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Structural causes and prevalence of neurosensoral hearing loss in children in Samarkand region

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Abstract *- According to the WHO, hearing loss occurs in 3% of children, of which 0.03% are children with severe and profound sensorineural hearing loss. Persistent hearing impairment in children is a serious problem for the child population. Chronic sensorineural hearing loss in children is the focus of many researchers. The factors affecting the organs of hearing of a growing organism do not decrease; in modern conditions, they acquire more and more importance (l). The vast experience of complex therapy for hearing loss in children has a character of insufficient effectiveness, which predetermines the search for new non-drug methods of treatment, the development of new approaches to the social adaptation of children with hearing loss. Hearing impairment of a child leads to impaired speech and mental development. Early diagnosis of hearing disorders and adequate rehabilitation can prevent a child's psycho-speech deviation (l).*

Keywords: *Hearing impairment, otoacoustic epilepsy, primary prevention.*

INTRODUCTION

Data on the prevalence of mild and moderate hearing loss require clarification, this is due to the late treatment of parents of children with this pathology, such changes are usually first detected at the age of 3-7 years (with the placement of children in kindergartens or schools). The most difficult is the diagnosis of children with hearing impairment. At an early age of children under 3 years of age, the clarification of the hearing threshold, it is difficult to conduct a total threshold audiometry (l). It is believed that the most reliable research methods is the use of objective research methods (registration of otoacoustic epilepsy and various classes of auditory evoked potentials). Having spent the bulk of research on the diagnosis and treatment of children with hearing loss, they forget about preventing the disease. Primary prevention prevents the very occurrence of the disease, the elimination of risk factors for deafness (genetic examination of parents, timely vaccination of children against rubella, refusal of ototonic drugs). Secondary prevention, detection of the disease in the early stages, when it is asymptomatic, and timely treatment can stop its development. Tertiary prevention of hearing impairment is focused on preventing the deterioration or complication of the disease, for example, chronic suppurative otitis media, leads to the progression of mixed hearing loss in them and often the occurrence of neurological complications (l). The correct level of prevention of hearing impairment in children, and rehabilitation will reduce the number of children with speech changes. In the literature, there are isolated works devoted to the study of the influence of etiological factors leading to hearing loss or deafness on the course of the disease. The lack of a detailed picture, as a result, leads to the impossibility of predicting diseases, and as a result, the rehabilitation program for a child with a hearing impairment either does not take into account, or does not sufficiently take into account possible prognostic changes on the part of the hearing organ and other functional systems. Identification of etiological factors significantly increases the likelihood of a child's development of hearing impairment associated with damage to other organs and functional systems, then the network of the formation of a complex developmental defect, suggesting a primary violation of body systems in a child with a complex of secondary disorders, this is the so-called complex developmental defect, a combination of neuropsychiatric disabilities (l). Accordingly, the analysis of the prevalence and structure of the causes of the development of severe and profound chronic sensorineural hearing loss in children

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is considered an important point in the medical and social problems of the upbringing, education and adaptation of children in modern conditions.

Aim. Study of the structural causes of hearing loss in children

Material and research method.

Children of preschool and school age, who are registered in children's outpatient clinics, on inpatient treatment in 1 clinic of the SamMI Department of Pediatric Neurology and Otorhinolaryngology, were subject to examination. The study was conducted from 2018-2020. In total, 4659 children with hearing loss and speech impairment were under observation, with 3123 children of the Samarkand region with deaf-and-dumbness, of this number of children, on the basis of the sample, 160 children were examined, 60 children under the age of 5, 100 children aged 5-14 years. There were 78 boys, 82 girls from the entire contingent of children. The study included collection of anamnesis by family affiliation, by the period of prenatal and perinatal life of the child, clinical and neurological examination, examination by an otorhinolaryngologist. From instrumental studies, audiometry, neuroimaging (CT / MRI), neurosonography, echoencephalography, electroencephalography carried out according to classical methods.

The audiological study was carried out taking into account the age characteristics of children. Preschool children were surveyed using a game technique. In older children, the study was carried out by the method of tonal threshold audiometry. According to the indications, the children underwent a study of short-latency auditory evoked potentials and a computer audiogram to clarify the degree of damage to the auditory analyzer. If necessary, the children were examined and consulted with a speech therapist and a psychologist. Statistical data were calculated on an individual computer.

Research results.

To identify the factorial causes of hearing loss in children, an analysis of the examination of children was carried out using data from the anamnesis of the disease of children, a questionnaire survey of parents. Based on the data, it can be seen that the structure of chronic sensorineural hearing loss in children depended on various reasons. In the first place should be noted the pathology of pregnancy 44% of all cases of hearing loss and childbirth 21%. Hereditary predisposition in 10% of cases. In a smaller percentage, cases of causes of prematurity of the fetus were noted 8%. The consequence of the transferred neuroinfection (viral encephalitis and meningoencephalitis) is 9%. Hearing loss occurred in 3% of children with the consequences of traumatic brain injury. Examination of children with hearing loss of unclear etiology, despite a thorough examination, turned out to be 5%. If we consider the causal factor features in the context of each separate etiological moment, then the period before the birth of the child turned out to be the most unfavorable. Premature birth 17%, fetopiacellular insufficiency 6%, intrauterine fetal hypoxia associated with intrauterine infection of the mother (TORCH infection). The internatal period turned out to be burdened, due to prolonged labor, a large fetus, a functional narrow pelvis, weakness of labor. In such cases, they were born in asphyxia with a score on the Angar scale from 4 to 7 points, in cases where the children received a birth trauma, the scale was below 4 points, and in the anamnesis the children received resuscitation measures on the Sipap apparatus for a long time. Hemologic disease of the newborn, noted in 23%. All these disorders to one degree or another formed a complex complex of neurological disorders, mainly of central origin. Syndromes of damage to the central nervous system were manifested mainly of ischemic-hypoxic nature. The most common of all syndromes are presented in the form of hypertensive-hydrocephalic syndrome 33%, neonatal excitement syndrome 25%, and neonatal depression syndrome 23%, convulsive syndrome was noted in 3 patients. In the context of a separate diagnosis in children with organic lesions of the central nervous system, infantile cerebral palsy was diagnosed in 11% of children, the forms of cerebral palsy were different, the hyperkinetic form was 6% to a greater extent, pyramidal disorders are more tetroparesis in combination with microcephaly, minimal cerebral dysfunction was found in 14 % cases. This examination prompted the need to register the

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bioelectrical activity of the brain. So gross organic errors were noted in 41% of children, in 50% of cases, diffuse changes in bioelectrical activity, epileptic activity in 9% of cases. In 20% of children on the EEG, epileptiform activity in the deep parts of the brain was clearly recorded, the island-wave activity in the occipital zones of the brain was in a smaller percentage of 7%, the rest of the children showed a normal EEG. Thus, electroencephalography gives changes in children with hearing loss only in case of hearing loss against the background of organic brain damage. Neuroimaging indicators are identical, there are no signs of structural changes on MRI, if the question is about hearing loss without organic brain diseases. In the examined children with a history of perinatal disorders, periventricular leukomalacia was determined as a result of hypoxic lesions of the brain in 18.1% of cases, and an arachnoid cyst in the temporal region in 2 patients. The data of audiogram indicators in a wide variety, in children with III-IV degrees of sensorineural hearing loss, air conductivity at the level of 80-83 dB, bone conduction with a purity of up to 500 Hz were at the level of 60 dB. The overwhelming majority of audiogram studies were descending, with the bone conduction curve repeating the air conduction curve. As a result, on the basis of audiometry, hearing loss corresponded to grade II in 30% of cases, in grade III-IV to 70%. As you can see, the main group of children with hearing loss consisted of children with severe III-IV degrees and how, as the scientific literature confirms, chronic sensorineural hearing loss is considered with clinical and neurological disorders and polyetiological reasons. Prevention, according to the analysis of the survey, can be achieved by improving the health of women of fertile age, by the correct management of pregnancy and childbirth.

Conclusion. Hearing impairment in children is very diverse in the structure of causes, with a predominance of pregnancy pathology, mainly infection; difficult childbirth; hereditary predisposition, accompanied by damage to the auditory analyzer; the consequence of neuroinfections in early childhood. Evaluation and correct approach to the analysis of the studied children with hearing loss will serve as a prevention of the possibility of practical-factor processes of hearing loss.

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