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Neurological Factors Affecting Teeth Development in Young Children

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Abstract: The process of teething and bite formation is a physiological process, which is one of the important indicators of the health and physical development of a child. However, there are a number of factors that have an unfavorable effect on this process and create an opportunity for the development of the pathological process. In this regard, despite the numerous works of domestic and foreign researchers on this topic, the development of methods for early diagnosis, prognosis of the course and outcome of the pathology of teething and occlusion formation in children remains relevant and in demand.

Keywords: timing of teething, children, cleft lips and palate, formation, bite, malformations.

Teething is a physiological stage process characterized by the appearance of milk teeth, then permanent teeth in children [1]. Teething serves as an indirect indicator of the correct development of the child. As a physiological act, teething is not a painful phenomenon, does not cause pathological conditions. It is in direct connection with the general state of health of the child, the timely growth of teeth in a certain sequence indicates the normal development of his body [3].

For various reasons, a number of deviations may occur in the structure of teeth, their location and development [4]: the absence of a tooth germ, the wrong position of the tooth axis (horizontal and oblique), which makes it erupt outside the arch of the dentition or remains in the thickness of the jawbone, the malformation of the tooth itself - size, shape, position, color, lack of enamel cover. Studies have established that malocclusion occurs due to uneven growth of the jaws, due to prolonged sucking on the nipple. Anomalies in the location of the teeth arise for constitutional reasons (small size of the jaw), due to injuries, with congenital disorders of the exchange of connective tissue, with tumors of the alveolar process of the jaw [5-9]. The process of teething and bite formation is a physiological process, which is one of the important indicators of the health and physical development of a child. However, there are a number of factors that have an unfavorable effect on this process and create an opportunity for the development of the pathological process. In this regard, despite the numerous works of domestic and foreign researchers on this topic, the development of methods for early diagnosis, prognosis of the course and outcome of the pathology of teething and occlusion formation in children remains relevant and in demand.[8]

When examining children, the following diagnostic methods were used: assessment of the general clinical status, laboratory research methods, analysis of local status, study of diagnostic models of the jaw, X-ray examination of the skull, dentition. The functional state of hearing and speech of patients was also investigated. The examination began with a joint examination of the child by a pediatrician and a neuropathologist during the initial visit to the department of pediatric maxillofacial surgery of the regional hospital or when providing advice in maternity hospitals in order to assess the somatic status, determine the indications and contraindications for surgical treatment and the tactics of correcting concomitant pathology. Particular attention was paid to the collection of the obstetric and gynecological history of the mother, family history, the peculiarities of the course of this pregnancy and childbirth and the diseases suffered by the child.

The frequency and characteristics of the birth of infants with the development of congenital malformations are influenced by many factors, often in various combinations. The frequency of development of intrauterine anomalies in different regions of Bukhara and the region, differing in ecological characteristics, can vary within wide limits.

The highest frequency of occurrence among various pathologies is congenital cleft lip and palate, as well as multiple malformations. We analyzed the frequency of birth of children with cleft lip and palate in the Bukhara region. The results of a prospective study of data for 8 years showed that during this period in the Bukhara region, the birth of 250605 living children was registered. Among them, 250 cases of the birth of children with CRHN were identified.

The data of the structural relationships of the anomalies of the maxillofacial region by gender did not reveal significant differences between boys and girls: 46.1 ± 4.19 and 55.9 ± 4.19%, respectively. At the same time, the structure of the anomalies is characterized by the fact that clefts of the lip are most common in boys, and clefts of the hard and soft palate are most common in girls. A significant part of the pathology is represented by isolated clefts of the hard and soft palate (hidden, incomplete, complete) - 30.12%, complete unilateral clefts of the upper lip, alveolar ridge, hard and soft palate - 29.02%, followed by isolated clefts of the soft palate - 16.01%.

At the same time, in the structure of malformations of the face and jaws, a certain place is occupied by isolated clefts of the upper lip (hidden, incomplete, complete) - 15.02%, complete bilateral clefts of the upper lip, alveolar go, hard and soft palate - 13.26%. It should be noted that in the presented anomalies of the development of the facial skeleton, there are often severe anatomical and functional disorders of organs and tissues of the oronopharynx (41.5%), which require a longer period of rehabilitation. Anatomical and functional disorders in congenital clefts of the upper lip are diverse and depend on the severity of the congenital malformation. With all clefts of the upper lip, there are anatomical disorders common to all types, expressed to a greater or lesser extent: splitting of the tissues of the upper lip; shortening of the lip height with unilateral and middle fragment of the upper lip with bilateral; deformation of the skin-cartilaginous part of the nose. With a hidden cleft of the upper lip, there is a pronounced underdevelopment of the muscle layer while maintaining the integrity of the skin and mucous membrane of the upper lip. On the side of the filtrum, there is a vertical cicatricial strip of skin in the form of a groove, under which the circular muscle of the mouth is absent. In a calm state, the defect is hardly noticeable and manifests itself only during a smile, crying, etc., when muscle ridges appear on both sides of the groove due to the contraction of the circular muscle of the mouth. The shortening of the upper lip with a hidden cleft is insignificant (1-2 mm), and the deformation of the cartilaginous part of the nose is hardly noticeable. With an incomplete cleft of the upper lip, tissue nonunion is present only in its lower parts, and at the base of the nose there is a correctly developed area or a thin skin bridge connecting both parts of the lip to each other. There is almost always a deformation of the nose: the wing of the nose on the side of the cleft is stretched, flattened, its base is displaced outward and downward, the tip of the nose is displaced towards the cleft, the nasal septum is curved due to its bending to the healthy side.

With a bilateral cleft of the upper lip, the septum of the nose is shortened, the prolabium protrudes anteriorly in the form of a proboscis, the tip of the nose is flattened, often bifurcated, the wings of the nose are stretched and flattened on both sides, the nostrils are wide. , expressed in varying degrees depending on the severity of the defect: cleavage of the tissues of the palate; shortening of the soft palate; expansion of the middle section of the pharynx. Without timely treatment, as the child grows, the deformity of the upper jaw increases. In some children with congenital clefts of the palate, congenital underdevelopment of all parts of the upper jaw (micrognathia) is observed. In addition to the deformation of the upper jaw, with cleft palate, congenital underdevelopment of the muscles of the soft palate and the middle part of the pharynx is revealed. The soft palate is short, the underdeveloped palatine muscles are not fixed to each other along the midline. With the contraction of the muscles of the palate, the transverse dimensions of the cleft increase, which contributes to the disorder of speech and swallowing.

Quite often, the children examined by us had a CNS pathology (perinatal encephalopathy, muscular dystonia syndrome, hypertensive-hydrocephalic syndrome, autonomic dysfunction syndrome), requiring observation by a neuropathologist and prescribing corrective therapy. During the first year of life, 62 children were found to have a delay in physical development, underweight and underweight. At the same time, this indicator is higher in the group of patients with congenital through cleft of the upper lip and palate (30.2%), compared with the group of children with congenital isolated cleft of the upper lip (10.7%).

Thus, anatomical disorders cause a change in the functions of directly affected and associated organs, the harmony of development of several areas is disturbed, so-called combined secondary deformities arise.

Analysis of the frequency of occurrence of cleft depending on the side of the lesion showed that the majority of children have a left-sided cleft, and 26.8% of sick children have a right-sided defect. Depending on the degree of anatomical disorders, the examined children had 2 forms of clefts of the upper lip and palate: in 20 (10.6%) - incomplete cleft lip, isolated cleft in the palate in 52 (27.8%) children and in 83 (44.6%) %) - unilateral complete through cleft lip and palate, and 31 (16.0%) children had bilateral complete through cleft lip and palate. In children with a hidden cleft of the upper lip, splitting of the muscle layer was observed while maintaining the continuity of the skin and mucous membrane. And with an incomplete cleft of the tissue, the lips of the examined children did not grow together only in its lower parts, and at the base of the nose there was a correctly developed area or a narrow skin bridge connecting both parts of the lip to each other.

In children with a cleft upper lip, from the first days of life, the sucking function was impaired due to the inability to create tightness in the oral cavity. Children with a hidden and incomplete cleft of the upper lip could take the mother's breast, pressing the breast tissue against the normally developed alveolar ridge of the upper jaw and palate, compensating for the inferiority of the lip muscles by actively including the tongue in the sucking act. However, with other forms of clefts, the child's nutrition from the first days was artificial. And in children with simultaneous cleft lip and palate, the sucking function was more severely disturbed. The anamnesis data showed that all children were born full-term.

The incidence of congenital malformations in the Bukhara region is 7.8%. In the structure of congenital malformations, cleft lip and palate is recorded in 18.9% of cases.

The main teratogenic factors contributing to the development of congenital malformations of the maxillofacial region of the fetus in women are: ecologically unfavorable factors (25.8%), a burdened infectious history (22.04%), hereditary burden (15.05%), funds with teratogenic effects (16.1%), the effect of combined teratogenic factors (21.0%).

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