



INCLUSIVE REHABILITATION PROGRAMS FOR CHILDREN WITH HEARING IMPAIRMENTS

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Abstract

This article presents the features of auditory-speech perception and speech development of hard-of-hearing and deaf children using modern means of hearing prosthetics – cochlear implants. The conditions favorable for the education and upbringing of children with cochlear implants are considered. Recommendations for teachers on the organization of the necessary conditions for the education and upbringing of such children in school educational institutions are presented.

Keywords: Inclusive education, children with hearing impairment, cochlear implantation, methods, educational, school.

INTRODUCTION

There are about 32 million children in the world with hearing impairments. For every thousand newborns, there are 2-3 children with significant hearing loss. In 2-3 children, hearing impairments occur in the first years of life. Among school-age children, hearing loss occurs in 2% of children. Another 8% of children have central hearing disorders, which manifest themselves in problems with auditory attention and auditory memory, speech disorders, and learning difficulties. Psychological and pedagogical methods of rehabilitation of children with hearing impairments are necessary when using any medical and technical rehabilitation methods. They include classes with a teacher of the deaf and a speech therapist to develop various skills in the child, primarily auditory and auditory-speech



perception of the native language and oral speech, as well as the creation of favorable conditions for the development of the child's speech and for learning [1]. These methods also include the development of children's communication and social skills, cognitive processes (thinking, memory, attention, imagination, etc.), emotional and volitional qualities, education and upbringing of the child, psychological support for parents and their training in the ability to communicate with the child, develop and teach him at home.

Various specialists participate in the comprehensive rehabilitation of children with impaired hearing.

1. An audiologist (from the Latin *surdus* - deaf) diagnoses hearing impairments, fits hearing aids, adjusts hearing aids and CIs, and treats. Works in an audiology center or audiology office.
2. A teacher of the deaf is a special educator who participates in the diagnosis of hearing impairment in a child, develops hearing and speech, and teaches children with impaired hearing. Works in kindergartens and schools for children with impaired hearing, audiology and rehabilitation centers. In recent years, some teachers of the deaf have been working in speech therapy and general kindergartens, schools, where integrated learning groups for children with impaired hearing are organized.
3. An otolaryngologist treats conductive hearing loss and ENT diseases that lead to hearing loss. Works in a clinic, ENT department of a children's hospital.
4. A neurologist diagnoses and treats neurological diseases that are often found in children with hearing pathology. Works in a clinic, children's hospital.
5. An otosurgeon performs cochlear implantation operations or implantation of implantable hearing aids.
6. A psychologist provides psychological assistance to the child and his family, conducts classes on the development of mental functions in the child.
7. A speech therapist develops the pronunciation side of speech and oral speech in children with speech disorders, as well as in children with a slight degree of hearing loss. In recent years, many speech therapists have been working with children with CIs who have already begun to speak.

8. A social worker helps the child and his family solve social problems.

If a child with impaired hearing has additional diseases and developmental disorders (cerebral palsy, autism, visual impairment, intellectual disabilities, endocrine diseases, etc.), then the appropriate doctors and teachers also participate in his rehabilitation. For example, if a child has not only hearing impairments, but also vision impairments, he should also receive help from an ophthalmologist and a typhlopedagogue.

METHODOLOGY

The main problem of auditory perception for most children with hearing impairments is that sounds are heard quietly or not at all. In this case, the child is helped by a hearing aid (HA) - a device for amplifying speech and other sounds. There are different types of HA - pocket, behind-the-ear, in-the-ear, implantable, in a spectacle frame[2].



FIG. 1. Different types of hearing aids.

After the surgery, the child does not hear until the CI processor is connected. The processor is connected and adjusted after 3-6 weeks, when the surgical wound has healed. This is done by an audiologist who has undergone special training. During the adjustment, the specialist sequentially sends electrical impulses to the CI electrodes, determining the minimum current level that causes a reaction in the child. It is also necessary to determine the current level at which an



uncomfortable reaction occurs in order to establish the maximum comfortable stimulation level. The CI processor is adjusted based on the child's behavioral reactions to electrical stimuli and sounds during a lesson with a teacher of the deaf, as well as based on objective methods. Just as when adjusting a hearing aid, the level of stimuli is increased gradually so that the child gets used to new sensations and can comfortably perceive loud and quiet sounds. This process takes 10-14 days. The child needs to regularly check and adjust the CI processor settings. The intervals for checking are determined by specialists at the cochlear implant center. Usually, in the first year after connecting the CI processor, this is done at intervals of 3 months, 6 months, then every 6 months for 3 years and then annually. In children with cochlear anomalies and additional disorders, the CI settings are adjusted more often [3].

Two approaches to teaching children with hearing impairments are being developed all over the world:

- special (correctional) education — education in kindergartens and schools for children with hearing impairments (for the deaf and hard of hearing);
- integrated education — joint education of children with hearing impairments with normally hearing children in mainstream kindergartens and schools (external integration). The child studies in accordance with the requirements for children in mainstream schools.

Internal integration is also distinguished — joint education of children with different disabilities.

In recent years, the concept of "integrated education" of children with disabilities has been replaced by the concept of "inclusive education". At the same time, unlike integrated education, a child with disabilities not only studies together with normally developing children, but the educational institution must create the conditions necessary for the education of such a child.

Research Results

Inclusive education is especially relevant for children with impaired hearing, since with the help of SA/CI, children with varying degrees of hearing loss hear speech and, thanks to this, can master their native language and speech by listening to the speech of adults around them. In the conditions of inclusive



education, a child with SA/CI has the speech environment he or she needs — the opportunity, necessity, and need to listen to speech and communicate using oral speech.

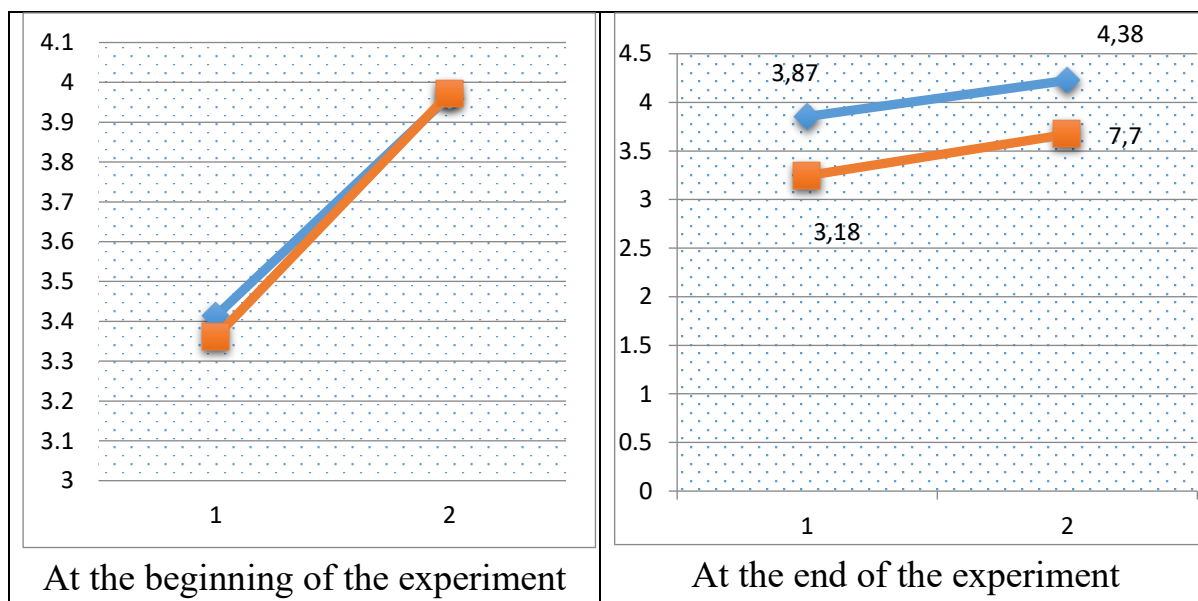
After the introduction of hearing screening for newborns in maternity hospitals (audiological screening), many children are diagnosed with hearing impairment early. This allows the child to be fitted with hearing aids and begin corrective and developmental work with him or her at an early age. Many deaf children are implanted at the age of 1–2 years. Thanks to this, more and more children with SA/CI are approaching the level of speech development of their hearing peers by school age, and therefore many of them attend mainstream kindergartens and schools. The increase in the number of children with hearing impairments/disabilities in such institutions is also associated with the adoption of laws allowing parents to choose the type of educational institution for their child, the spread of inclusive education for children with disabilities as a way of their socialization. Therefore, children with hearing impairments/disabilities who, in terms of their level of speech development, are essentially not ready to study in such a school can also study in a mainstream school [5].

Parents can apply for admission of a child to school on a general basis through the MFC within a certain period at the place of registration. But often the school is not ready to accept a child with hearing impairments and explains the refusal by the lack of the necessary specialists. In order for a child with hearing impairments/disabilities to be accepted to a mainstream school and for conditions for his/her successful education to be created there, it is necessary to submit an application to the psychological and medical pedagogical commission (PMPC) for a comprehensive psychological, medical and pedagogical examination and preparation of recommendations based on the results of the examination for the provision of psychological, medical and pedagogical assistance and the organization of education and upbringing for the child.

During the examination at the PMPK, the child may be very nervous and perform test tasks worse than he or she is able to do. Therefore, you should have a reference from the teacher of the deaf-defectologist (speech therapist) with whom the child regularly studies. It describes the level of development of the child's auditory perception, speech comprehension, vocabulary, grammatical concepts,



pronunciation, speech communication and learning skills, coherent speech, reading, writing, and counting skills. It is also useful to bring video recordings of lessons that demonstrate the child performing various tasks, allowing you to determine the level of development of the child's speech comprehension and oral speech (dialogic, coherent). The child should be prepared in advance, explaining to him or her that he or she can expect a slightly unusual test lesson with new teachers. You can conduct a game called "Little Exam" in advance, during which an adult and a child take turns giving each other different tasks and completing them. Such a game will help him or her feel more confident in such a situation. Before the consultation, it is important to feed the child and take a drink and a light snack with you.



Recommendations are formulated in the conclusion.

In accordance with the state educational standard (FSSES), the conclusion contains the following recommendations:

- 1) the child must sit at the 1st or 2nd desk;
- 2) the child is taught according to an adapted general educational program of primary general education with the creation of conditions for children with disabilities who have hearing impairments (hard of hearing, option 2.1);



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- 3) the form of education is at the discretion of parents/legal representatives;
4) it is necessary to use forms and methods of psychological, medical and pedagogical assistance in accordance with the requirements of the educational program.

The necessary forms and methods of psychological, medical and pedagogical assistance involve the use of advanced training in auditory perception of texts in preparation for written work (dictation, summary, essay), as well as the creation of special conditions for obtaining an education[7].

Special conditions for a child with hearing impairments to receive an education include:

- the use of special technical teaching aids for collective/individual use;
- organization and creation of an auditory-speech environment using sound amplification equipment of various types, including individual hearing aids, cochlear implants and FM systems;
- organization of a barrier-free environment, which involves the presence of text information in the form of printed tables on stands or electronic media warning of dangers, changes in the training mode; duplication of audio reference information about the schedule of classes with visual information;
- monitoring of hearing status;
- training based on printed text and visual aids;
- organization of psychological and pedagogical support, including individual remedial classes.

CONCLUSION

The conclusion may define the following individual remedial classes necessary for the child:

- with a speech therapist to develop the pronunciation side of speech and the phonetic-phonemic structure of speech; to prevent and overcome errors associated with phonemic difficulties; to teach various types of language analysis; to expand, clarify, and activate vocabulary; to develop the grammatical structure of speech;
- with an educational psychologist to develop full-fledged social competencies, to develop adequate communication skills for communicating with teachers and



classmates, to develop cognitive processes, to prevent intrapersonal and interpersonal conflicts and negative attitudes towards school education, to maintain an emotionally comfortable environment;

- with a teacher/special education teacher (deaf teacher) to improve auditory-visual perception, verbal and non-verbal communication skills.

This conclusion, together with the application and other documents, is submitted to the school. The conclusion is advisory in nature for parents, and mandatory for the school. If the PMPK conclusion, in accordance with the level of speech or general development, recommends that the child attend a special school, then the parents can still apply for the child to attend a regular school. However, the school may refuse to provide the child with additional necessary conditions for education. In any case, it is important for the parents to get acquainted with the teacher in advance and organize a meeting with the child, explain to the teacher the peculiarities of the child's perception and understanding of speech, try to establish a trusting relationship with the teacher, express their willingness to provide assistance to the child and the teacher and be ready to provide it throughout the entire education.

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