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# FEATURES AUTONOMIC NERVOUS SYSTEM IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

Physiological responses of peripheral autonomic nervous system are critical to maintaining homeostasis, physiological flexibility, and acute adaptation to stressful situations mediated by a variety of chemical coding systems, thus maintaining body homeostasis [1]. The autonomic nervous system is also responsible for cognitive, affective, and behavioral responses, and its deregulation is manifested in a variety of neuropsychological disorders [2].

Both the sympathetic and parasympathetic branches of the autonomic nervous system promote social functioning and communication, with activation of the sympathetic nervous system (SNS) reflecting a threat-oriented response, and the dominance of the parasympathetic nervous system (PNS) facilitating adaptive social interaction [3]. PNS plays an important role in social functioning, innervating several organs of the face and neck and influencing various functions, including cardiac activity related to social behavior and communication [4,5].

The aim of the study was to investigate the To investigate the peculiarities of the autonomic nervous system functioning in children with attention deficit hyperactivity disorder (ADHD).

A total of 60 children 7,27±0,17 years old were examined, of which 71,67 %(n = 43) were boys and 28,33 (n =17) were girls a clinically confirmed diagnosis of ADHD.

All patient`s somatometric markers (height, body weight), indicators of the cardiovascular system (pulse, blood pressure) were measured. The assessment of the predominant type of the autonomic nervous system was carried out using the calculation of the Kerdo index. Kerdo index is calculated by the formula: (1-diastolic blood pressure\Ps)x100. If the value is more than one, we talk about the predominance of sympathetic regulation of the autonomic nervous system. If the value is less than one, we talk about the predominance of parasympathetic regulation of the autonomic nervous system.

The adaptation cardio-vascular system potential according to Baevsky (1976) were assessed.

It measured: 0.0011(Ps) + 0.014(systolic blood pressure) + 0.008(diastolic blood pressure) + 0.009(weight) – 0.009(heigh) + 0.014(age) – 0.27.

*Table1*

**The adaptation cardio- vascular system potential according to Baevsky**

| Score | Adaptation level |
|---|---|
| 1,50-2,59 | satisfactory adaptation level |
| 2,6-3,09 | adaptation intensity |
| 3,1-3,6 | unsatisfactory adaptation level |
| <3,6 | adaptation failure |

Parents undergo standardized Vanderbilt questionnaire to determine the severity of ADHD symptoms in children.

Thus, the dominance of parasympathetic type was found only in (23,32±2,74%) cases, in the most of the children with ADHD (76,72±3,82)% the SNS prevalence was diagnosed according to the Kredo index (table 1), $p<0,05$.

The adaptation potential according to Baevsky assesment found that in most patients an unsatisfactory adaptation level (45,00±6.42)% was present, while a satisfactory adaptation level was recorded only in (8.33±3.57)% of cases, p <0.05, the adaptation intensity was noted in (40,00±6.32)% patients p <0.05, and the adaptation failure – in (6.67±3.32)% p<0.05.

According to the Vanderbilt questionnaire, ADHD occurs with a predominant attention deficit (46,67±6,44%, p< 0,05), with a predominance of impulsivity (25,00±5,59%, p< 0,05), as well as with hyperactivity (28,33±5,82%, p< 0,05). After analyzing the collected data, we obtained the following distribution. ADHD with attention disorder was recorded significantly more often than ADHD (46,67±6,44%, p< 0,05), with activity disorder and impulsivity, which can be explained by the sympathetic type of autonomic nervous system regulation predominance according to the data obtained using the Kerdo index.

The ADHD frequency in the studied group according to the gender, was also analyzed. The male predominance was found, that is confirmed by numerous scientific studies .

**Conclusions**

1. In the studied group of children with ADHD, attention disorder prevailed in the structure of the syndrome – (46.67±6.44)% over activity disorder (25.00±5.59)% and impulsivity (28.33±5.82)%, p<0.05.

2. In the structure of the ADHD males predominate was found (71,67±5.82)%, p<0.05.

3. The overwhelming majority of the children with ADHA showed the sympathetic type of autonomic nervous system predominance – (76,72±3,82)%, p<0.05.

4. There is a trend towards a decrease in adaptive capabilities, up to a breakdown of a cardio-vascular system adaptive capacity, according to Baevsky.

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