в Москве в 2015 г. анорексией страдало не менее 5% молодых женщин, но большинство специалистов считают, что истинные показатели намного выше, так как фиксируются только запущенные случаи. Актуальность проблемы нервной анорексии связана с потенциальной угрозой жизни пациентов, нарушением пищевого поведения, сопутствующими психическими заболеваниями и в целом ухудшением психического статуса больного. Несмотря на кажущуюся простоту постановки диагноза, к врачу чаще обращаются пациентки с запущенными стадиями, требующими длительной терапии.

Лечение анорексии требует комплексного подхода, включающего психофармакотерапию, психологическое воздействие, диетотерапию, терапию соматической патологии и сопутствующих осложнений. Важно, чтобы все эти аспекты лечения проводились одновременно. Ключевой момент в достижении успеха — постоянный контроль терапии психиатром. В результате нарушения питания пациента идёт ухудшение общего соматического состояния здоровья, вследствие чего конкретно у девушек происходят нарушения менструального цикла, осложнения, связанные с зачатием и вынашиванием плода, тяжело проходящей беременностью. В связи с этим особенно важно рассмотреть данное заболевание с точки зрения и психиатрии, и акушерства, и гинекологии.

Ключевые слова: нервная анорексия; расстройство пищевого поведения; аменорея; олигоменорея.

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神经性厌食症：看待老问题的新视角

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摘要

根据俄罗斯国家统计局的数据，2015年俄罗斯约有2.5%的青少年患有厌食症。在莫斯科，2015年至少有5%的年轻女性患有厌食症，但大多数专家认为真实数字要高得多，因为只有未能及时医治的病例才会被记录在案。神经性厌食症问题的紧迫性与患者的生命受到潜在威胁、饮食行为紊乱、伴随的精神疾病以及患者的精神状态普遍恶化有关。尽管表面上看诊断似乎很简单，但需要长期治疗的晚期患者更有可能会求助于医生。

厌食症的治疗需要采取综合方法，包括精神药物疗法、心理影响、饮食疗法、躯体病理和相关并发症的治疗。重要的是，所有这些方面的治疗必须同时进行。成功的关键在于心理医生对治疗的持续监控。由于患者营养失调，全身健康状况恶化，导致月经失调、与受孕和怀孕有关的并发症以及难产。因此，从精神病学、妇产科学的角度考虑这种疾病尤为重要。

关键词：神经性厌食症；饮食失调；闭经；月经过少。

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Anorexia nervosa (AN), ICD-10 code F50.0, is an eating disorder characterized by a deliberate decrease in body weight caused and/or maintained by the patient [1]. According to the Federal State Statistics Service (Rosstat) data, the prevalence of AN in the population is 1.2% in women and 0.29% in men. Over the past 50 years, the incidence of anorexia has only been increasing among women aged 15 to 24. Among other age groups and men, the incidence of anorexia remains stable.

The relevance of anorexia nervosa is associated with the potential threat to the life of patients, eating disorder, concomitant mental illnesses and general deterioration of the patient's mental status. In the patient's body, nutritional disorders lead to negative changes in somatic status, irregular menstruation, complications related to conception and child-bearing, and complicated pregnancy in women. Therefore, it is particularly important to consider this disorder from the perspectives of both psychiatry, and obstetrics and gynecology [2–3].

In the population, the disease occurs at an incidence of 0.3% to 5% in both women and men. The annual incidence rate fluctuates from 5 to 8 cases per 100,000 people. The mortality rate for this disease is 18%. It is worth noting that one in five deaths is caused by suicide [2]. According to the US statistics given in Current Issues of Anorexia Statistics, 90% to 95% of all anorexia nervosa patients are female, and in 5% to 10% of them, the disease is fatal [3–4].

Regarding the referrals of patients with anorexia nervosa to psychiatrists and obstetricians, patients with symptoms of anorexia nervosa more often seek medical advice from psychiatrists because it is a mental disorder related to eating behavior, self-esteem, and emotional state. Patients with anorexia nervosa usually consult psychiatrists if they experience the following symptoms:

- excessive food restriction and food refusal, resulting in significant weight loss;
- a distorted perception of the shape and appearance;
- preoccupation with thoughts about food, weight, and food practices;
- mood problems, anxiety or depression.

On the other hand, patients may also consult gynecologists for various reasons related to their general health or physiological aspects due to anorexia nervosa, such as:

- skin and hair problems along with menstrual disorders;
- menstrual disorders, including amenorrhea (absence of menstruation);
- difficulty conceiving or complications in pregnancy;
- contraception or sexual health issues.

Importantly, psychiatrists and obstetricians can use a team approach to provide comprehensive treatment and support for patients with anorexia nervosa [4].

DEVELOPMENT THEORIES

The causes of anorexia nervosa are not known, but researchers suggest that many factors are involved.

Genetic factors

No specific gene has been found, but there is evidence that genetic predisposition has an important role in the development of this disease. People whose families have previously been diagnosed with anorexia nervosa have an 11-fold greater risk of developing this condition than those with no history. Moreover, a relative with another eating disorder also increases the risk [3–5].

Development factors

An unfavorable course of prenatal, perinatal and antenatal periods increases the risk of AN (prematurity, developmental delay, breastfeeding difficulties, poor sleep in infancy). Personality traits are formed while growing up: the development of traits associated with anxiety, depression, perfectionism, and autism spectrum also increases the risks of AN.

Anorexia nervosa most often develops during adolescence, suggesting that factors specific to this period may put individuals at risk for developing this condition. Adolescence is a period when many changes occur in a person's life: biological, psychological and social ones [4–6].

Hormonal changes (changes in body shape and weight) can be a stress factor that provokes dissatisfaction with oneself and decreased self-esteem. In addition, a relationship with parents, transition to adulthood, and romantic relationships can be stress factors [3–6].

Physiological factors

These include weight above normal, early menarche, and dysfunction of the neurotransmitters that regulate eating behavior (dopamine, serotonin, and norepinephrine).

Psychological factors

Some psychological aspects increase the risk of anorexia nervosa in individuals with perfectionism, self-discipline, harm avoidance, and a tendency to self-criticism. People with the restrictive subtype show low impulsivity and are much more likely to delay rewards than those without the condition. Cognitive inflexibility is also typical of this disease. People with obsessive-compulsive disorder (OCD) and obsessive-compulsive traits are also at risk of anorexia nervosa [6–9].

Environmental and societal factors

These include living in an industrialized area with sustainable beauty standards, namely, emphasizing a slim shape, maintaining optimal weight within strict limits, and following all sorts of diets. Among social factors, the disease development can be influenced by physical, psychological and sexual violence, death of close relatives and other turning points in life [4–9].

STAGES OF ANOREXIA NERVOSA

The first stage is the initial one (also *dysmorphomanic*), which lasts an average of 2 to 4 years, more often in

childhood. Patients may have an idol from movies, TV shows, cartoons, who has a slim figure. Accordingly, the supervaluable idea of dysmorphomania is formed from that moment on. Depressive components are less pronounced, but as soon as the disease progresses, they are closely related to the success of appearance correction performed by patients. The patients are strongly influenced by the so-called Western lifestyle, i.e. established eating habits, high standards of body shape and weight, which are achieved by active sports and strict diets.

The second stage is anorexic. It begins as an active desire and aspiration to change one's appearance by losing weight (by 20%–25% of the initial weight). Consequently, somatic and endocrine disorders develop, particularly oligomenorrhea, amenorrhea, and infertility. Patients use nay methods to lose weight. Most often, they start with vigorous sports that are not appropriate for their initial fitness. Patients combine strenuous activities with limiting the amount and caloric content of food. At first, carbohydrate-rich foods are excluded from the diet, then proteins, and later the diet is cut down to the intake of only plant foods. Patients use several methods to lose weight. A passive one, which includes heavy smoking, drinking black coffee, energy drinks, chicory instead of any food; taking medications (appetite suppressants, psychostimulants, diuretics, laxatives in high doses). Less commonly, enemas are used. An active one includes vomiting behavior (patients induce vomiting after eating to get rid of consumed calories) [9–10].

The third stage is cachectic. It is characterized by an asthenic syndrome with predominance of adynamia and exhaustion. Patients lose criticism of their condition, continuing to refuse to eat in order to lose weight; obsessive supervaluable ideas are revealed.

Mortality can be as high as 20%, and suicide can be one of its causes. Thus, there are links between the disease stages and the actual choice of a specialist [1, 10]. At the second stage, when somatic and endocrine disorders develop with amenorrhea or oligomenorrhea, patients seek medical advice from gynecological specialists, as they do not suggest or realize the seriousness of their weight issues and general condition.

In the third stage of the disease, more and more patients are admitted to psychiatric clinics with psychiatric syndromes (lack of criticism, delusions, depression, anxiety disorder, adynamia, suicidal thoughts, etc.) [10].

Complaints that make patients and their relatives consult a doctor are diverse: weight loss of more than 15% of the age-related index or a body mass index of up to 17.5 (the minimum acceptable limit), lack of weight gain during puberty. Frequent attempts to deliberately induce vomiting, intake of laxatives, diuretics and/or appetite suppressants, and exhausting physical activities to compensate for the calories consumed have a significant impact on the quality of life and social activity of patients. There is a distorted perception of one's own body, weight, dissatisfaction with it (the patient is not satisfied with the current body weight, which, in his/her opinion, is too high; he/she considers the whole body or some parts of it "fat"). Reduced growth and development as a consequence of endocrine impairment, insufficient production of hormones by internal secretion organs leads to delayed sexual development (amenorrhea, undeveloped mammary glands in girls).

Panic fear of eating, of seeing the own reflection in the mirror, the feeling of being overweight while actually underweight, attempts to pretend that the problem does not exist, and denial of being ill nullify all parents or friends' attempts to influence the patient's behavior. Changed ways of eating (strictly alone, while standing, eating in small pieces), the desire to "overnourish" the loved ones, cooking for them complex, varied dishes, a sudden passion for cooking (search for new recipes, constant watching of cooking TV programs, reading, interest in diets) do not immediately alarm the parents. Patients themselves or their relatives more often note mood swings, tendency to depressed, low mood, unreasonable anger, resentfulness, especially to comments about weight, restless sleep [10–13].

SYMPTOMS

The symptoms of anorexia nervosa occur in many organs and body systems. Gastrointestinal tract: constipation, delayed evacuation of gastric contents, esophagitis, gastritis, duodenitis, Mallory-Weiss syndrome (as a consequence of vomiting behavior), intestinal obstruction, erosion of tooth enamel, increased ALT (alanine aminotransferase) and AST (aspartate aminotransferase), enlarged salivary glands. Cardiovascular system: cardiac arrhythmia, bradycardia, hypokalemia, hypomagnesemia, fainting, dizziness, persistent and constant feeling of cold due to slow heartbeat. Skin and hair: hair loss, dry and pale skin, lanugo, brittle nails. Endocrine system: thyroid dysfunction, nodular goiter, amenorrhea, oligomenorrhea, loss of fertility, breast atrophy. Mental status: impaired concentration, depression, obsessive-compulsive disorder, anxiety, suicidal thoughts. Other: osteoporosis, bone fractures, including the spine, and reduced brain mass.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) has defined diagnostic criteria for anorexia nervosa:

- restriction in food intake leading to abnormal weight loss;
- fear of gaining weight and behavior to prevent weight gain;
- distorted body image: distorted perception of body shape and weight; self-esteem dependent on the degree of thinness; lack of awareness of the seriousness of low weight-associated issues;
- in women: amenorrhea or absence of three consecutive cycles.

According to the American Psychiatric Association, AN falls into two categories:

- *restrictive type,* behavior patterns: following diets, fasting, exercising for at least 3 months;
- *cleansing type,* behavior patterns: gluttony followed by cleansing the gastrointestinal tract of food (induced

vomiting, intake of laxatives and diuretics, usage of an enema) [6, 9, 13].

Possible outcomes:

- complete recovery (reported in 40%–50% of patients);
- recurrent course;
- death (5%–20% of patients) with a suicide is a frequent cause [5, 6, 8].

PREVENTION OF ANOREXIA NERVOSA

Measures that may reduce the risk of AN:

1. Healthy lifestyle. Patients should be advised to follow a sleep schedule, exercise regularly, and tailor their diet to their needs, which may require consultation with a nutritionist. Patients should be provided with adequate nutrients and not ignore hunger signals.

2. Education of patients at risk (adolescents, young people under 35 years of age) on the conformity of their appearance to the imposed images in the media, social networks, and magazines.

3. Regular medical check-ups, with special attention to the tendency to develop eating disorders.

4. Mandatory attendance of group or individual psychotherapy sessions to correct the psychoemotional state, as well as regular check-ups with a psychiatrist to correct the drug therapy [14].

TREATMENT

Treatment of AN requires a comprehensive approach, including psychopharmacotherapy, psychological effects, diet therapy, therapy of somatic symptom disorder and associated complications. It is important that all these aspects of treatment are carried out concomitantly. The main point of treatment is to ensure continuous monitoring of psychopathologic syndrome by a psychiatrist.

The treatment of AN can be divided into three stages. At the first stage, which lasts 7–14 days, the vital functions are restored; metabolic and water-electrolyte disorders are eliminated; adequate cardiac function is stabilized, and food tolerance is formed. At the second stage, which lasts 2–3 weeks, body weight deficit correction and metabolism optimization measures are performed. At the third stage, rehabilitation is carried out [1].

Other researchers also distinguish three stages in the treatment of AN: intensive observation and correction of somatic complications, the main stage of in-patient treatment and the rehabilitation stage of outpatient follow-up. The duration of each stage depends on the severity of the mental and somatic condition. From the very beginning of in-patient treatment, patients are prescribed an individualized diet containing the necessary nutrients and monitored for the body weight, consumed and excreted fluids. Partial bedrest and strict medical observation are important during this period, as patients often fail to comply with the therapy [4, 13].

AN patients often use active dissimulation and practices to maintain pathological eating behavior, such as refusal to eat, induction of aversion after eating, and excessive exercise, as well as intake of diuretics and laxatives. One of the reliable signs of improvement in an AN patient is recovery of body mass index (BMI) and normalization of eating behavior. The patient's diet is prepared, taking into account their physiological features and somatic status. Before prescribing therapeutic nutrition, it is important to assess the patient's nutritional status using laboratory and instrumental methods. Deficiencies of proteins, fatty acids and micronutrients, as well as the functional status of organs and systems are assessed, and appropriate doses of deficient components are introduced into the patient's diet. Metabolic and water-electrolyte disorders such as dehydration, hypomagnesemia, hypocalcemia, hyponatremia and hypokalemia are pre-corrected. Sometimes thiamine is required, as the need for thiamine increases dramatically during the nutrition resumption due to the activation of carbohydrate metabolism [4, 13, 15].

If there are complaints related to the reproductive system, a gynecologist and a psychiatrist develop a collaborative treatment plan. When certain criteria indicating successful treatment are met, patients are prescribed vitamin therapy as an adjunct to a nutritional rehabilitation program to correct nutrient deficiencies that may have a negative impact on the ovarian function. If amenorrhea persists despite weight normalization and there are criteria determining an unfavorable prognosis for menstrual cycle recovery, including ultrasound signs of uterine hypoplasia and lack of follicle growth dynamics, hormone replacement therapy should be prescribed, which has two important goals: 1) to increase the plasma level of ovarian hormones to values close to physiologic ones to prevent atrophic changes in the target organs, i.e. mammary glands and uterus; 2) to prevent osteoporosis and cardiovascular diseases. Bone loss in amenorrhea is due to the same mechanisms as in postmenopause. The bone density has been proven to correlate with the body weight in amenorrheic AN patients, and the bone response to hormone replacement therapy depends on the maintenance of adequate body weight and the absence of stress-induced hypercortisolism. The risk of fractures in female patients with AN is two to seven times higher than in healthy peers and persists longer than ten years, even in girls with restored body weight [14–15]. Estriol administration in hypogonadotropic functional hypothalamic amenorrhea stimulates restoration of luteinizing hormone synthesis. This indicates the need to prescribe hormone replacement therapy to young female patients not only to compensate for the deficiency of sex hormones, but also to "unblock" and modulate the synthesis of luteinizing hormone by the pituitary gland.

Usually, combination drug products containing estradiol as an estrogenic component and dydrogesterone as a gestagenic component are suitable for hormone replacement therapy. The major unconjugated and conjugated metabolites of estradiol are estrone and estrone sulfate. These metabolites

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exhibit estrogenic activity both directly and after conversion to estradiol.

CONCLUSION

Anorexia nervosa is not just a fascination with dieting and striving for the perfect body, but rather an obsessive desire to lose weight, leading to disastrous consequences in the body. Patients cannot cope with it on their own, continue to hide their problems, while relatives often do not even realize the extent of this disaster. Although AN is a mental disorder, a team of specialists is required to treat this condition, where the gynecologist has one of the leading roles. The goal of therapy is not only to gain weight, but also to preserve the reproductive health of adolescent girls and young women.

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Authors' contribution. All authors made a substantial contribution to the conception of the work, acquisition, analysis, interpretation of data for the work, drafting and revising the work, final approval of the version to be published and agree to be accountable for all aspects of the work. The concept and design of the study — M.B. Ageev; collection and processing of the material — R.A. Sarkisyan, E.R. Akhmetgaryaev; writing of the text — E.A. Sosnova, E.A. Svidinskaya; editing — E.A. Sosnova.

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