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FEATURES OF NEUROLOGICAL DISORDERS IN CHILDREN WITH SPEECH DEVELOPMENTAL DISORDERS

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ABSTRACT

Problems of speech pathology in children attract the attention of doctors, speech therapists and psychologists due to the high prevalence of these disorders and the importance of speech function in the mental development of the child. The result of impaired speech development is the difficulty or impossibility of a child's education in a comprehensive school.

In this regard, the formation of speech in children is a necessary factor for social adaptation and learning. Despite the numerous studies, there are no exact criteria for the early diagnosis of speech development disorders, questions of etiology and pathogenesis have not been resolved, methods for predicting the course and rehabilitation of children with speech development delays require further development, and the features of speech development delays for various variants of comorbid neurological disorders [4].

Delayed speech development in children, if adequate therapeutic and rehabilitation measures are not carried out in a timely manner, may in the future lead to a decrease in the intellectual potential of the nation.

KEYWORDS: *delayed speech development, neurological disorders.*

PURPOSE

To study of clinical and neurological characteristics in children with speech developmental disorders.

MATERIALS AND METHODS

A total of 95 children aged 3 to 6 years were under clinical observation. Of these, 55 were children with speech development disorders of organic origin and 40 were children with speech development disorders of the type of general speech underdevelopment. To characterize the state of the central nervous system, data from the neurological status of the examined patients were used. Registration of total bioelectrical activity of the brain (EEG) was carried out using a computer encephalograph.

RESULTS

The reason for patients to turn to a specialist was complaints of lack of speech, disruption of the stages of psycho-speech development, as a result of which a speech development disorder was identified in these patients. All patients underwent routine clinical and neurological examination, EEG and MRI of the brain.

Factors contributing to the formation of speech development disorders include asphyxia during childbirth (29.7%), pathology of pregnancy (28.5%), prematurity (21.2%), infectious and viral diseases of the mother during pregnancy (15.5 %), hemolytic disease of newborns (6.7%), birth injury of the cervical spine (5.8%).

At the same time, the majority of children with speech development disorders had diffuse organic neurological symptoms, as well as central insufficiency of the VII and XII pairs of the cranial nerve, anisoreflexia, and revitalization of tendon reflexes. When examining the medical history, signs of perinatal damage to the nervous system were revealed in 48 (85%) patients.

In accordance with the results obtained, in children with speech development disorders aged 2-5 years, the maximum for the P1 component was recorded in the occipital region. At the same time, in children of group I, registration of the maximum P1 component was detected in the right hemisphere, and in children of group II it was found in the left region of the brain. In children one year of age with speech developmental disorders, two maximum amplitude values of the N1 component were present in the frontal and left occipital regions. In addition, an asymmetry in the formation of the N1 component was found in these brain regions.

Consequently, when studying survey data, a wider display of interhemispheric connections was found in the group of children with speech developmental disorders compared to children without speech developmental disorders.

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Table. 2

Characteristics of the state of bioelectrical activity of the brain in the study groups (%)

EEG data	1 group, n=55	2nd group, n=40
Delayed maturation	40,0	8,5
Diffuse changes	30,0	8,2
Focal changes	25,0	4,2
Paroxysmal activity	10,0	1,4
Epileptiform activity	15,0	1
Variant of the age norm	0	10

Note. * - pvalue<0.001; ** - significant EEG differences between groups (p <0.001).

In 69.6% of patients, bilateral asymmetry and asynchronization of the EEG were detected and a wide range of changes in regulatory and organic origin of mild to moderate severity was diagnosed. A variant of the age norm was noted in 10% of patients in group 2. The EEG data obtained in children with speech development disorders indicate that children show more significant changes in the bioelectrical activity of the cerebral hemispheres than children in the healthy group.

Characteristic were significant diffuse changes in the bioelectrical activity of the brain, with a predominance of the organic nature of the changes. There was a delay in the formation of the age-related rhythm. Focal changes are represented in 25% of children in group 1, 4.2% in group 2, mainly with bursts of slow wave activity.

Table. 4

MRI in the examined groups, %

MRI data	1group, n=55	2 group, n=40
Expansion of the subarachnoid spaces	61,1	1,7
Ventriculomegaly	61,1	1,7
Focal lesions of white matter and basal ganglia	27,9	7,3
Periventricular changes	16,8	4,7
Anomaly of development	2	0

In children with speech development disorders, in most cases we observed expansion of the subarachnoid spaces (61,1%), ventriculomegaly (61,1%). The incidence of these changes in children of group 1 was 91.7% and was significantly higher (p>0.01). In 27.9% of children in group 1 and 7.3% in group 2, focal lesions of the white matter and subcortical areas were detected. In our study, 2% of cases of developmental anomaly were identified in children with speech development disorders, which characterizes a disorder in the maturation of nervous tissue in children against the background of intrauterine lesions.

CONCLUSIONS

An in-depth examination of children with speech development disorders using clinical, neurological, and neuroimaging studies makes it possible to determine the structure of various factors that lead to speech development disorders and influence the further course of the disease.

LITERATURE

1. *Joon S.Y, Park Y.A., Bong J.P., et al. Predictive value of neutrophil to lymphocyte ratio in first-time and recurrent idiopathic sudden sensorineural hearing loss // Auris nasus larynx. – 2015. – Vol. 42. – P. 438-442.*
2. *Puig T. Universal neonatal hearing screening versus selective screening as part of the management of childhood deafness / T. Puig, A. Municio, C. Meda //Cochrane Database Syst. Rev. - 2005.-№2.- P.31 -37.*
3. *Quintos M.R. Newborn hearing screening using the evoked otoacoustic emission: The Philippine General Hospital experience / M.R. Quintos, P.F.Isleta, C.C. Chiong [et al.] // Southeast Asian J. Trop. Med. Public. Health. -2003.-Vol.34.-№3.- P.231 -233.*
4. *Ramenghi L.A. Traditional nuclear magnetic resonance / L.A. Ramenghi //Pediatr. Med. Chir. - 2002.-Vol.24.-№6.- P.435 -439.*
5. *Ranee G. Hearing threshold estimation in infants using auditory steady-state responses / G. Range, R. Roper, L. Symons [et al.] // J. Am. Acad. Audiol. - 2005.-Vol. 16.-№5.- P.291 -300.*
6. *Rouev P. Universal newborn hearing screening program in Bulgaria /P.Rouev, H.Mumdzhiev, J. Spiridonova [et al.] // Int. J. Pediatr. Otorhi- nolaryngol. - 2004.-Vol.68.-№6.- P.805 -810.*
7. *Rutherford M. The role of imaging / M. Rutherford // Pediatr. Med. Chir. - 2002.-Vol.24.-№6.- P.470 -474.*
8. *Sano M. Sensorineural hearing loss in patients with cerebral palsy after as-phyxia and hyperbilirubinemia / M. Sano, K. Kaga, E. Kitazumi [et al.] // Int. J. Pediatr. Otorhinolaryngol. -2005.-Vol.69.-№9.-P.1211 -1217.*
9. *Santiago-Rodriguez E. Auditory steady-state responses in infants with peri-natal brain injury / E. Santiago-Rodriguez, T. Harmony, M. Bernardino [et al.] // Pediatr. Neurol. - 2005.-Vol.32.-№4.- P.236 -240.*
10. *Savman K. Cytokine response in cerebrospinal fluid from preterm infants with posthaemorrhagic ventricular dilatation / K.Savman, M. Blennow, H.Hagberg [et al.] // Acta Paediatr. - 2002.-Vol.91.-№12.- P.1357 -1363.*
11. *Shankaran S. Whole-body hypothermia for neonates with hypoxic-ischemic encephalopathy / S. Shankaran, A.R. Laptook, R.A. Ehrenkranz [et al.] //N.Engl. J. Med. - 2005.-Vol.353.-№15.- P.1574 -1584.*
12. *Shapiro S .M. Definition of the clinical spectrum of kernicterus and bilirubin- induced neurologic dysfunction (BIND) / S.M. Shapiro // J. Perinatol. - 2005.- Vol.25.-№1.- P.54-59.*

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13. *Sharma A, Dorman MF, Spahr AJ. A sensitive period for the development of the central auditory system in children with cochlear implants: implications for age of implantation - Ear Hear. 2010 Apr;31(2):166-85. doi: 10.1097/AUD.0b013e3181c8e7b6.*
14. *Smith C.M. Auditory brainstem response detects early bilirubin neurotoxic¬ity at low indirect bilirubin values / C.M. Smith, G.P. Barnes, C.A. Jacobson [et al.] // J. Perinatol. - 2004.-Vol.24.-№11.- P.730 -732.*
15. *Stueve M.P. Estimation of hearing loss in children: comparison of auditory steady-state response, auditory brainstem response, and behavioral test methods / M.P. Stueve, C. O'Rourke // Am. J. Audiol. - 2003.-Vol.l2.-№2.- P.125 -136.*
16. *Suzuki N. Relation between predischarge auditory brainstem responses and clinical factors in high-risk infants / N. Suzuki, H. Suzumura // Pediatr. Int. - 2004.-Vol.46.-№3.- P.255 - 263.*