

Gushcha S. G., Nasibullin B. A., Plakida A. L., Volyanska V. S. Perspectiveness of correction of accompanying diseases in patients with autism by course of interior use of naturally low mineralized water. *Journal of Education, Health and Sport*. 2018;8(1):228-234. eISSN 2391-8306. DOI <http://dx.doi.org/10.5281/zenodo.1188292>  
<http://ojs.ukw.edu.pl/index.php/johs/article/view/5332>

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 1223 (26.01.2017).  
1223 *Journal of Education, Health and Sport* eISSN 2391-8306 7

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The authors declare that there is no conflict of interests regarding the publication of this paper.  
Received: 23.01.2018. Revised: 26.01.2018. Accepted: 31.01.2018.

## **PERSPECTIVENESS OF CORRECTION OF ACCOMPANYING DISEASES IN PATIENTS WITH AUTISM BY COURSE OF INTERIOR USE OF NATURALLY LOW MINERALIZED WATER**

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### **Abstract**

The article reviews the pathogenesis and the course of autism. Authors define autism as a psychosomatic disorder. A distinctive feature of mineral waters, as natural therapeutic factors of weak intensity, is their pronounced biological activity, the absence of side effects and the possibility of long-term use in combination with medication therapy. The paper presents data substantiating the possibility of using mineral water with an increased content of organic substances for the correction of the somatic component of autism (problems of the gastrointestinal tract, carbohydrate metabolism disorders, neurosis).

**Key words: autism, psychosomatic disorders, mineral water.**

The problem of autism in the world is beginning to acquire special relevance due to the fact that the number of cases is constantly increasing compared to the previous years, on average by 14% [1]. Back in 2007, the World Health Organization (WHO) stated that humanity faces a serious problem: the number of people with mental and neurological problems, including autism, is growing steadily. These diseases account for 11% of all health problems globally. WHO claims that at least 1,100,000 cases of autism can be counted in

China, 650,000 in the United Kingdom (Great Britain), 500,000 in the Philippines, and at least 180,000 in Thailand.

The concept of "autism" was introduced in the middle of the last century by the Austrian and American pediatrician and psychiatrist Leo Kanner. In 1943, a similar disorder in older children was described by the Austrian scientist Hans Asperger, and in 1947 - by the Soviet scientist Samuel Mnukhin [2]. Today, experts believe that this is not just a kind of mental anomaly, but a systemic disorder, which is based on problems of very different origins: immunological, neurological, biochemical, endocrine, etc., which makes autism a bright and severe psychosomatic pathology [3].

The number of children and people falling into the spectrum of autistic disorders, as a rule, are united by common signs, that is, by the presence of a characteristic triad: difficulties in communicating with other people; difficulties in perceiving something new and determined by limited interests; repetitive patterns of behavior [2]. Many children and adults with a diagnosis of autism spectrum disorder (ASD) have concomitant health problems. Recent large-scale studies have confirmed that a number of medical syndromes are more common in people with autism, compared with the neurotypic population. A detailed assessment carried out by the US Centers for Disease Control and Prevention showed that children with autism have a much higher predisposition to such diseases as eczema, allergies, asthma, respiratory infections, gastrointestinal problems, headaches, migraines and convulsions [4].

Further clinical studies have confirmed that concomitant diseases are widespread in children and adolescents diagnosed with ASD [5].

The mortality rate of patients with autism is significantly increased (from 3 to 10 times higher than in the main population) [6]. It should be emphasized that these deaths are usually the result of concomitant diseases, such as gastrointestinal and respiratory nosologies [7, 8].

According to data [8], deaths from gastrointestinal and respiratory diseases among patients with moderate and severe autism were at 40.8 and 24.5 times higher respectively in patients compared with neurotypical peers. Adults with developmental disabilities are also at a much greater risk of developing diabetes mellitus, coronary heart disease, osteoporosis and show a severe degree of bone demineralization [9, 10].

Concomitant diseases are much more common and difficult to diagnose in patients with autism than in the general population. The inability to identify such co-morbidities is partly due to inadequate patient communication and ambiguous symptomatology. As a result, these pathologies often remain without proper treatment.

All noted concomitant diseases and associated pathological processes can adversely affect behavior, socialization, communication, cognitive functions and sensory signal processing in people with autism, that is, they participate in the formation of a vicious circle of autism as a psychosomatic pathology.

Taking into account the above, the search and development of new and effective methods of treatment of concomitant diseases in patients with autism is important and relevant. We can assume that most of the above-mentioned concomitant diseases are essentially psychosomatic. It should be noted that the use of standard medical methods for the treatment of such violations requires long-term use, which is due to their high cost, the presence of toxic and side effects. Against this background, the therapeutic efficacy of the intake of mineral water (MW) in patients with various psychosomatic disorders, which was confirmed by scientific studies [11]. The advantages of MW using include: the practical absence of contraindications and allergic reactions; the possibility of long-term use, in particular in outpatient conditions, affinity with the buffer systems of the organism, the combination of general non-specific action on the processes of sanogenesis of the human body as a whole and the local pathogenetic mechanisms of the disease [12].

As part of the MW, ions and biologically active components and compounds are in the most active and digestible form, which determines the significant biological effect. MW stimulate the secretion of gastrointestinal hormones, including insulin. Under the influence of MW, the sensitivity of insulin receptors increases (or improves), which provides the optimal course of metabolic processes, which helps to prevent the formation of diabetes mellitus, atherosclerosis, coronary heart disease, obesity, hypertension, and other [13, 14, 15]. That is why MW can be designated for the normalization of functional, trophic, metabolic disorders of the psychosomatic genesis in the body. In the realization of the healing effect of MW, the relationship between their specific and non-specific effects on the body is very important. Against the background of the general non-specific action of MW (the strength of the body's response is determined by its initial functional state), specific effects due to the peculiarities of the physico-chemical composition, osmolarity of the MW are clearly distinguished. That is, even MW of the same type and the similar chemical composition exhibit a unique biological effect [16, 17, 18].

In an experiment in rats with a model of immobilization-cold stress, a tread effect of weakly mineralized with an increased content of organic substances in water was determined that intragastral (during 11 days) introduction of this therapeutic water to animals stimulates the secretion of endarterial endarterial cells of the antral-doudenal gastrin gastric mucosa;

leads to an increase in the activity of monoamine oxidase in the kidneys and the content of oxidized forms of catecholamines in the liver, indicating an increase in the inactivation of stress hormones. At the same time, they are accelerated their excretion in the urine, as this MW increases the rate of urination. In addition, prolonged use of this MW by rats leads to the suppression of peroxidation of lipids on the membranes of cells of various tissues. Natural mediators of stress-limiting systems increase the body's resistance to stress-related injuries. In connection with this, the use of tools that increase the effectiveness of natural stress-limiting systems, such as the use of chemical compounds of different chemical compositions, can be promising in the prevention and correction of stress injuries [19, 20]. Clinical and experimental data showed that another low mineralized MW with an increased content of organic substances has similar adaptogenic properties [21].

An example of such MW is the packed low-mineralized water with high content of organic matter - "Zbruchanska 77" ("Lotus"). Comprehensive studies conducted by scientists of SE Ukrainian Research Institute of Medical Rehabilitation and Balneology Ministry of Health of Ukraine, Odessa, it has been established that this MW is effective in the treatment of hepatobiliary, endocrine, gastrointestinal tract infections. Experimental studies have established the mild soothing effect of this Lotus MB on the functional state of the central nervous system (CNS) and the emotional state of animals (white Wistar line rats). Such a character of biological action allowed to determine the direction of further clinical trials. A group of people with psycho-emotional disorders drank mineral water "Zbruchanskaya 77" in a daily dose of 1% of body weight 3 times a day for 40 minutes before eating, a course of 21 days. Application of MW "Lotus" leads to the normalization of psycho-emotional state in 80% of the subjects. At the end of the treatment, there was only a weak manifestation of psycho-emotional disorders. In addition, experimental studies have found the corrective effect of this MW on rats with reproductive pathology of the digestive system (with a related violation of the functional state of the kidneys and a violation of carbohydrate metabolism), which made it possible to determine the design (or selection) of groups of patients and conduct clinical trials. Upon completion of the study, based on the analysis of the obtained data, the following conclusions were identified.

- The use of mineral water "Lotus" in patients with chronic nonatrophic normocytic gastritis leads to "complete recovery" in 61.55% and to "significant improvement" in 38.45% of patients.

- The use of mineral water "Lotus" in patients with non-alcoholic steatohepatitis and type 2 diabetes has allowed to achieve 100% "significant improvement" from received treatment.

- Application of mineral water "Lotus" in patients with chronic noncalculous cholecystitis and chronic pancreatitis has allowed 100% of patients to achieve "significant improvement"

- Application of mineral water "Lotus" in patients with chronic pyelonephritis with uric acid diathesis allowed to achieve 80.0% "significant improvement" and in 20.0% of patients "improved" from the received treatment.

- Application of mineral water "Lotus" in patients with chronic neurosis allowed 77.8% of patients to achieve "recovery".

It should be noted that the use of MW is positively affecting the glyceic parameters of blood in patients with type 2 diabetes. This MW has a systemic normalizing effect, including through activation of the detoxification and excretory systems of the body, while restoring the balance between pre-oxidation of lipids and antioxidant system, reducing the intensity of inflammatory processes, improving the neurotrophic function of the central nervous system. That is, the reception of MW directly corrects the metabolic reactions in the body, in fact, in those tissues, organs and systems, where these violations are most significant.

Thus, the data obtained suggest the possibility of using "Lotus" MW in patients with autism for the correction of certain concomitant diseases.

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