

Improvement of Early Diagnosis and Orthodontic Treatment in Children with Dental Anomalies and Deformations

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Abstract To date, extensive experience has been gained in the treatment and prevention of dental diseases. It has been proven that embryonic prevention of dentoalveolar anomalies is possible when carrying out complex measures aimed at preventing and eliminating etiological and pathological factors. At the same time, the most difficult is the adequate impact on the general condition of children, the elimination of factors that adversely affect the fetus and its dentoalveolar system in the antenatal period.

Keywords Anomalies, Deformation, Periodontal diseases, Dental anomalies, Etiopathogenetic factors

1. Introduction

In recent years, studies have been carried out to study the prevalence of dental caries, periodontal disease and dentoalveolar anomalies among children and adults. However, some key points of this problem have not yet been elucidated, such as the relationship between the level of environmental pollution in different territories, differing in the degree of pollution of environmental objects - [1,2,5].

Establishing a relationship between the main causal factors and the deformation caused by them is a difficult task. The difficulty lies in the fact that the action of the same factors on the growth and development of the masticatory apparatus at different ages and with an unequal general state of the body can cause various deformities.

Many etiopathogenetic factors in combination with the individual characteristics of the organism cause the occurrence of various forms and variants of dentoalveolar deformities.

It is necessary to systematize these diverse forms, as it facilitates the correct diagnosis and the choice of the method of therapy.

Attempts to systematize various forms of pathology and separate them into separate nosological units were observed already at the early stages of the emergence and development of orthodontics. Hence it is clear that by now there are a large number of classifications of anomalies of the dentoalveolar system and methods for their diagnosis [3].

The first attempts to classify deformations date back to the beginning of the 19th century. These classifications are based on the principle of determining the correct or incorrect position of individual teeth. The nature of these classifications reflects the methods of therapy inherent in that time, which were limited only to the treatment of anomalies in the position of individual teeth.

Then there were classifications of occlusion anomalies, which are based only on the study of the ratio of the frontal sections of the dental arches.

The development of orthodontics, the accumulation of clinical data on etiopathogenesis, the study of various variants of deformities of the dentoalveolar system prompted attention not only to the ratio of dental arches in the frontal area, but also to the articulation of the lateral teeth, to their relationship in normal and pathological occlusion.

The study of the prevalence of forms of dentoalveolar anomalies in different periods of bite formation is of scientific interest. The data of such studies are used to develop organizational principles for the prevention of dental anomalies and specialized medical care.

In the 20-40s, scientific research in the field of epidemiology of dento-jaw anomalies was sporadic. Much more attention has been paid to this issue over the past three decades, as evidenced by the increased number of publications.

I would like to note the role of dynamic monitoring, which is expedient for dental clinics.

2. Materials and Methods

Dynamic observation is a system of work of medical and

preventive institutions that ensures the prevention of diseases, their early detection and treatment with systematic monitoring of the patient.

The organization and conduct of planned dental sanitation of children, which also includes the prevention of the development of dentoalveolar anomalies, are the basis for medical examination of the child and adolescent population.

Healthy teeth, healthy periodontal tissues and a normal bite are essential conditions for proper digestion and growth of a child.

To prevent violations in the dentofacial region, it is important to carry out the following measures:

1. to carry out medical genetic counseling for newlyweds;
2. to organize a rational mode of work, rest, nutrition of a pregnant woman, to protect her health;
3. organize hygienic care for the child, conduct hygienic education, teach regular brushing and control its quality. Provide planned medical and preventive dental sanitation of the child population to preserve teeth, prevent their carious destruction, odontogenic pathological processes, diseases of the oral mucosa, periodontal disease, using the territorial-district principle of servicing the child population;
4. identify family predisposition to the development of dentoalveolar anomalies;
5. prevent the development of dental anomalies (combating bad habits in children, normalizing mouth closing, breathing, swallowing, speech, normalizing the function of the muscles of the perioral region, plastic of a shortened frenulum of the tongue, abnormal frenulum of the lips, restoration of crowns of destroyed milk teeth and replacement of defects of dental arches by prosthetics, timely removal of supernumerary and delayed temporary teeth);
6. to eliminate existing dental anomalies by using orthodontic appliances and complex methods of treatment (stomatological - orthodontic, therapeutic, surgical, as well as otorhinolaryngological, endocrinological, psychoneurological, orthopedic, speech therapy, etc.);
7. prevent recurrence of dental anomalies;
8. strive to achieve a morphological, functional and aesthetic optimum in the dentofacial area.

To implement the tasks of organizing orthodontic care, it is necessary:

1. to ensure the further development of the network of dental clinics, to provide for the organization of children's departments in dental clinics, and in the absence of them in other outpatient clinics;
2. provide preventive planned sanitation of the oral cavity in the child population;
3. organize timely detection, registration and dispensary observation and treatment in dental clinics and hospitals of children with congenital pathology of the

maxillofacial region;

4. increase the number of orthodontic departments and offices;
5. when carrying out preventive planned sanitation of the oral cavity, organize the identification of children in need of orthodontic treatment.
6. tooth decay due to caries and its complications, as well as their early loss, predisposes to deformation of the dentition.

In each children's institution (nurseries, kindergartens), where it is planned to introduce a comprehensive system of dental prophylaxis, it is necessary to organize special rooms.

Employees of a children's dental clinic working at a preschool-school site should draw up a plan of work with parents, educators, medical personnel, including the following questions:

1. average terms of eruption and change of temporary teeth;
2. features of their formation and function;
3. the influence of bad habits on the development of the dentition;
4. non-closing of lips, mouth breathing, violation of posture and their adverse consequences;
5. dental caries in children and its complications;
6. average terms of formation and eruption of permanent teeth;
7. the influence of carious destruction of temporary and permanent teeth on the formation of bite;
8. orthodontic treatment and dentoalveolar prosthetics in children;
9. correct selection of toothbrush and toothpaste;
10. when and how to properly brush your teeth [4].

It is necessary to identify children with an increased risk of occurrence and development of malocclusion, dental caries. It's basically:

1. children whose parents or close relatives have pronounced malocclusion;
2. children with impaired development of the temporomandibular joints who have suffered trauma during childbirth;
3. children born prematurely, having malformations, including non-union in the maxillofacial region, who have undergone hemolytic disease, pneumonia, purulent-septic diseases during the neonatal period and breastfeeding;
4. children born to mothers with malformations of the cardiovascular system, hypertension, nephropathy, diabetes, tuberculosis, toxicosis of pregnant women, etc.

For a wide orthodontic practice F.Ya. Khoroshilkina developed an algorithmic scheme for establishing an orthodontic diagnosis, the orientation to which allows the orthodontist to develop a logical-dynamic stereotype of thinking. Orthodontic diagnosis should reflect morphological, functional and aesthetic disorders in the

dentofacial region. When diagnosing, one should also take into account data on the impact of dentoalveolar anomalies or deformities on the state of adjacent organs and the whole organism as a whole, as well as the etiological factor in cases where it can be detected [1].

These anomalies are characterized by a change in the number, size and position of the teeth:

1. anomalies in the number of teeth;
2. anomalies in the size of the teeth, their shape, color, hard tissues - enamel hypoplasia, irregular shape of the crown, tooth root;
3. anomalies of the position (position) of the teeth.

With the last anomaly, the location is indicated, for example, the right canine of the upper jaw between the premolars on the vestibular side of the alveolar process.

Anomalies of the dentition are characterized by a change in the size and shape of the dentition in three mutually perpendicular directions:

1. sagittal;
2. vertical;
3. transversal.

Occlusion in the sagittal direction in the area of canines and molars on both sides can be characterized by the following ratios: neutroocclusion, distoocclusion, mesioocclusion (position of the teeth of the lower jaw in relation to the teeth of the upper jaw). The severity of sagittal occlusion anomalies is determined in millimeters (disto-occlusion in the area of the first permanent molars on the left is 5 mm) or in relation to the size of the molars cusps (for example, the distal step in the area of the first permanent molars is equal to the size of the molar cusp). The size of the sagittal gap between the incisors is expressed in millimeters.

There are anomalies in the shape and attachment of the buccal mucosal cords, length and attachment of the frenulum of the tongue [1], size, shape, density and mobility of the tongue, size of the palatopharyngeal tonsils, and expression of the sublingual glands.

3. Result and Discussion

Dental anomalies are among the main dental diseases and are characterized by a high prevalence. The study of the prevalence of dentoalveolar anomalies and their individual nosological forms in different periods of occlusion formation is important in solving various issues: calculating the required number of orthodontists, organizing a network of orthodontic departments and offices, planning treatment and preventive measures, etc. The difference in the frequency of dentoalveolar anomalies in children, according to different authors, can be explained by the regional features of the spread of pathology, the difference in the incidence of dental caries, the individual approach of the authors to research methods and the assessment of deviations from the norm, the lack of a unified classification of dentoalveolar anomalies, and also by the fact that not all authors differentiate

dentoalveolar anomalies according to individual ages, analyzing only individual risk factors that contributed to the occurrence of dentoalveolar anomalies. Obtaining scientifically comparable indicators of the prevalence of dentoalveolar anomalies can be achieved with strict adherence to the principles of the age grouping of the examined contingents, the same methodological approach to assessing the condition of the teeth, dentition and occlusion based on a single classification, taking into account the ethnic features of the structure of the face and its individual parts.

T.D. Kudryavtseva published the results of a survey of children aged 3–7 years from a preschool institution in St. Petersburg. Completely healthy children were 4%, dentally healthy - 7%, 30% had emerging anomalies in the position of the teeth, dentition and occlusion, 45% had formed dentoalveolar anomalies, 56% had signs of violations [10, p.92].

Currently, there is a high percentage of prevalence of dentoalveolar anomalies and deformities (DAD) among all categories of the population [2,5]. Against the background of high dental morbidity in children and adolescents, the study of etiological factors, types of anomalies of the maxillofacial region and the dependence of this pathology on the general state of the body is of particular importance [1,3,4,6]. According to E. G. Perova et al., a feature of the child's body is an indispensable response to any external intervention, which also includes orthodontic treatment [4]. In connection with the foregoing, studies aimed at taking into account the prevalence of morbidity in different age periods in patients of different health groups become necessary. In the process of studying the frequency of occurrence of diseases of the dentoalveolar system among children and adolescents, a number of authors found that with age [1] the proportion of pathological conditions of the dentoalveolar system increases. In connection with the foregoing, early diagnosis of dentoalveolar anomalies and deformities in children and adolescents is important for the purpose of orthodontic correction of dentoalveolar anomalies and deformities at all stages of bite formation.

Of the huge number of factors that ensure the harmonious growth and development of the child, the physiological development of the dentition is of great importance, the functioning of which directly depends on the preservation of the teeth of the temporary and permanent occlusion [1,4]. Considering in detail the changes that occur after the removal of temporary teeth, most authors noted the important role of the integrity of the dentition in the processes of developing the height of the occlusion, timely eruption and correct establishment of permanent teeth in the alveolar arch, as well as ensuring an adequate growth impulse throughout all stages of the formation of the masticatory apparatus [2,5]. The defeat of the carious process and the subsequent removal of temporary molars disintegrate the processes of growth and development of the dental system, which in turn plays the role of a trigger in the occurrence of secondary deformations, abnormal

development of teeth, dental arches and jaws. In severe cases, the functions of the gastrointestinal tract are disturbed, which in turn exacerbate the primary etiological factor [4,7,9].

4. Conclusions

Inflammatory diseases of the pulp and periodontium of temporary teeth are severe complications of caries. One of the determining reasons for the development of this pathology is the morphological features of temporary teeth: wide root canals, a large apical opening, an increased lumen of the periodontal fissure, the presence in 50% of cases of additional communications with periodontal tissues in the area of root bifurcation. This initializes the rapid course of the inflammatory process, both in the dental pulp, and the rapid transition to the adjacent tissues [6]. G.B. Ospanova and R.I. Smolyanova, having analyzed a large amount of clinical and radiological material, concluded that chronic granulating periodontitis of temporary molars in the presence of abscessing phenomena or a fistulous tract has a negative effect already from the age of 2, leading to dysplasia of the rudiments of permanent teeth, and in some cases to lysis [6].

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