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OBJECTIVES AND TASKS OF COCHLEAR IMPLANTATION

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Annotation
At present, various hearing aids are used to improve the hearing perception of children and adults with various hearing impairments. However, not all devices can improve the effect of speech on auditory perception during use. Some hearing aids partially and partially affect the hearing of people who are unable to hear due to various technical, physiological and pathophysiological causes of various sensorineural deafness.

Keywords: Physiological and psychological characteristics, cochlear implantation, sensory deafness, electrical stimulation.

Introduction

Based on the analysis of theoretical data on the education of deaf and hard of hearing children, we have formed the following conclusions:
the importance of accurate diagnosis in the organization of education and upbringing of deaf and hard of hearing children; the use of hearing aids should be given priority in the development of speech in children with hearing impairments. In this process, it is important to choose different means of influencing the sense of hearing, taking into account the physiological and psychological characteristics of the child;
Appropriate use of oral, written, tactile, and gesture forms of speech is required as the optimal way to develop slurred speech in deaf and hard of hearing children; when working with deaf and hard of hearing children, from the very beginning, work on both hearing and speech should be carried out in parallel;
The potential of the cochlear implant, which is intended to restore hearing, including sound-enhancing devices in the development of auditory perception and speech in deaf and hard of hearing children, is great.
The cochlear implant is recognized as a means of intensively ensuring the effectiveness of work aimed at performing corrective pedagogical and developmental tasks with the listed deaf and hard of hearing children.
Over the last fifteen years, the development of deaf and dumb pedagogy and the practical application of innovative technologies have increased the need for hearing aids for children with hearing impairments using a new multi-channel cochlear implantation. Cochlear implantation serves the following purposes:

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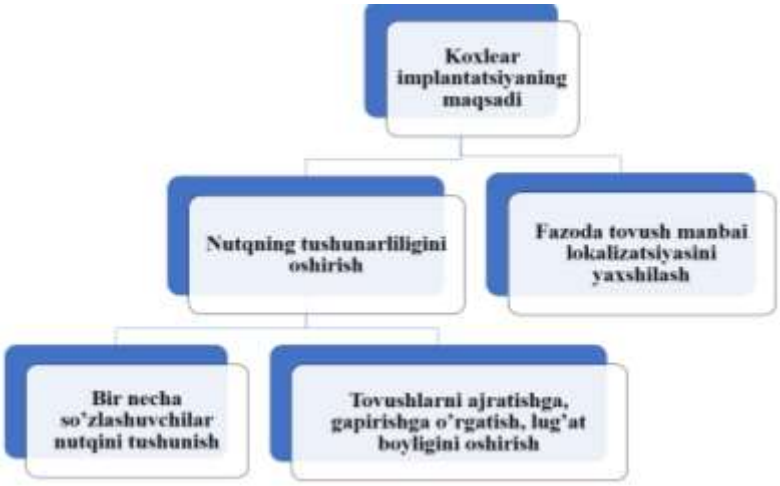
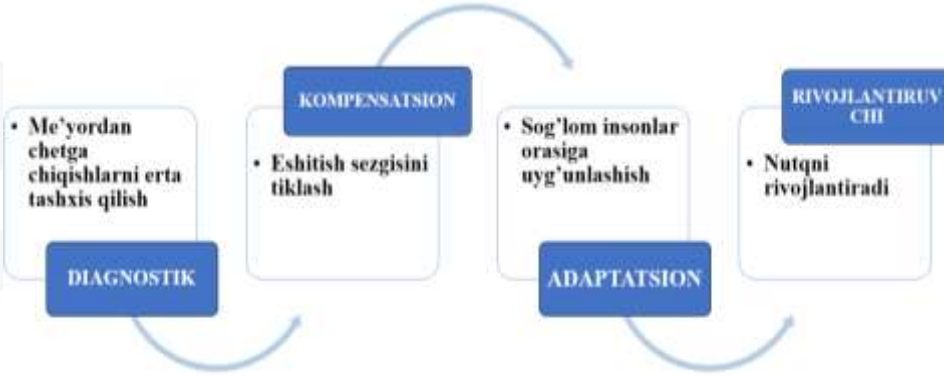
- Increase speech comprehensibility by 10-12% in noisy conditions;
- Improving the localization of the sound source in space;
- In the context of reverberation, to increase the comprehensibility of speech in conversations with several tuners;
- Teaching to distinguish and speak different sounds, increase vocabulary.



The purpose of cochlear implantation:
The functions of cochlear implantation are:

- Early diagnosis of abnormalities in child development.
- Restoration of auditory perception.
- Speech development through the development of auditory perception.
- Ensuring adaptability among healthy people.



Functions of cochlear implantation

According to IV Korolyova: The earlier cochlear implantation is performed, the better the results. Information on the history of cochlear implantation in which countries and what experiments have been conducted is given in the appendix. Sensory deafness is accompanied by damage to the inner ear, i.e. fibrous tissue. However, despite the fact

that most of the sensory tissues are damaged, in many such patients the fibers of the auditory nerve are preserved. When these fibers are actuated directly by an electric current, they can send a signal to the brain that triggers auditory sensations. This process is based on the principle of cochlear implantation, which in turn means an artificial inner ear. Today, the cochlear implant is becoming a real tool of hearing prosthesis for people with high levels of total deafness and sensorineural hearing loss. One of the most common cochlear implant systems is the 22-channel Nucleus cochlear implant, distributed by Cochlear. Different people may have different (sensory) sensations as a result of electrical stimulation of the auditory nerve. Therefore, it is necessary to use different forces of the stimulating current when stimulating different channels in one person or when stimulating one channel in different people. In addition, the same person has the ability to individually distinguish different tones of sound when stimulating different channels. For this purpose, a fine tuning is envisaged in the speech processor, which is adjusted individually depending on the customer's reception of an electrical stimulus.

Restoration of auditory perception through the physical and technical capabilities of the cochlear implant listed above provides the person with the following opportunities. hearing sensitivity of up to 40 dB relative to normal hearing is restored; the level of differentiation increases by hearing everyday non-verbal sounds encountered around; listening to speech sounds ensures that a person effectively enters the world of listeners; children and adults with cochlear implants begin to understand the interlocutors speech in exchange for hearing. These listed KI capabilities are shown in the diagram below. Social possibilities of cochlear implantation

Hearing loss or partial hearing loss as a result of sound transmission can be compensated using individual hearing aids. In practice, there have been a lot of controversial questions, such as whether the amplifier is good. or Cochlear implantation? As a practical solution to this question, we list the following medical, pedagogical, deaf technical conclusions: A multi-channel implant can restore the frequency selectivity of hearing, i.e., the ability to distinguish frequencies that are present simultaneously in an acoustic signal. Hearing aids cannot in principle restore the frequency selectivity of hearing. The use of an implant prevents acoustic feedback (often when heard with an amplifier, the room□s sound-reflecting effect has a negative effect on the person). Accordingly, the tuning provides the ability to perceive low sounds in the main speech. In addition to the convenience of cochlear implantation listed above, there are some disadvantages: Variety (different nebulae) of results of improvement of speech hearing sensations after cochlear implantation. That's into

date, although a number of factors have been identified to predict the speech sensations of implants, no definitive prognosis has been provided.

People who use the implant have difficulty perceiving concentrated sounds, such as musical sounds. In addition, the microphone can receive sounds from a certain distance, but it is not possible to hear them from large distances. The development of todays electronic technology can also overcome this shortcoming. The first indication for the use of cochlear implantation is the highest level of sensorineural deafness. The selection criterion for subsequent cochlear implantation focuses on the effectiveness of hearing prosthetics with a simple hearing aid.

If a person is able to understand 30-40% of words using a normal hearing aid, recommending a cochlear implant can lead to better results. If the patient's response is less than 5% and there are no contraindications, it can be safely recommended for implantation. After surgery, educators and parents should be aware of the complications that can occur in a child: complicated cases of injury; facial nerve injury; loss of sensation and stiffness in the area behind the ear; disturbance of full sensation and balance; significant increase in noise in the ear; It should be noted that ineffectiveness of the cochlear implant has been observed in rare cases. However, it is likely that the implant will not significantly improve speech comprehension. The duration of electrical stimulation has not yet been determined. The first year after surgery is an important period in the formation and development of physical and mental characteristics that a child needs throughout his life. Researchers consider this period to be the period of the most rapid development of children. It is known that during puberty, a child born and developing normally develops intensive sensory systems, ie vision, hearing, tactile sensations. The social situation of this period is characterized by the inseparable interaction of adults and children. In doing so, adults act on the child as a stimulus to the senses of sight and hearing.

The period of infancy and early adolescence is a dangerous period in a childs development, during which time the brain becomes highly sensitive to the perception and use of stimuli such as speech sounds in the environment. This auditory function means that sounds are needed during the developmental stage of the brain to imitate speech, speech activity, feedback acoustic communication and understanding the meaning of words, phrases. The differentiated sense of hearing of phonemes serves as a necessary condition for their correct pronunciation. A 5 to 6-year-old child is able to master all aspects of speech development as he or she develops little pronunciation. That is, the phonetic, rhythmic structure of the word, the varied embellishment of phrases with tones, the full mastery of expressive speech based on various communicative purposes, also master the subtleties of emotional states in later

adulthood. In order for the first speech movements to occur, there must be a certain cognitive reserve that arises with the functioning of the cerebral cortex. The appearance of the target when hearing the mother's voice, and other sounds, seeing the face of the tuner, interest in brightly colored toys, etc. are important factors for the overall development of the child. At 1.5 months of age, the first nonverbal reactions to communication occur: as a smile when the mother sees her face and hears her voice. By 3 months of age, the baby's laughter is synchronized with the parents' laughter.

Visual communication, emotional interactions determine verbal communication, which determines hearing, auditory attention span and retention, auditory perception, and speech perception. Ye. According to N. Vinarskaya: By 9-10 months of life, the child develops an understanding of adult speech, at 18-20 months understands the 1st simple words that can be connected. Hearing impairment in deaf children reduces the sensory side of mental development. In addition, there are secondary disturbances in the emotional sphere, spatial perceptions, subject-practical activity.

Children who lose their hearing at an early age will not be able to master their mother tongue independently. In healthy children, this opportunity is available at the level of imitation. E.V. According to Mironova: Hearing loss in a normal hearing child for some reason has a negative impact not only on the ability of others to accept speech directed at him, but also on the quality of his personal speech. These are: intonation is impoverished, the tempo of pronunciation of words changes, the vocabulary is shortened, a defect in the pronunciation of sounds is formed by not pronouncing them to the end, dropping them. As a result, verbal communication is disrupted bilaterally.

Scientists dealing with children with hearing impairments believe that children with severe hearing impairments are more likely to hear low-frequency sounds when they use hearing aids. Experience has shown that implanted children begin to receive a wide range of sounds, as well as high-frequency sounds, as soon as the speech processor is connected for the first time. In this way, we are confident that other possibilities of speech acquisition will emerge. Acoustic and speech signals transmitted through the cochlear implant are different from natural sounds. However, in all categories of customers (button deafness or acquired deafness), adapting to a new sound image takes less time. Children with cochlear implants at an early age develop personal auditory-speech skills when given complex coma, with a high level of psychophysical development, normally close to their auditory peers. In the early days of cochlear implantation in Uzbekistan, individual work with children was a priority. That is, the specialists conducted targeted training with the child with a cochlear implant before and after surgery.

Initially, educators developed the content of the lessons on the basis of assignments that taught them to distinguish non-verbal and non-verbal sounds. Then, as a result of the organization of a scientific-practical seminar at the Tashkent RIPIAT Center throughout the country, an integrated pedagogical system of creating the content of lessons was introduced into practice. The content of this system includes the following directions. Listening to non-verbal sounds and learning to differentiate.

Listening to speech sounds and learning to differentiate. Listening to sentences and texts and learning to differentiate. The Russian practice is leading in pedagogical work with children with cochlear implants. Russian scientist O. Zontova has introduced a number of methods of working with children with cochlear implants. The uniqueness of these techniques is that children with cochlear implants are given the opportunity to choose the type of communication that is least comfortable in the speech environment. In particular, this approach has been applied to children who have had a cochlear implant implanted after speech has been formed or while they are studying in special education institutions.

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