

The Functioning Of The Vocal Apparatus In Children And The Causes Of Its Disorders

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Abstract: This article analyzes the specific features of the functioning of the vocal apparatus in children, the causes of voice disorders, their types, and the impact of such disorders on the mental and physical development of the child on a scientific basis. The study covers organic and functional types of voice disorders, methods for their detection, and the relevance of corrective approaches.

Keywords: Vocal apparatus, dysphonia, aphonia, mutation period, phonopedics, children's voice.

Introduction: Voice is one of the important components of human speech, which is of great importance not only as a communicative, but also as a means of emotional expression. Since the vocal apparatus is not yet fully formed in childhood, various external and internal factors can negatively affect its normal functioning. In recent years, the increasing incidence of voice disorders among children has attracted the attention of specialists. This article is devoted to a scientific analysis of this problem. According to the results of studies conducted in different countries, more than 10% of school-age children have voice disorders. According to Wilson (1971), this figure is 6% in preschool children, and 9% among schoolchildren. Studies conducted in Japan have shown that 15% of children under 6 years of age have voice problems. This further increases the urgency of the problem.

The methods of examining the vocal apparatus of children and adults do not differ much from each other, but researchers face some difficulties. The extremely small size of the larynx in children, the closure of the laryngeal entrance by the epiglottis, and the strong expression of the laryngeal reflex create a number of difficulties associated with examining the larynx in young patients. Despite the widespread use of fiberoptic instruments in pediatric practice, doctors are often forced to examine the larynx of children under anesthesia. In modern scientific literature, there is a lot of conflicting information about the prevalence of voice disorders in children. The differences between

the data presented by researchers from different countries are due, on the one hand, to the differences in voice hygiene in different nations, and, on the other hand, to the incompatibility of different methodological approaches to classifying voice disorders in children. For example, American scientists have found that voice disorders are observed in 6-9% of US citizens aged 5-18, which on average covers 3 million people. F.B. Wilson (1971) found voice disorders (which make communication difficult to varying degrees) in 76% of the children he examined. Japanese researchers (1984) reported that voice disorders were found in only 1% of children in Japan. However, this very low figure is explained by the fact that this screening procedure was carried out by school teachers who did not have special training. Zaliouk (1957) found dysphonia in 21% of Israeli schoolchildren. Yu.S. Vasilenko and S.E. Ulyanov (2002) conducted a study involving 2540 children and adolescents aged 5 to 17 years in order to answer problematic questions related to the specifics and frequency of voice disorders in children. After analyzing the data obtained, the authors found a significantly higher prevalence of such disorders in children and adolescents (3.5%). The rate of children attending the choir was 8.03%. Yu.S. Stepanova (2005) noted that voice disorders occur regardless of gender and are almost the same in both boys and girls. According to the studies conducted by Yu.S. Stepanova, among children with voice disorders, 48% were boys and 52% were girls. Dysphonia was observed at a maximum level among children aged 8-10 years, and at a minimum

level among children aged 15-16 years.

Voice disorders in childhood manifest themselves in the form of functional and organic dysphonia. Among the functional voice disorders observed in children and adolescents, hypotonic (17.7%) and mutational dysphonia (18.1%), and among organic voice disorders, vocal cord nodules (29.2%) and laryngitis (19.4%) are most often noted. Most researchers note that overstrain of the vocal apparatus, inflammatory diseases of the upper respiratory tract and psychotraumatic factors are among the main causes of voice disorders in children. Dysphonia is the most common disease among them, characterized by chronic hoarseness and resonance disorders of the voice (often hypernasalization). The frequency of dysphonia is to some extent dependent on the age of children. The frequency of these voice disorders reaches a maximum in children aged 5-8 years; Yu.S. According to Vasilenko, voice disorders were detected in 23% of preschool children. This is manifested by the immaturity of the muscular and nervous systems of the larynx, the incorrect implementation of the phonation process, and excessive straining of the voice.

Organic voice disorders are less common in children than functional voice disorders. It has been established that there is a relationship between the age of children and the nature of voice disorders: boys often develop hypo-hypertonic dysphonia, and girls - psychogenic aphonia. The main factor causing voice disorders is the extreme fragility of the vocal apparatus in children. L.B. According to Dmitrieva, when examining the larynx after 30-45 minutes of singing, in most children, one or another pathological sign was detected, such as pinkish discoloration of the mucous membranes at the free edge of the vocal cords, insufficient adhesion of the vocal cords, and a certain degree of impairment of the vibratory function. These disorders were mainly noted in children who complained of fatigue of the voice function. The etiology of voice disorders in children should be considered depending on the mechanism of the phonation process disorder and the time of its manifestation.

Organic voice disorders in children can be divided into the following etiological groups:

- Congenital anomalies of the structure and function of the vocal apparatus;
- Laryngeal trauma;
- Laryngeal tumors.

Functional voice disorders occur mainly as a result of the following reasons:

- Excessive fatigue of the voice;
- Failure to observe voice hygiene when singing;

- Improper use of the vocal apparatus during the mutation period;

- Psychological factors;

- Pathological foci in organs and systems that are not part of the vocal apparatus.

A separate group is formed by voice disorders that occur due to partial or complete loss of hearing as a result of diseases of the auditory organs.

Congenital anomalies in the group of organic voice disorders are one of the most common causes of voice disorders. Usually, laryngeal anomalies are detected in infancy, since these disorders cause a significant change in the timbre of the voice and are often accompanied by respiratory disorders (choking, cyanosis (blueness), rapid breathing). Stridor - a whistling noise caused by anatomical or physiological narrowing of the airways during inhalation and exhalation - is one of the most common causes of congenital pathologies of the larynx. Laryngeal asymmetry, the presence of a connective tissue membrane and stenoses, the formation of folds in the vocal cords, and laryngomalacia are the most common forms of laryngeal structural anomalies. Most voice disorders in children are caused by pathologies in the voice-producing part of the vocal apparatus, in particular, in the palatal-laryngeal ring. In such cases, phonation is characterized by hypernasalization, hypernasalization or a combination of them, and nasal emission.

Laryngeal injuries are another common cause of voice disorders. Laryngeal injuries in children under 1.5 years of age are mainly caused by foreign bodies in the respiratory tract and prolonged use of endotracheal intubation. Laryngeal injuries in children aged 1.5 to 12 years are caused by foreign bodies in the respiratory tract, road traffic accidents, and prolonged use of intubation. Laryngeal injuries can also occur as a result of inhaling toxic or corrosive substances. Laryngeal injuries can also be characterized by damage to the laryngeal ligaments and muscles, fractures of the cartilage, and damage to the vocal muscles and laryngeal mucosa. All types of laryngeal injuries require phonopedic correction of voice disorders. Laryngeal tumors are a relatively rare pathology in children. Overexertion of the vocal apparatus is one of the most common causes of such disorders. It should be noted that this condition occurs mainly on the basis of poorly formed speech skills in children. These speech skills are formed due to imitation of those around them who have voice disorders or who speak too loudly or have a habit of using a harsh/breathy voice. At the same time, this condition can also be observed in children with a labile nervous system. The use of imitation of non-

physiological sounds during the game (the sound of an airplane, a siren, etc.) or a long stay of the child in a noisy environment also leads to an exacerbation of the pathological condition. Excessive fatigue of the voice leads to tone disorders in the larynx muscles (mainly in the form of hypotonia) or the development of phonasthenia in children with congenital weakness of the neuromuscular apparatus. According to L.B. Dmitriyeva, L.M. Telyaeva and other authors, many defects associated with the process of sound formation arise due to the irrational use of the voice in childhood, especially in boys during the mutation period, sometimes in the pre-mutation and post-mutation periods. Children often try to sing like adults, and they overcome the technical difficulties that arise due to the intensive use of the vocal apparatus or its part. Children who sing may experience disorders that are commonly seen in adults' vocal apparatus. These conditions can range from inflammation of the vocal cords to vocal cord nodules seen in singers. In most cases, such disorders are caused by improper use of the vocal apparatus or incorrect singing. In turn, strict adherence to vocal hygiene is required to maintain the functional activity of the vocal apparatus in children who sing.

Voice defects limit the child's communication activities, reduce self-confidence and cause the emergence of psychological complexes. Researcher Ye.S. Almazova (2005) emphasizes the specific course of development of the emotional-volitional sphere in such children. The limitation of speech communication in children with voice disorders negatively affects their social adaptation. In the study of the vocal apparatus in children, methods such as fibrolaryngoscopy, acoustic analysis, and phonopedic observation are used. At the same time, due to the small size of the larynx in children, the strength of reflexes, and the difficulty of maintaining peace, the examination requires a specific approach. Compliance with voice hygiene, psychoprophylaxis, and phonopedic exercises are of great importance. In conclusion, disorders of the vocal apparatus in children are multifactorial and are closely related not only to anatomical, but also to psychological and social factors. Therefore, early diagnosis, speech therapy, and phonotherapy are essential for the development of children. Practicing voice hygiene and taking preventive measures can help reduce the problem.

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