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**SCIENTIFIC PARADIGM IN THE
CONTEXT OF TECHNOLOGIES
AND SOCIETY DEVELOPMENT**

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Influence of metabolic therapy on the adaptive potential of the cardiovascular system of children with attention deficit hyperactivity disorder

**Stoieva Tetiana¹, Bratkova Lyubov², Vesilyk Nataliia³,
Reshetilo Olesia⁴, Nayarenko Kateryna⁵**

¹ DMSc, Professor of the Department of Pediatrics 2;
Odesa National Medical University; Ukraine

² Assistant of the Department of Pediatrics 2;
Odesa National Medical University; Ukraine

³ PhD, Associate Professor of the Department of Pediatrics 2;
Odesa National Medical University; Ukraine

⁴ PhD, Assistant of the Department of Pediatrics 2;
Odesa National Medical University; Ukraine

⁵ 4th year student;
Odesa National Medical University; Ukraine

During the last decade, scientific interest in researching the problem of attention deficit hyperactivity disorder (ADHD) in children has not faded. Despite the large number of published proceedings, this topic does not cease to interest specialists – not only doctors, but also pedagogical workers. This is explained by the fact that the problem of ADHD leads to social maladaptation and causes not only medical, but also pedagogical difficulties, which worsen the quality of life of the child and the family.

ADHD refers to hyperkinetic disorders and represents a group of diseases characterized by early onset (usually in the first five years of life), non-availability of persistence in activities that require mental concentration, and a tendency to jump from one task to another without completing them. At the same time, unorganized, unregulated and excessive activity is noted. Children with hyperkinetic disorders are often desperate and impulsive, they are prone to risk-taking, accidents, social inhibition and disciplinary sanctions due to reckless violations of rules, and it is difficult to

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realize their inappropriate behavior. They do not enjoy the love of other children and may end up in isolation. Lack of cognitive functions is a common phenomenon that leads to delayed motor and language development. Such children are characterized by antisocial behavior and low self-rating.

It should be noted that the signs of ADHD do not disappear with age, but transform and provoke mental disorders, antisocial behavior and even the emergence of pathological conditions of psychosomatic etiology.

Peculiarities of central and autonomic regulation in children with ADHD cause a high tendency to develop functional disorders on the part of internal organs and systems, increased risk of infectious pathology.

That is why the trend of increasing prevalence of ADHD among the children's population prompts us to search for new ways of correcting this condition at the biochemical, molecular and genetic levels.

The purpose of this study is to evaluate the adaptive mechanisms of the autonomic nervous system of children with ADHD and the possibility of metabolic correction by using omega-3-polyunsaturated fatty acid (omega-3-PUFA) and zinc agents.

Materials and methods.

60 children diagnosed with ADHD at the age of 4.3 ± 0.8 years were examined.

Anamnestic data, results of general clinical laboratory and instrumental research methods were studied. Assessment of the adaptive potential of the cardiovascular system was carried out according to R.M. Baevsky. (2002). All children were divided into two groups equal in age and gender. The main group of children received metabolic correction by using the drug omega-3 polyunsaturated fatty acids in a dose of 1750 mg (EPK-455mg, DHA-280 mg) and zinc sulfate in a dose of 1.88mg, in the form of syrup, for 60 days. Children in the control group did not receive metabolic correction.

Results: At the beginning of the survey, the initial concentration of zinc in the hair of all examinees was determined, which was $94.3 \mu\text{g/g} \pm 0.5$ ($p < 0.05$), and was significantly reduced, with normative indicators (124-320 $\mu\text{g/g}$).

Evaluating adaptation potential according to R.M. Baevsky. in all children at the beginning of the study, an unsatisfactory level of adaptation was found in $(66.7 \pm 4.1)\%$ and disruption of adaptation mechanisms in $(6.7 \pm 3.2)\%$, a

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satisfactory level of adaptation was observed in $(8.3 \pm 3.5)\%$, tension of adaptation mechanisms in $(18.3 \pm 4.9)\%$, $p < 0.05$.

On the 60th day of the study, positive dynamics regarding the normalization of adaptive mechanisms of the autonomic nervous system were noted in the main group. The following was determined: a satisfactory level of adaptation was found in $(30.0 \pm 8.3)\%$, the tension of adaptation mechanisms in $(46.7 \pm 9.1)\%$, an unsatisfactory level of adaptation – $(10.0 \pm 5.5)\%$, failure adaptation mechanisms were not recorded, $p < 0.05$. At the same time, in the control group, the initial indicators were preserved in the following form: a satisfactory level of adaptation was noted in $(13.3 \pm 6.2)\%$, the tension of adaptation mechanisms in $(26.7 \pm 8.0)\%$, an unsatisfactory level of adaptation in $(56.7 \pm 9.0)\%$ and disruption of adaptation mechanisms in $(6.7 \pm 4.5)\%$, $p < 0.05$. The obtained data conclusively prove the influence of metabolic disorders on the state of adaptive mechanisms of the cardiovascular system in ADHD.

During the period of use of omega-3 PUFA and zinc, pedagogical workers noted high school attendance by children: the number of absences due to illness decreased.

Unfortunately, it was not possible to evaluate the change in the level of zinc in the hair of the examined children after 60 days of taking the drug. But, taking into account the improvement of the general condition, the increase in the level of adaptation and the reduction of missed days of education due to health, it can be concluded that the general condition of children with ADHD who received omega-3-PUFA and zinc in the complex of metabolic correction significantly improved.

Conclusion: During the study, a reduced zinc content in the body of children with ADHD was found. Metabolic correction with the drug omega-3-PUFA and zinc allows you to restore the vegetative balance, reduce the frequency of recurrent diseases and improve the quality of life of children with ADHD, which in turn positively affects the quality of life and reduces the clinical signs of somatic diseases and behavioral disorders of this group of children.