

DYSPHASIA (SPEECH DISTURBANCES), CAUSED BY HYPOACUSIS
(Phoniatric aspects)

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The clinic-social and pedagogic observations testify to the fact, that the absence of the auditory control in the formation of the communicative means is leading to the disturbance of the speech- and voiceformation. Due to the tedious work a hard hearing child may rehabilitate the speech communication and become social adequate member of our society.

People with the defect of hard hearing are regarded as people with damaged hearing in their speech communication, needing special measures for preventing these defects.

The communication abilities limitations, the decline of the working capacity and intellectual development of the people with defect of hard hearing are promoting the infringement of their psychosocial development. The aggravation of the defects of general and linguistic development is determined by the type, degree

and time of the beginning of the hearing damage, the individual conditions of life and the social-cultural environment, as well as by the inadequate level of education process at special schools and it demands a particular form of influence, corresponding to the modern stage of society development. The speech-vocal disturbances of people with the defect of hard hearing are serving as risk factors for preserving the full working capacity, their social adequacy and integration into the federation of hearers.

With advance of the scientific-technological progress the need of the national economy in the labour reserves has increased, thus the social and vocational rehabilitation of people with the defect of hard hearing is of special significance.

The study of speech-formation process and its interdependence of the type and degree of hypoacusis is an urgent clinic-social and pedagogic problem.

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There are no objective data in literature allowing to judge about the functional condition of the vocal apparatus of people with defect of hard hearing and its interdependence with the degree and time of the hearing damage in the age groups of the pupils of special schools. The usage of the modern acoustic-physiological methods of investigation and the original methodical approach helped to study the interdependence of the functional condition of the vocal apparatus and the acoustic voice and speech characteristics of the condition of the auditory function in age groups of the pupils of schools for the deaf and weak hearers.

One can notice that the data, obtained as a result of the carried investigations are promoting clarification of the phoniatric and phonetic aspects necessary for the correction of the existing surdopedagogic methods, concrete for the definite age group.

The study of the peculiarities of the speech of the earlier- and later-deaf pupils of special schools (who have earlier had normal speech function) has been carried out at the age of (7-17). The determination of speech distinction has been carried out by the method of syllabic articulation with subsequent phonetic

analysis of mistakes and it has helped to determine, that in the result of hypoacusis is occurring in the deterioration speech distinction percentage, directly depending on the degree and remoteness of the hearing disturbance. Predisposition to the replacement of the soft consonants by hard ones, the devoicing of the voiced consonants is typical. With the increasing degree of hypoacusis the deterioration of vowel distinction process (particularly э, е, ъ) is observed.

It has been noted, that if within the range of 500 - 3000 Hz the hearing loss constitutes more than 30 dB, speech delay is taking place and its melodic and tone formation are broken. If the hearing loss is more than 60 dB the acoustic ways of normal communication are broken.

When studying the changes of the volume of the resonant cavities in case of phonation of the above said groups of the pupils in comparison with the control group it has been noted, that if hypoacusis has been acquired in the early childhood, the volume of the resonant cavities is not changing, and as a result the articulation is indistinct. The difference in the volume of the resonant cavities during the phonation of high and low sounds is very insignificant, thus the speech is monotonous, deprived of melodiousness and accents. The later deaf pupils, especially in the control group

of children, during the pronunciation of the low sounds, the resonant cavities of the larynx are widening or are deepening, but in case the high sounds they are narrowing. The degree of volume changes of the resonant cavities is directly depending on the hearing acuity and the functional condition of the vocal apparatus.

The duration of the separate sounds and especially the vowels is shortened or lengthened, due to it the disturbance of rhythmicity is observed already at the age of 5-7. The melodicity of speech is sharply changing since the ability to discern the pitch of the acoustic stimulus is being violated.

In case of the full absence of the hearing sensibility (the third and the fourth degree of hypoacusis), the rightness of stresses in the speech is violated. The disturbance of the hearing acuity with respect to the high and low tones are negatively influencing the function of the vocal folds right up to its complete cessation. The disturbances of the functional condition of the vocal apparatus, revealed during electronic laryngostroboscopy, expressed in the motor violations of the neuromuscular apparatus of the larynx of the functional character, the degree of which was not indirect dependence of the laryngoscopy data, but on the contrary it depends on the degree of

hypoacusis and the time of its acquisition. So, in case of the first and the second degree of hypoacusis the vibrations of the vocal folds, uneven and asynchronous in amplitude have been revealed, when examining the phonation phases hypokinesia of the vocal folds in case of the phonation has determined their incomplete closure, the presence of displacement of the mucosal membrane on their internal edge. In case of hypoacusis of the third and the fourth degree closure of the vocal folds is strong, that determines the hard attack of the voice.

The pressure of the expiratory air is diminishing with the increase of degree and time of hypoacusis, closure force of the vocal folds is changing, the detonation of voice is observed, falset sounding is becoming evident. The above-stated pathology of the voice formation process is leading to the nodulation on the vocal folds in the vibration centre.

The investigations data of the speech quality at different degrees of hypoacusis testify to the dependence of the speech distinction on the degree of hypoacusis. Predisposition of the replacement of the soft consonants by the hard ones and the devoicing of the voiced consonants, apparent already at the second degree of hypoacusis is typical.

The time of maximum phonation is representing a motley picture and it is in close

interdependence on an attack of the sound and correlation of inhalation time to exhalation. With the aggravation of hypoacusis and shortening expiration the time of maximum phonation has been decreasing.

Phonation coefficient of people with the defect of hard hearing is increasing with the hearing impairment.

The speech of people with defect of hard hearing is characterized by disturbances, concerning all the three types of stresses: rhythmical, dynamic and melodious.

The investigations data of the external respiration function are testifying to the fact, that voice disturbances of people with the defect of hard hearing is connected to a considerable extent with disturbance of the phonation breathing. Often during the phonation an inhalation is being used, instead of exhalation, that it is distorting the articulation and is making it impossible, inspiratory phase is being shortened in this position. Coordination between expiratory phase and phonation is violated. During roentgenoscopy observations the paradoxical function and asymmetry between the right and left half of the diaphragm is being revealed from I2 to I4. The results of the carried investigations are indicating to the fact, that the phoniatric treatment of hypoacusis should be expressed in the elaboration of the

number of the conditioned reflexes: breathing, phonation and articulation. The results of speech rehabilitation are better, if logophonopedic treatment begins earlier, since in the peripheric department of speech-vocal apparatus, functioning quite satisfactorily at the beginning (up to 4-5), in due course (at I4-I5 years and older) the mechanisms of speech formation are acquiring steady disturbances of phonation breathing, function coordination of the vocal folds, resonant cavities and articulation. Due to the tedious and purposeful work of the specialists a hard hearing child may rehabilitate the speech communication and become a social adequate member of our society, that will help to expand the volume for the choice of professions during the vocation guidance.