Changes In The Dental System In Children And Adolescents With Hearing Loss

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Abstract

The article presents an analysis of the prevalence of malocclusion pathology and the nature of morphological changes in the dental apparatus in children and adolescents with hearing loss living in the Bukhara region. The prevalence of dental anomalies and deformities in schoolchildren with hearing impairment was 76.5 ± 0.03%, dental anomalies were diagnosed in 78.9%, dental anomalies in 30.3% of students. The prevalence of dental anomalies and deformities in children and adolescents with hearing loss exceeded the corresponding indicator in conditionally healthy children of the corresponding age groups living in the Bukhara region. In connection with the above, the expediency of developing and implementing preventive measures in this contingent of the child population is justified.

Keywords: children and adolescents with hearing loss, dental anomalies and deformities, dental anomalies, dentition anomalies, jaw anomalies.

Introduction

Children and adolescents with hearing loss belong to the category of individuals with disabilities, i.e. having physical (mental) deviations that cause disorders of general development, do not allow children to lead a full life [4, 8, 9]. According to WHO, in 2005, 1517 children and adolescents were recognized as disabled for the first time due to diseases of the ear and mastoid process, in 2010 this figure was already 2611 people [2, 3]. In 2011, there were about 1.3 million children and adolescents suffering from hearing loss, 1.5 to 2 thousand more are born annually. children with congenital hearing loss and 2 thousand children acquire it later [5, 6]. Such patients need the close attention of doctors of various specialties, a specific approach to preventive and curative measures. The dental apparatus of children with hearing impairment has a number of characteristic morphological features due to the absence or specific speech articulation, due to the primary pathology of the auditory analyzer [7, 10]. These features have been studied little to date, there is no information in the educational and methodological and scientific literature on the prevalence and structure of dental anomalies and deformities, as well as the specifics of the organization of preventive care for the above category of patients.

The purpose of this work was to study the prevalence and nature of morphological changes in the dental apparatus, to determine the structure of dental anomalies and deformities detected in children with sensory hearing deprivation living in the Bukhara region.

Materials and methods of research. To achieve this goal, a dental examination was performed on 143 schoolchildren aged 7 to 16 years studying at a correctional boarding school of type I-II for deaf and hard of hearing
children in Bukhara. To determine the effect of the severity of hearing impairment on the development of dental pathology, all the examined were divided into 2 groups: the 1st group consisted of schoolchildren suffering from sensorineural hearing loss - 68 people (57.3%); the 2nd group — students with deafness of various etiologies - 75 people (42.7%). Of these, 68 (57.9%) are male and 75 (42.1%) are female. The physiological development of the dental apparatus corresponded to the following parameters: 62 (49.8%) students had a removable bite and 73 (50.2%) had a permanent bite.

The orthodontic status of the examined children and adolescents was determined by the following methods: clinical (survey, examination, clinical functional tests) and anthropometric (if necessary). According to the classification of anomalies of the dental system proposed by A.I.Betelman, all anomalies of the dental apparatus were grouped into 3 groups: anomalies of the teeth; anomalies of the dentition; anomalies of the jaws and their individual anatomical parts.

The prevalence of maxillary anomalies and deformities was determined by the formula:

\[ R = \left( \frac{M}{n} \right) \times 100 \% \]

where 
R - the prevalence of dental anomalies and deformities; M - the number of persons with dental anomalies and deformities; n is the total number of examined.

The results of the examination were recorded in a specially designed individual examination card. The obtained data were recorded in a computer database with their subsequent statistical processing. Based on the obtained absolute values, relative (intensive and extensive coefficients) and average values were calculated. Calculations were performed using Excel spreadsheets, as well as a package of statistical programs.

The results of the study. The prevalence of dental anomalies and deformities among students of the Bukhara specialized Boarding School for deaf and Hard of Hearing children was 76.5 ± 0.03%, while the prevalence of dental anomalies and deformities among boys and girls has no significant differences. In the period of a removable bite, dental anomalies and deformities were detected in 82.5% of children, in a permanent bite, pathology was diagnosed in 74.3% of adolescents. When analyzing the dependence of the prevalence of dental anomalies and deformities depending on the degree of hearing impairment, it was revealed that in children with sensorineural hearing loss, orthodontic pathology was diagnosed in 78.6% of cases, which is 5.7% less than in children with deafness of various etiologies (83.4%).

In schoolchildren with hearing impairment in the formed permanent bite, anomalies of the position of individual teeth (77.6%) were identified in the first place in terms of occurrence, including: tortoanomalia, dispositions, endo- and expositions, latero- and mediopositions, as well as supra- and infrapositions of individual teeth. Anomalies of the structure of the hard tissues of the teeth were determined in the second place in terms of frequency of occurrence — 27.8% in both groups. Violation of the timing of eruption of permanent teeth in children of the first group in 22.6% of cases, in children of the second group — in 23.5% of cases. Analysis of the results of the parameters of the timing of teething in children and adolescents with hearing loss showed a delay in eruption of permanent teeth on average from 6 to 12 months. There was also a violation of the sequence of eruption of permanent teeth in 4.1% of all examined. Anomalies in the number of individual teeth in the form of adentia of lateral incisors and/or first premolars were detected in 5.2% of cases.

Anomalies of the shape and size of dental arches in group 1 were diagnosed in 20 individuals (33.6%), in group 2 - in 22 (32.4%). A high percentage (21.0 and 23.2%) of mesial displacement of the lateral group of teeth was noted, while in 100% of cases there was an early removal of temporary chewing teeth in the anamnesis. Among the occlusion anomalies, in most cases (33.2%), sagittal dysocclusion was detected, while in children there was a reduced tone of the muscles of the peritoneal region and a mixed type of breathing, aggravating the emerging anomaly. The progression of the pathology was also facilitated by the carious destruction and removal of teeth of a temporary bite, leading to a slowdown in the growth of the alveolar processes of the jaws in the period of preparation for the change of teeth and the displacement of eruption of permanent teeth to the place of prematurely removed temporary ones. In 80.4% of cases, the dental alveolar form of orthodontic anomalies and deformities was registered, which can serve as a promising circumstance for the use of myogymnastics for the correction of orthodontic anomalies and deformities in younger age groups.

Conclusion. Thus, it can be stated that the prevalence of dental anomalies and deformities in children and adolescents with sensory hearing deprivation exceeds the corresponding indicator in conditionally healthy children of the
corresponding age groups living in the Bukhara region [1]. The noted changes in the morphological structure of the dental apparatus in children and adolescents with hearing loss, as well as the causal factors of their formation, should be taken into account when planning preventive and rehabilitation dental measures for disabled children of this category.

The development and implementation of preventive measures will reduce the negative impact of existing risk factors for the formation of dental anomalies and deformities, reduce the prevalence and severity of forms of orthodontic pathology in children with hearing loss.

List of literature