

**PREVENTION OF AUTONOMIC CONTROL DISORDER IN CHILDREN OF
PRIMARY SCHOOL AGE**

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Abstract: In children with autonomic dysfunction syndrome, structural transformations and changes in the functions of erythrocyte membranes of a destabilizing nature were revealed by the fluorescence spectroscopy method. Significant biophysical risk factors for the development of autonomic dysfunction syndrome in children aged 7-11 years were: low calcium-accumulating capacity of membranes, high rates of membrane-bound water and fluidity of the surface layers of the membrane, as well as an increased coefficient of asymmetry of the fluidity of the lipid bilayer.

Keywords: children of primary school age, autonomic dysfunction syndrome, erythrocyte membranes.

INTRODUCTION

In recent decades, there has been a steady increase in the incidence of “dysregulation” diseases among children [1]. Many researchers associate this with the lifestyle of modern schoolchildren [2]. The intensification of the educational process, accompanied by increasing mental and psycho-emotional stress, including maladaptive use of the Internet, leads to overstrain of the child’s regulatory systems. These factors contribute to the development of autonomic dysfunction syndrome (ADS) in school age. Most studies on this problem are devoted to adolescents [3], while publications concerning the study of autonomic dysfunction syndrome among primary school students are few. However, it is in primary school age that ADS most often debuts.

MATERIALS AND METHODS

Primary school age is an extremely “responsible” stage in the life of an ordinary schoolchild. This period is filled with intensive physical and psychophysiological development aimed at ensuring the child’s optimal adaptation to school. At the same time, the current age period contains a number of negative features that make the child “vulnerable” when interacting with learning and education factors. Thus, due to psychophysiological immaturity, the behavior of primary school students is accompanied by impulsiveness, inability to restrain their feelings, frequent mood swings, a tendency to affects, short-term and violent manifestations of anger and fear. The recurrence of these circumstances entails the development of autonomic dysfunction and maladaptation of the child’s body as a whole [4]. Disorders of autonomic regulation occur at different levels of the structural and functional organization of the child’s body: systemic, organ, tissue and cellular, including the level of cell membranes [2]. In this case, the cell membrane with its associated numerous receptors, including receptors for key bioregulators of the ANS (acetylcholine, adrenaline), is the effector link of the ANS. It is no coincidence that at the cellular level, initial disturbances most often appear due to changes in the nature of metabolic processes that have a dysregulatory and dysmetabolic focus [4].

RESULTS AND DISCUSSION

At present, the leading role of biomembranes in the development of a number of psychosomatic diseases, and in particular, hypertension, which belongs to the group of "major psychomatoses" is considered established [1]. Biomembranes, being an integral part of living tissue, actively participate in various metabolic reactions [2]. The main structural segment of the plasma membrane of various organs and tissues is the lipid bilayer with proteins immersed in it (enzymes, receptors, including those for bioregulators of the autonomic nervous system). Moreover, the activity of the latter largely depends on their lipid environment (the functioning of membrane lipids and their relationships with membrane proteins), which determine such physicochemical properties of the membrane as hydration, "fluidity", electrical properties. Lipid peroxidation (LPO) processes have a significant impact on these indicators. An increase in LPO is associated with a decrease in membrane fluidity, while the total amount of phospholipids decreases and they become enriched with fractions that are resistant to oxidation [3].

Children with SVD had various complaints: headache - 72.0% (29 people), non-systemic dizziness - 46.3% (19 people), motion sickness in transport - 53.6% (22 people), increased fatigue - 85.3% (36 people), increased sweating - 31.7% (13 people), sleep disturbance - 17.0% (7 people). During neurological examination, scattered microsymptomatology was determined: horizontal nystagmus - 34.1% (14 people), swaying in the Romberg position - 43.9% (18 people), regional hyperhidrosis of the palms and feet, red dermatographism - 56.1% (23 people). Considering the importance of heredity in the development of autonomic dysfunction, we assessed the significance of the presence of psychosomatic diseases in parents. For this purpose, the risk of developing VDS in primary school children was calculated using the odds ratio with a 95% confidence interval. We found that the presence of any psychosomatic disease in one of the parents (to a greater extent in the mother: migraine, tension headache) increases the risk of developing VDS by 2.25 times (odds ratio 2.258; 95% CI 1.100-5.123). The next important causal factor contributing to the development of VDS is the presence of perinatal pathology of the central nervous system (PPCNS) in the anamnesis. It was revealed that the presence of PPCNS increases the risk of developing VDS by 3.65 times (odds ratio 3.652; 95% CI 1.703-8.181). Taking into account the importance of emotionally experienced stressful situations (conflicts with peers, with teachers, unfavorable family environment) in the implementation of VSD, we analyzed this factor. It was recorded that the existence of this factor increases the risk of developing VSD by almost 4 times (odds ratio 3.778; 95% CI 1.694-8.943).

CONCLUSION

In order to implement a personalized approach to early diagnostics of VD in children of primary school age, it is necessary to conduct timely diagnostic measures to establish significant anamnestic and biophysical (at the membrane level) risk factors. The results obtained will allow the examined schoolchild to be included in the risk group for psychosomatic diseases for dynamic observation and timely implementation of preventive measures.

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