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Electroencephalography in the Diagnosis of Symptomatic Epilepsy in Patients with Infantial Cerebral Palsy

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Abstract: In the structure of the incidence of the nervous system in children, one of the leading places is occupied by cerebral palsy (ICP). This disease combines a group of syndromes that occur as a result of brain damage in the early stages of ontogenesis and are manifested by the lack of the ability to maintain a normal posture and perform voluntary movements.

Keywords: cerebral palsy, neurological, literature data, EEG monitoring, children differs significantly.

The urgency of the problem. In the structure of the incidence of the nervous system in children, one of the leading places is occupied by cerebral palsy (ICP). This disease combines a group of syndromes that occur as a result of brain damage in the early stages of ontogenesis and are manifested by the inability to maintain a normal posture and perform voluntary movements [1,4,5]. The frequency of cerebral palsy in Uzbekistan, according to various authors, is 5.0-6.0 per 1000 newborns, in Russia it is 2.5-5.9 per 1000, in European countries - 1.4-3.0 per 1000, in the USA - 3 .0-5.1 per 1000 with a predominance among sick boys in the ratio of 1.9:1.0 [3,6,7,9,12].

Cerebral palsy is not only serious and persistent impairment of motor functions, but also a whole range of neurological and somatic problems, the most important of which is symptomatic epilepsy (SE). According to the literature data, about 1/3 of patients with cerebral palsy suffer from SE [4,8,10,12].

An electroencephalographic (EEG) study is the main method for testing epilepsy and epileptic syndromes. Based on the EEG pattern, one can judge the presence of an epileptic process, the depth of its location, and also judge the effectiveness of ongoing anticonvulsant therapy as a result of dynamic repeated EEG monitoring. However, all these advantages of EEG are difficult to use in childhood, since the EEG in children differs significantly from that of adults. The fact is that the maturation of the bioelectrical activity of the brain and brain biorhythms is very closely related to the maturation of the morphofunctional structures of the brain itself. The presence of epilepsy further aggravates the course of the disease and worsens the quality of life of patients. Data on the frequency of convulsive syndrome and epilepsy in children with cerebral palsy are contradictory: from 12% to 90% [1,2,7,11]. These circumstances indicate the continuing relevance of the study of epilepsy in patients with cerebral palsy.

The purpose of the study was to give a comprehensive clinical and electrophysiological characteristics of cerebral palsy in combination with SE.

Material and research methods. The work is based on the results of neurophysiological studies of 250 patients with cerebral palsy who were treated in the pediatric neurology departments of the Republican Children's Psychoneurological Hospital named after A. Kurbanov. Patients, depending on the presence or absence of SE, were divided into two groups: the 1st main group - 150 patients with cerebral palsy with SE, the 2nd comparison group - 100 patients with cerebral palsy without epilepsy aged 3 to 12 years. All children underwent routine EEG. The studies were carried out on

encephalographs "Encephalan 131-03" (Russia), "Mizar" with an international system for applying cup electrodes "10-20" and a sweep speed of 30 mm/sec. When evaluating the EEG, the (2001) International Classification of EEG Disturbances was used.

Results of the study and their discussion: The significance of differences in the frequency of occurrence of changes in the EEG between patients of the studied groups was made according to the Mann-Whitney U-criteria.

Table 1. Frequency of EEG changes in patients with cerebral palsy

EEG signs	cerebral palsy and SE (n=150)	cerebral palsy without SE (n =100)	P
Regional epileptiform activity	70 (46,7%)	4 (4,0%)	<0,001
Generalized epileptiform active. activeactiveactive	6 (4,0%)	-	0,705
Slow down background active activity	26 (17,3%)	32 (32,0%)	0,166
Intermittent regional slowdown in activity	4 (2,7%)	48 (48,0%)	<0,001
Hypsarrhythmia	16 (10,7%)	-	0,314
Secondary bilateral synchronization	10 (6,7%)	-	0,529
Continued regional slowdown	-	16 (16,0%)	0,131
Slow wave sleep status	2 (1,3%)	-	0,900
Regional epiactivity amid slowdown	16 (10,6%)	-	0,314

The reliability of differences in the frequency of occurrence of changes in the EEG between patients of the studied groups shows that in the first group (cerebral palsy with SE) there was a significant predominance of regional epileptform changes, in the second (cerebral palsy without SE) - the predominance of periodic regional deceleration.

In 100 (66.7%) observations of the main group, various types of epileptiform activity were registered. Almost half of the 70 cases (46.7%) had regional epileptiform activity. Pathological complexes "acute - slow wave", "peak - slow wave", regional and multiregional high-amplitude groups of theta and delta waves were registered. In 16 (16.0%) in the second group of patients, continued regional delta slowdown was noted in combination with the activity of "acute - slow wave".

The described changes were noted in the anterior-frontal, frontotemporal, temporo-occipital and parietal-temporal leads, according to the type of epilepsy. Often, in 54 (36%) patients, a combination of regional epileptiform activity with a pronounced slowing of the cortical rhythm was observed. In most cases, these changes were recorded in patients with severe forms of symptomatic partial epilepsy in combination with double hemiplegia and hemiplegic forms of cerebral palsy. Subclinical regional epileptiform activity was detected in 4 (44%) children from the comparison group. Hypsarrhythmia was revealed in 16 (10.7%) children in the main group. These were patients with a history of severe infantile epileptic encephalopathies (West syndrome). In 2 patients with Otahara's syndrome, the "flash-depression" phenomenon was registered.

Primary generalized epileptiform activity "peak - slow wave" occurred in 6 (4.0%) patients from the study group - mainly with idiopathic generalized epilepsy in combination with spastic diplegia. Secondary generalization of regional epileptiform activity was noted in 28 (11.3%) children with registered focal epileptiform activity. An isolated slowdown in background activity was noted in 26 (17.3%) children of the main group and in 32 (32.0%) children of the comparison group. Of these, a moderately pronounced slowdown in the main activity of I-II degree was registered in 10 (6.7%) children of the main group. Roughly expressed changes in the form of a general slowdown in the

cortical rhythm indicated a delay in the functional development of the brain. These changes occurred in 5 (6.6%) children of the main group and in 18 (18.0%) children of the comparison group.

Periodic regional slowdown significantly prevailed in 48 (48%) patients of the comparison group. Periodic theta and delta waves were recorded in the affected hemisphere of the brain with a high index. In the main group, 14 (18.6%) patients showed continued slowdown in the affected hemisphere of the brain. The described interhemispheric asymmetries in the form of a partial reduction of the cortical rhythm and its exaltation were characteristic of children with hemiplegic cerebral palsy at the age of 3 years.

Follow-up observation from 3 to 5 years allowed us to trace the dynamics of electrophysiological patterns in 206 (82.4%) children. During the observation period, EEG studies were performed for each child 4-5 times. In the presence of epileptiform activity in the first study, it could subsequently change its shape, but, as a rule, did not disappear even against the background of ongoing antiepileptic therapy. In addition, it was noted that epileptiform changes usually increased with age. In observations without epileptiform manifestations, pathological nonspecific changes increased in dynamics, which usually correlated with the severity of the disease. Against the background of an unfavorable clinical course of epilepsy, the EEG showed a gradual spread of epileptic patterns with the formation of "mirror" and secondary independent foci of epileptiform activity.

In children whose EEG recorded relatively intact forms of cortical rhythms or showed a mild delay in electrogenesis, a positive trend was observed, manifested in the formation of the main cortical rhythms and the disappearance of regional asymmetries. These were mainly patients with mild spastic diplegia and mild hemiparesis in combination with or without idiopathic epilepsy.

Conclusion. EEG retains a leading role in the diagnosis of epilepsy in cerebral palsy. In prognostic terms, a stable EEG picture, the formation of an alpha-like rhythm in young children indicate a relatively favorable prognosis. On the contrary, a gross slowdown in the background rhythm, high-amplitude generalized activity, hypsarrhythmia, as well as a combination of regional epileptiform activity with a pronounced functional delay in electrogenesis are unfavorable EEG signs and correlate with the severe course and poor prognosis of this disease.

Bibliography:

1. Айкарди Ж. Заболевание нервной системы у детей / Пер. с англ. Проценко Т.С., Барашкова С.В., под общ. ред. Скоромца А.А. - Т.1. – М.: БИНОМ-Издательство Панфилова, 2013. - 568 с.
2. Артыкова М.А. Клинико-анамнестические факторы риска развития симптоматической эпилепсии при детском церебральном параличе//Детская и подростковая реабилитация. Москва, 2014. - №2(23).–С.33-36.
3. Артыкова М.А., Набиева Н.А. Электроэнцефалографические особенности детей с церебральным параличом и эпилепсией //Журнал неврологии и нейрохирургических исследований, - Самарканд, 2020, №1(01) С.34-39.
4. Артыкова М.А., Валиев Н.А. Клинико-морфологические особенности развития симптоматической эпилепсии при детском церебральном параличе//Журнал теоретической и клинической медицины. Ташкент.-2022. -№3. -С.79-84.
5. Набиева Н.А. Генетические аспекты развития детского церебрального паралича и симптоматической эпилепсии. //Журнал теоритической и клинической медицины. Ташкент.-2022. -№3. -С.84-89.
6. Taylakova D. I., Avezova S. M. The prevalence of systemic hypoplasia of hard tooth tissues in children and the analysis of anamnestic data. Conducting secondary prevencion //Journal of Biomedicine and Practice. – 2020. – Т. 2. – №. 5. – С. 72-87.
7. Mukhsinova L. A., Sharopov S. G. Immunological status in sick children with congenital cleft upper lip and palate //Euro-Asia Conferences. – 2021. – Т. 4. – №. 1. – С. 135-136.

8. Petrukhin, A.S. Risk factors and early manifestations of individual forms of cerebral palsy at different gestational ages / A.S. Petrukhin, N.S. Sozaeva // Kazan medical journal. -2010. -T. 91, No. 2.-S. 180-186.
9. Aronson E., Stevenson S. B. Bone health in children with cerebral palsy and epilepsy // J. Pediatr. Health Care. – 2012. - Vol. 26, N 3. – P. 193–199.
10. Artykova M.A. Morphological changes in children with cerebral palsy with symptomatic epilepsy//European science Rewiev журнал. - Австрия, 2016. - №7-8. – P. 49-51.
11. Nabieva N. A., Artykova M.A. Possibilities of Magnetic Resonant Spectroscopy in the Diagnostics of Epilepsy in Patients with Cerebral Palsy// American Journal of Medicine and Medical Sciences 2020, 10(6): 388-392.
12. Woolfenden S., Galea C., Smithers-Sheedy H., Blair E. at all. Australian Cerebral Palsy Register Group; CP Quest. Impact of social disadvantage on cerebral palsy severity // Dev. Med. Child. Neurol. - 2018.
13. Уринов М. Б., Ахророва Ш. Б., Рахматова С. Н. Сроки восстановления лицевого нерва при параличе Белла в зависимости от стороны поражения и пола //Психическое здоровье. – 2014. – Т. 12. – №. 10. – С. 67-69.
14. Urinov M. B., Gafurov B. G., Rasprostanennost I. Genderniye osobennosti ideopaticheskix form prozoplegicheskix I prozopalgicheskix sindromov //Nevrologiya". Tashkent. – 2019. – Т. 4. – №. 80. – С. 52-53.
15. Ахророва, Ш. Б., Рахматова, С. Н., & Уринов, М. Б. (2016). Опыт лечения больных с невропатиями лицевого нерва с применением препарата Nucleo CMF forte. *Вестник Совета молодых учёных и специалистов Челябинской области*, *1*(1 (12)), 20-23.
16. Fayzullayevich, S. S., Hikmatovna, K. S., Khasanovna, M. M., & Ul´yanovna, S. G. (2018). Immune status in patients with duodenal ulcer and influence on her immunomodulatory therapy. *European science review*, (9-10-2), 161-163.
17. Isroilovich A. E. et al. The Role and Importance of Gliah Neurotrophical Factors in Early Diagnosis of Parkinson Disease //Texas Journal of Medical Science. – 2022. – Т. 5. – С. 1-6.
18. Abdukodirov E. I., Khalimova K. M., Matmurodov R. J. Hereditary-Genealogical Features of Parkinson's Disease and Their Early Detection of the Disease //International Journal of Health Sciences. – №. I. – С. 4138-4144.