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NEUROLOGICAL STATUS IN AUTISM IN CHILDREN

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Abstract: The neurological status of children with childhood autism is characterized by the presence of scattered microsymptoms in the form of hyper or hypotonia, the establishment of pathological reflexes (asymmetry of tendon and periosteal reflexes), impaired speech development and social communication. Neurological symptoms were more pronounced in children with autism in the age group of 3-6 years and smoothed out, but did not disappear, at the age of 7-10 years. With the help of VB - MAPP, it was possible to reveal that the highest average score in patients with childhood autism was in the verbal communication subscale (3 points), which indicates the difficulty of social communication of children with childhood autism. Also, these children often have fear and nervousness. The lowest average score was in the subscale "non-verbal communication" and "use of objects" of 2.12 points. Otherwise, there were averages among all studied children with childhood autism. As a result, it was found that 92% of children have certain disorders in the neurological status.

Keywords : childhood autism, diagnosis, neurological status

Relevance: Childhood autism (CA) is one of the urgent health problems, determined by the frequency of autism in children - 4-26 per 10,000 children [3, 8], social significance and its insufficient study [2]. The frequency of CA is significantly higher than the official one, and 10% of mentally retarded children suffer from autism [4, 9].

CA refers to a group of disorders of psychological development, manifested by a violation in social interaction, a violation of sociability and imagination, a narrowing of interests and activity. Due to the complexity of diagnosing CA and the lack of knowledge about this anomaly, it is assumed that the incidence of diseases is much higher, and every tenth child with mental retardation suffers from CA [4, 9].

Clinical examination of children with CA should take into account not only the main clinical manifestations, but also concomitant neurological pathologies, since brain pathologies are the causes of both [1, 3, 7]. Neurological disorders in CA children often manifest themselves "... in the form of slow and disharmonious early psychomotor development, sensory perception or processing features, rigidity and monotony of motor and mental reactions, motor disinhibition and increased excitability, motor stereotypes, coordination pathologies, praxis disorders and expressive motor skills, developmental speech disorders and pathology of articulation, tics and epilepsy" [6, 8].

The motor skills of children with CA are characterized by imperfection and disharmony of movements, previously called "motor debility", "motor infantilism", "frontal motor insufficiency" [1, 3]. According to some authors, in autism, muscular dystonia, unusual gait (walking on toes), difficulty in maintaining balance, coordination and complex movements are stated. Stereotypic or repetitive movements are included in the diagnostic criteria for CA. [5, 8].

Thus, neurological disorders are among the characteristic comorbid disorders in autism. Following the slow and disharmonious early psychomotor development in children with autism, a peculiar spectrum of movement disorders expressed to varying degrees and violations of the formation of higher mental functions is formed. Their identification is of great importance in determining the tactics of providing comprehensive care to patients with autism spectrum disorders.

Purpose of the study: studying the features of the neurological status of children with autism.

Materials and methods of research : to achieve the goal and solve problems, the following groups were formed. The control group consisted of 35 children comparable with the main group in terms of gender and age, attending educational institutions and not having autistic disorders (Table 1).

Table 1
Distribution of children with CA by sex and age, abs . (%)

age	Control group n =35		Asperger's syndrome n = 72		Kanner syndrome n =76	
3-6 years old	22	62.9	38	52.8	44	57.9
7-10 years old	13	37.1	34	47.2	32	42.1
boys	20	57.1	50	69.4	50	65.8
girls	15	42.9	22	30.6	26	34.2

The main group consists of two subgroups: the group with Asperger's syndrome (72 children) and the group of children with Kanner 's syndrome (76 patients).

The diagnosis of CA in the study groups was determined using the DSM-V criteria for diagnosing autistic disorder. To reliably confirm the diagnosis of DA, at least 8 of the listed 16 signs must be present, with 2 signs from group A, 1 - B and 1 - C.

The exclusion criteria from the above groups were: current organic lesions of the central nervous system (CNS); hereditary metabolic disorders (phenylketonuria, tyrosinemia, hyperglycuria, etc.); chromosomal diseases; other (other) autism spectrum disorders.

The severity of autistic manifestations was determined by the Childhood autism Rating Scale - CARS (Schopler E. et al., 1988). The dynamics of CA manifestations was assessed using the CARS scale, which consists of 15 blocks. Each indicator was compared with the age norm and behavioral characteristics were evaluated. The severity of autism in children consisted of the sum of the scale points, so 15-29 points is the norm, 30-36 is mild / moderately severe autism, 37-60 is severe autism.

The data obtained were subjected to statistical processing on a personal computer using the EXCEL package programs, using a library of statistical functions. Differences in mean values were considered significant at a significance level of $p < 0.05$. At the same time, the existing guidelines for statistical processing of the results of clinical and laboratory studies were followed.

Results of the study : a burdened family history of mental and degenerative diseases proves the genetic predisposition to autism (Table 2). From the presented data, it can be seen that the frequency of hereditary burden in children with CA for mental illness occurs 3.7 times more often than in the control group ($p < 0.05$).

Table 2

Percentage of detectability of mental and degenerative diseases of the CNS in relatives of the examined children, abs . (%)

Groups	No burden		burdened			
			mental illness		degenerative diseases	
	n	%	n	%	n	%
Control, n = 35	30	85.7	3	8.6	2	5.7
Main, n = 148	96	64.9	47	31.8*	5	3.9

Note: * - reliability of data between groups ($p < 0.05$)

On the part of the cranial nerves - insufficiency of cranial innervation in the form of asymmetry and smoothness of the nasolabial folds, asymmetry of the palpebral fissures, deviation of the tongue from the midline, etc; violation of convergence and accommodation was in 15.6% of children, smoothness and less mobility of the nasolabial fold: right - in 17.2% of children, left - 12.4% of children; deviation of the tongue from the midline in 2% (most children refuse to follow this instruction), bulbar and pseudobulbar symptoms were not detected, but in 14% of children there was a long-term retention of food in the mouth with a preserved swallowing reflex.

Dissociation of tone, pathological reflexes, coordination disorders were in 35.5-41.1% compared with the clinical comparison group of 9.1%.

Neurological symptoms were more pronounced in children with autism in the age group of 3-6 years and smoothed out, but did not disappear, at the age of 7-10 years.

In the structure of neurological pathology (Table 3), we considered individual neurological syndromes, such as peripheral cervical insufficiency, muscular dystonia syndrome, pyramidal - extrapyramidal insufficiency syndrome, enuresis and other syndromes (tics, convulsive syndrome, hypertensive-hydrocephalic syndrome).

Table 3

Structure of neurological syndromes (% of the total number of children with these diseases), abs . (%)

Nosological forms	Control group (n =35)		Asperger's Syndrome (n =72)		Kanner syndrome (n =76)	
Peripheral cervical insufficiency syndrome	2	5.7	14	19.4*	16	21.1*
Syndrome of muscular dystonia	5	14.2	18	25.0	22	28.9*
Pyramidal, extrapyramidal symptoms	2	5.7	12	16.7*	14	18.4*
Enuresis	1	2.8	6	8.3*	6	7.9*
Sleep disorders	2	5.7	30	41.7*	42	55.3*
Other syndromes	5	14.2	4	5.6*	6	7.9*
No CNS pathology	25	71.4	6	8.3*	8	10.5*

Note: * - differences are statistically significant at $p < 0.05$.

It was found that in children with Asperger's and Kanner 's syndromes, the frequency of sleep disorders (dyssomnias, insomnias, somniloquia, somnambulism, nightmares) is significantly ($p< 0.05$) higher - 41.7% and 55.3%, respectively.

It is also noted that the percentage of children who do not have pathological changes in the CNS is statistically significantly ($p < 0.05$) lower compared to the control (71.4%, versus 8.3%).

Summarizing the data obtained, it can be concluded that only 9% of children with autism did not have CNS pathology, while in the control group this figure was 71.4%.

Neuropsychological disorders of the higher brain functions in children with CA are shown in Fig. 1.

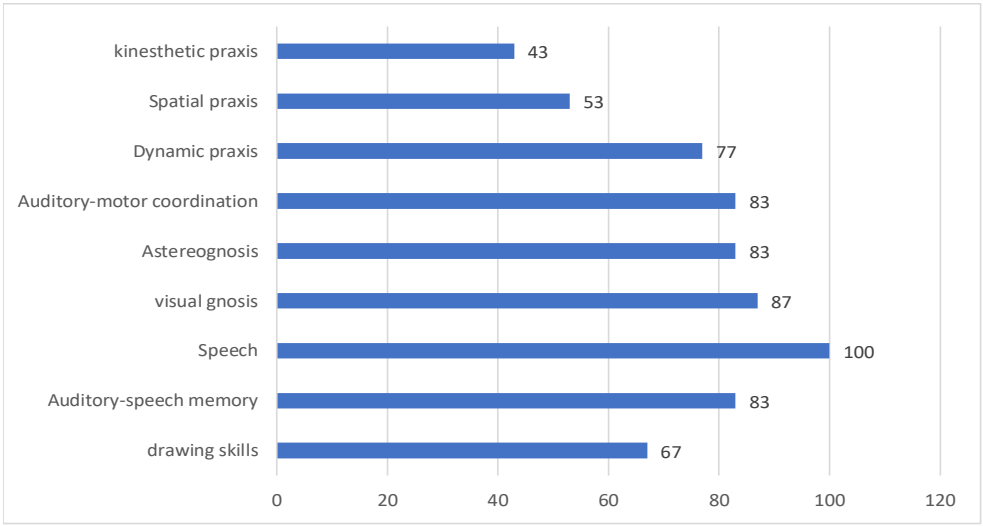

Fig 1. Impairments of cognitive functions in the studied children with autism

Speech disorders occurred in 100% of cases in both groups, with auditory gnosis, astereognosis, auditory-motor coordination and dynamic praxis predominating (87 % , 83%, 83% and 77%, respectively). Violation of drawing and hearing -speech memory occurred in 67% and 83%, respectively.

With the help of VB - MAPP children with CA were tested. As we see, in Fig. 2. The highest average score in patients with CA was in the subscale "verbal communication" (3 points), which indicates the difficulty of social communication of children with CA. Also, these children often have fear and nervousness. The lowest average score was in the subscale "non-verbal communication" and "use of objects" of 2.12 points. Otherwise, there were averages among all the studied children.

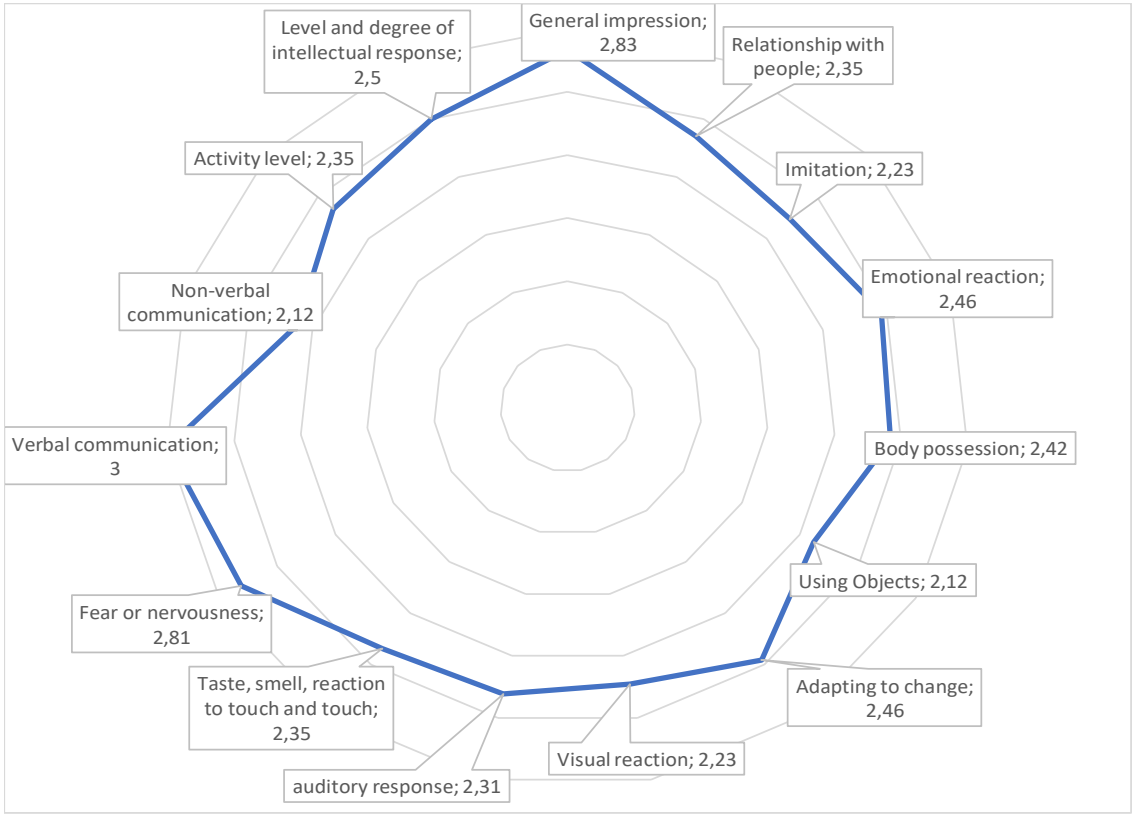

Fig. 2. Assessment of the state of children with CA by subscales CARS

In children with CA, 79.7% of children had a moderate degree of autism and was in the range of 35-37 points, 30 children (20.3%) had a severe degree of autism, they were older.

Based on the foregoing, we can assume that, according to our results, these syndromes (pyramidal, extrapyramidal insufficiency syndrome, muscular dystonia syndrome, enuresis, and others) may be the result of a fairly high frequency of subclinical forms of damage to the central nervous system in the perinatal period.

Conclusions:

1.Neurological symptoms in children with CA are characterized by the presence of scattered microsymptoms in the form of hyper- or hypotonus, the establishment of pathological reflexes (asymmetry of tendon and periosteal reflexes), impaired speech development and social communication.

2.Neurological syndromes (pyramidal, extrapyramidal insufficiency syndrome, muscular dystonia syndrome, enuresis, etc.) detected in children with autism are the result of a fairly high frequency of subclinical forms of damage to the central nervous system in the perinatal period.

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