

DENTAL CHARACTERISTICS OF TISSUES AND ORGANS OF THE DENTAL SYSTEM IN CHILDREN AND ADOLESCENTS WITH DIFFERENTIATED CONNECTIVE TISSUE DYSPLASIA

¹Gafforov Sunnatullo Amrulloevich, ²Shaymatova Azizakhon Rustambekovna,
¹Nazarov Ulugbek Kakhramonovich.

¹Center for the development of professional qualifications of medical workers under the Ministry of Health of the Republic of Uzbekistan.

²Samarkand State Medical University.

Annotation. The study is devoted to the study of the organs of the dento-jaw system (DJS) in 59 children and adolescents with differentiated connective tissue dysplasia (DCTD). A complex of general clinical studies was used; general examination, dental, instrumental and radiological methods. Based on the results obtained, it was concluded that patients with DCTD (differentiated connective tissue dysplasia) often have pathologies of the oral cavity (OR) and anomalies and deformations of the jaws, which lead to further damage to the integrity of the organs and tissues of the DJS.

Key words: differentiated connective tissue dysplasia, carious lesions of the teeth, periodontitis, Marfan syndrome, Ehlers-Danlos syndrome, Alport syndrome, osteogenesis imperfecta, epidermolysis bullosa.

Relevance. It is known that connective tissue (CT) is a complex of mesenchymal derivatives, consisting of cellular trims and a large amount of intercellular substance, and it makes up more than 50% of the human body weight. ST is involved in the formation of the stroma of organs, interlayers between other tissues, the dermis of the skin, and the skeleton; in total, it performs trophic, protective, supporting, plastic, and morphogenetic functions. In addition, bone tissue is a depot of calcium (Ca) and phosphorus (P) salts in the body [9, 10, 14]

Today, connective tissue dysplasia (CTD) is common and is diagnosed by skeletal pathology - in 57–94% of all dysplasias. The most common pathologies are kyphoscoliosis (up to 80%), flat feet (up to 78%), arachnodactyly (up to 36%), hollow foot (up to 16%), hyperkyphosis, hyperlordosis (up to 19%), joint hypermobility (up to 33%), polysegmental early osteochondrosis (up to 38%). In addition, up to 41% of dysplasias have isolated or combined craniofacial anomalies (CFA) [7, 23]. DCTD is characterized by: a certain type of inheritance, a distinct clinical picture, often established and well-studied genetic and / or biochemical defects such as Marfan, Ehlers-Danlos, Alport syndromes, osteogenesis imperfecta (OI), epidermolysis bullosa, etc.; DCTD is diagnosed in cases where a patient's set of phenotypic and other signs does not fit into any of the differentiated diseases. It is also known that in the embryonic period, the structure-forming function of ST is manifested, which affects the differentiation and organization of tissues, including periodontal tissues [19, 20, 21]. NDDTD is characterized by a genetically heterogeneous group of diseases of a multifactorial nature with a progressive course, which is based on disturbances in the synthesis, breakdown or morphogenesis of extracellular matrix components that occur in individuals with

a certain genetic predisposition in the period of early embryogenesis or postnatally under the influence of adverse environmental factors. [2, 8, 10, 11, 12, 16]

A number of studies provide evidence that, with OI, there are “..... deformities of the skeleton: chest, spine, pelvis, shortening of the lower extremities and children may lag behind in growth, subtypes IB and IVB are characterized by dysplasia of the teeth, impaired development of enamel and dentin (dentinogenesis imperfecta), teeth have an amber, yellow-brown or bluish color due to impaired dentin formation [9]. It is also known that, despite numerous publications devoted to the problems of DCTD pathologies, the issue of assessing and providing specific dental care to such patients remains open, especially among children and adolescents who often seek dental care [1, 3, 10, 13].

Purpose of research. To study the features of the clinical course of anomalies and deformations of the dentoalveolar system in children and adolescents with DCTD pathologies.

Materials and research methods. The study is based on retrospective and prospective data obtained as a result of observation of patients in 2020-2022 with different severity diagnosed with DCTD - 59 people - the main group (O/G); of them with Marfan syndromes - 14 (1a-group), Ehlers-Danlos - 12 (1b-group), Alport - 11 (1c-group), BUT - 11 (1d-group), bullous form of epidermolysis - 11 (1d-group) and 32 practically healthy individuals without signs of musculoskeletal dysplasia - the control group (C/G) aged 6 to 19 years; including - 49 (53.8%) boys, -42 (46.2%) girls (Table №1).

(Table №1).

Characteristics of those examined with pathologies of DCTD and the control group by age and gender (M + n in %)

Diagnosis and groups			Age (M+n in %)			By gender in %	
			6-9 years in %	10-13 years in %	14-18 years in %	Boys in %	Girls in %
%	%	%					
General examination 91/100	DCTD (1-gr.) 59/64,8	Marfan syndromes (1a-gr.)14/23,7	4/28,6	5/35,7	5/35,7	7/50	7/50
		Ehlers-Danlos (1b-gr.) 12/20,3	3/25,0	5/35,7	4/33,3	8/66,7	4/33,3
		Alporta (1v-gr.)11/18,6	4/36,4	4/36,4	3/27,3	5/45,4	6/54,6
		Imperfect osteogenesis (1g-gr.) 11/18,6	3/27,3	3/27,3	5/45,5	5/54,6	6/45,4
		Bullous form of epidermolysis (1d-gr.) 11/18,6	3/27,3	4/36,4	4/36,4	7/63,6	4/36,4
		Medium: DCTD 59/64.1	17/28,9	21/35,6	21/35,6	32/54,2	27/45,8

	K/G 32/35,2	Practica I health 32/35.2	7/21,8	12/37,5	13/40,6	17/53,1	15/46,9
Average by age	91/100	91/100	24/26,4	33/36,3	34/37,4	49/53,8	42/46,2

A complex of general clinical studies was carried out - questioning, general examination, instrumental, biochemical, chemiluminescent methods, a diagnosis of DCTD was made, with the participation of a geneticist and a rheumatologist to exclude chromosomal pathology in accordance with the classification [15.]: During intraoral examination, the state of hard tissues was assessed tooth, periodontal tissues, condition of the oral mucosa (OMS). Nosology of diseases of periodontal tissues based on ICD 10-C (by degrees - K05.31) and assessment of the severity of periodontal diseases [4] including the following indices: - hygiene index (Hygiene Index (HI) according to the method of Lindhe, 1983); - gingival index - GI, papilla bleeding index PBI (Papilla Bleeding Index); -measuring the depth of the periodontal pocket and the degree of attachment loss. The indexes for assessing the state of hard tissues of teeth KPz, KPp, KUz, KUp were used. Clinical and functional tests of Eshler-Bitner, Ilina-Markosyan were carried out and in the final diagnosis anthropometry of jaw models according to (Bolton method), occlusion of alveolar growth according to (Engel method), CA and CA according to Engel classification and classification of dental anomalies of jaw occlusion according to previously performed methods [17]. X-ray (R) methods for assessing the state of bone tissue (c/t) of the jaws were performed on an orthopantomograph (OP); to quantify the degree of resorption of the alveolar part (a/h) of the lower jaw (n/h) and the alveolar process (a/o) of the upper jaw (v/h), we used the indices of destruction of the alveolar bone - the Fuchs index and the R index. For quantitative and qualitative characteristics of the cortical layer of n/h, the MCI index according to Klemetti E was used [18].

Results and their discussion. As can be seen from the results obtained, according to the dental condition in the studied groups: in the 1st group of patients with DCTD, the intensity of caries averaged -18.2 ± 0.5 ; ratio of KPU elements; K -2.1 ± 0.5 ; P -16.8 ± 0.4 ; In total, 24.7 ± 0.4 teeth -2.8 ± 0.3 , while non-carious lesions of the teeth amounted to -9.0 ± 0.4 , pathology of periodontal tissues -42.4 ± 0.6 , while a high increase in indicators of damage to the organs of the PR among children and adolescents is swept aside with pathologies of OI - group 1; -21.2 ± 0.8 ; -6.4 ± 0.8 ; -14.2 ± 0.6 ; -1.8 ± 0.9 ; -24.7 ± 0.4 ; -10.2 ± 0.4 ; -54.5 ± 0.4 , respectively. Among C/G patients, these indicators were -6.46 ± 0.6 ; -2.3 ± 0.4 ; -3.5 ± 0.4 ; -1.3 ± 0.8 ; -23.7 ± 0.2 ; -1.5 ± 0.2 ; -28.8 ± 0.4 , respectively. When compared with the average incidence rates of carious and non-carious lesions of hard tissues of the teeth, and diseases of periodontal tissues among O/G patients, it can be noted that the bullous form of epidermolysis (group 1e) is less common than the above lesions; -16.0 ± 0.4 ; -6.4 ± 0.8 ; -14.2 ± 0.6 ; -1.8 ± 0.9 ; -24.7 ± 0.4 ; -10.2 ± 0.4 ; 27.3 ± 0.4 .

The analysis of the results shows different directions of growth in the results of periodontal pathologies: in O / G - 42.4%, including those with Marfan syndrome (1a-gr.) and Ehlers-

Danlos syndrome (1b-gr) 50% each; with Alport's syndrome (1c-gr.) - 36.4%; imperfect osteogenesis (1d-gr.) - 54.5% and with bullous form of epidermolysis (1d-gr.) only - 27.3%, it should be noted that low rates in comparison with C/G are observed in 28.8 % cases. Comparisons by age groups show the highest rates of periodontal disease UO/G - 14-18 years (48.8 ± 1.8); including groups 1a, 1b, 1c, 1d and 1e -74.8 ± 0.8 ; -70.4 ± 0.8 ; 33.4 ± 2.2 ; -75.3 ± 0.8 ; -33.2 ± 0.6 , respectively, in K / G, also a high prevalence of periodontal disease was noted in this age group - 34.3 ± 0.6 . chronic generalized catarrhal gingivitis, it accounted for more than 60% of cases, of the total number of periodontal tissue lesions, mild gingivitis more than 30%, with moderate gingivitis about 8%.

Analyzing the results of the hygienic state of the PR in patients - 1a, 1b and 1d - groups, there is a deterioration in the indicators of the hygienic state of the PR directly related to the increase in age. The analysis of the results is reflected in table No. 2, where the clinical state of periodontal tissues confirms that with DCTD, patients have an unsatisfactory hygienic state of the PR, high rates of destructive processes in periodontal tissues, severe bleeding and hyperemia of gum tissues.

(Table №2).

Evaluation of the state of oral hygiene and the state of periodontal tissues in the examined children and adolescents (M ± n in %).

Diagnosis, groups and clinical symptoms		M±n in % and millimeters (mm)						
		Disease s Pi	H1	PB	GI	Pocket Pi Depth (mm)	Attachme nt loss amount (mm)	Tooth mobility
ДДСТ (О/Г) 59/64,8%	Marfan syndromes (group 1a) 14/23.7%	50±1,8	28,6±1,2	2,8 ±0,4	2,0±0,4	1,4±0,2	2,1 ±0,2	1,1±0,1
	Ehlers-Danlos (1b-group) 12/20.3%	50±0,8	25,0±0,8	2,0 ±0,4	2,4±0,6	3,4±0,8	1,1 ±0,1	1,4±0,1
	Alporta (1c-group) 11/18.6%	36,4±1,1	36,4±1,8	1,1 ±0,8	1,8±0,4	2,8±0,5	0,4 ±0,4	1,0±0,1
	imperfect osteogenesis (1d-group) 11/18.6%	54,5±1,4	27,3±0,7	1,3 ±0,4	2,0±0,6	4,0±0,9	1,4 ±0,2	1,0±0,1
	bullous form of epidermolys	27,3±0,7	27,3±0,7	1,3 ±0,2	1,5±0,8	3,6±0,1	2,3 ±0,6	1,0±0,1

	is (1d-group) 11/18.6%							
	Medium: DCTD 59/64.1%	42,4±1, 4	28,8±1, 2	2,4 ±0,3	1,9±0, 1	3,2±0, 6	1,2 ±0,4	1,2±0,6
K/G	K/G32/35,2 %	37,5±1, 2	62,5±1, 8	0,6±0, 2	0,6±0, 4	0,6±0, 4	0,7±0,4	-
We d	91/100%	40,6±1, 3	40,6±1, 3	1,3±0, 8	1,2±0, 2	1,8±0, 8	0,8±0,4	0,6±0,4

Appendix: Hygiene index - H1, bleeding index - PB; gingival index - GI; Pi - periodontal tissues;

According to the results obtained, during the survey of 91 children and adolescents, including 59 with DCTD, it was found that the frequency of AF and AF is observed in 52.5% of cases, while in group 1a they are observed in -35.5%, in 1d group y - 37.5% and in group 1b 19.4% of patients. Also, out of 52.5% of the available AF and AF, 22.6% of cases are adentia and 12.9% of cases, deep incisal disocclusion, trema and diastema (Table № 3).

(Table №3).

Frequency of occurrence of AF and AF in children and adolescents (M ± n in %).

Examined group according to diagnoses of DCTD and K/G (M±n in %)								
Diagnosis	Total obs. 91/100%	K/G- n=32	1-gr. DCTD n=59	Including.				
				1a-gr. n=14	1b-gr. n=12	1v-gr. n=11	1g-gr. n=11	1d-gr. n=11
Anomaly of the teeth		1/3,1	2/6,5	1/3,2	-	-	1/3,2	-
Adentia		3/9,3	7/22,6	3/9,7	2/6,5		2/6,5	-
Trema, diastema		2/6,2	4/12,9	1/3,2	-	1/3,2	1/3,2	1/3,2
Crowding of teeth		1/3,1	1/3,2	-	-	-	1/3,2	-
Narrowing of the jaws		-	3/9,7	1/3,2	1/3,2	-	1/3,2	-

Distal occlusion	1/3,1	2/6,5	1/3,2	-	-	1/3,2	-
Mesial occlusion	-	3/9,7	1/3,2	1/3,2	-	1/3,2	-
Deep incisal disocclusion	2/6,2	4/12,9	1/3,2	1/3,2	-	2/6,5	-
Vertical shear disocclusion	1/3,1	3/9,7	1/3,2	1/3,2	-	1/3,2	-
Transverse anomaly of occlusion	-	2/6,5	1/3,2	-	-	1/3,2	-
Total DMA and DMD	n=11/34	n=31/52,5	n=11/35,5	n=6/19,4	n=1/3,2	n=12/37,5	n=1/3,2

The data presented in the tables show that adentia, trema, deep incisal disocclusion, narrowing of the jaws, mesial occlusion, abnormal position of the teeth and transverse anomaly of occlusion dominated in the structure of AF and AF in the examined O/G. At the same time, it was often noted that the permanent teeth had a bell-shaped shape, were narrowed in the cervical region, the shades of the teeth were observed from yellow to blue. It can be said that constitutional and morphological dyskinesia, as a manifestation of DCTD, to a certain extent, affect the frequency of pathological disorders in the MChS. The obtained results also confirm the presence of anomalies and deformities of the teeth and occlusion, a high prevalence of carious and non-carious lesions of the teeth and pathologies of periodontal tissues. At the same time, it should be noted that DCTD occurs mainly in childhood. This observation demonstrates distinct clinical symptoms, pathognomonic signs of one of the types of DCTD.

In the results obtained by the OP estimates in 40 surveyed children and adolescents; including 29 patients from the 1st group and 11 examined from the C/G in order to study the state of the bone tissue, a/h of the jaw and the body of the n/h, it is noted that the average degree of resorption of the alveolar bone in the group was 0.48 ± 0.06 according to the Fuchs index, while in K / G 0.99, which corresponds to a value from 1/2 to 2/3 of the length of the tooth root. Also, as in the 1a group, the indicators of bone tissue resorption a / o v / h (0.44 ± 0.04) turned out to be slightly worse than those of n / h (0.48 ± 0.08). Comparison of the values obtained during the measurement cortical index (MCI) revealed statistically significant differences in the state

of the bone tissue of the body n/h in K/G and 1a, 1b and 1d group of patients with DCTD (Table №4).

(Table №4).

Index indicators	1a-group. p-value according to Student's t-test (n=11)	1b-group p-value according to Student's t-test (n=6)	1c-group p-value according to Student's t-test (n=12)	K/G (n=11)
Fuks index upper jaw	0,44±0,04p<0,001(t=10,68)	0,48±0,06p<0,001(t=10,02)	0,45±0,04p<0,001(t=10,88)	0,98
lower jaw	0,48±0,08p<0,001(t=10,01)	0,52±0,08p<0,001(t=9,46)	0,50±0,08p<0,001(t=11,14)	1,0
Tot. Index	0,46±0,06p<0,001(t=10,01)	0,50±0,08p<0,001(t=9,78)	0,48±0,06p<0,001(t=11,48)	0,99
Cortical index (MCI), mm	4,9±0,3 p<0,01 (t=2,44)	5,2±0,2 p<0,01 (t=2,94)	5,0±0,4 p<0,01 (t=2,22)	4,2±0,2
R-index upper jaw	1,46 ±0,08 p<0,001 (t=5,88)	1,44 ±0,06 p<0,001 (t=5,04)	1,48 ±0,04 p<0,001 (t=4,68)	0,98
lower jaw	1,38±0,08 p<0,001 (t=3,44)	1,28±0,04 p<0,001 (t=3,66)	1,32±0,02 p<0,001 (t=4,22)	1,0
Tot. Index	1,42 ±0,08 p<0,001 (t=4,22)	1,36 ±0,05 p<0,001 (t=4,64)	1,40 ±0,03 p<0,001 (t=4,36)	0,99

Evaluation of the R-th index also showed that the value of bone tissue resorption, a / o v / h (1.46 ± 0.08) somewhat exceeds this indicator by n / h (1.38 ± 0.08) and the total value of resorption of the bone tissue of the jaws on average for the group was 54%.

Comparative assessment of the state of bone tissue, a/h of the jaws and body of n/h in patients with patients 1a, 1b, 1d and C/G. It is known that one of the main diagnostic signs of the presence of periodontal pathology is the loss of bone tissue, a / h of bone. However, the nature and form of its resorption are so variable and depend on many factors that it is very difficult to determine the features of the course of the pathological process. At the same time, R-th data are of the greatest value in determining the nature of the pathological process occurring in short-term periodontal tissue. Our results confirm that the activity of bone resorption is evidenced by the fuzziness and unevenness of the contours of the destroyed c/h tissue both in the region of the interalveolar ridges and around the roots, the presence of foci of osteoporosis. Long-term active inflammatory changes also cause marginal patterns of the cervical sections of crowns and roots. When acute processes subside, the contours of the destroyed bone become

more even and clear, the zones of focal osteoporosis disappear, while the architectonics of the end plates is disturbed, its subsidence was accompanied by the restoration of continuity, but the height of the destroyed interalveolar ridges was not restored. Also, we carried out a comparative analysis of the state of the bone tissue of the jaws, depending on the form of the pathology of DCTD (Table №5).

(Table №5).

Comparative characteristics of bone tissue in examined children and adolescents with DCTD pathologies.

Indices index	1a-group. R-value by Student's t-test	1b-group. R-value by Student's t-test	1c-group. R-value by Student's t-test	Control	R-value of the Fisher test				
					Fuchs index				
upper jaw	0,44±0,04	0,48±0,06	0,45±0,04	0,98		1a-gr	1b-gr	1c-gr	Control gr
					1	1.000	1.000	0.010	
					2	-	1.000	0.003	
					3		-	0.002	
					4			-	
lower jaw	0,48±0,08	0,52±0,08	0,50±0,08	1,0		1a-gr	1b-gr	1c-gr	Control gr
					1	1.000	1.000	0.000	
					2	-	1.000	0.001	
					3		-	0.001	
					4			-	
General indicator	0,46±0,06	0,50±0,08	0,48±0,06	0,99		1a-gr	1b-gr	1c-gr	Control gr
					1	-	1.000	1.000	0.000
					2	-	0.796	0.000	
					3		-	0.000	
					4			-	
Cortical index									
	4,9±0,3	5,2±0,2	5,0±0,4	4,2±0,2		1a-gr	1b-gr	1c-gr	Control gr
					1	-	1.000	0.602	0.000
					2	-	0.100	0.000	
					3		-	0.078	
					4			-	

<i>Radiological index</i>									
upper jaw	1,46 ±0,08	1,44 ±0,06	1,48 ±0,04	0,98		1a- gr	1b- gr	1c- gr	Control gr
					1	-	0.650	0.650	0.000
					2		-	0.887	0.000
					3			-	0.000
					4				-
lower jaw	0,48±0,08	0,52±0,08	0,50±0,08)	1,0		1a- gr	1b- gr	1c- gr	Control gr
					1	-	0.372	0.901	0.000
					2		-	0.402	0.001
					3			-	0.002
					4				-
General indicator	0,46±0,06	0,50±0,08	0,48±0,06	0,99		1a- gr	1b- gr	1c- gr	Control gr
					1	-	0.342	0.801	0.000
					2		-	0.627	0.000
					3			-	0.000
					4				-

Analyzing the data obtained, it should be noted that in patients with various forms of DCTD and pathologies of periodontitis, regardless of gender and age, there was a significant loss of bone tissue of the interalveolar septa, determined by the Fuchs index within 1/2 -2/3 of the root length, this is also times confirms that osteoporosis of the jaw bones of patients with DCTD has an aggressive course. Especially in the group of patients 1a and 1d, the R-th signs of pathology of the bone tissue, n/h and v/h, were characteristic with features of bone tissue loss, a/h of the jaws, and the process was generalized, uniform in the area of all teeth. At the same time, the shape of the interalveolar septa was preserved, and the cortical plate was traced throughout, which is more typical for the process of atrophy, a/h bone accompanying dystrophic changes in the periodontium. as in patients of group 1b, the vertical nature of resorption predominates with the formation of bone pockets.

Conclusion. The analysis of the obtained results of the clinical and epidemiological study of children and adolescents with DDTD indicates a high prevalence of dental diseases and phenotypic signs that manifest themselves in the CP. At the same time, the intensity of tooth decay by caries and periodontal tissue damage in the key age group of children aged 14-18 years is characterized as a high level of -21.2 ± 0.8 , -54.5 ± 0.4 , respectively, with syndromes - HO, also in the examined children with Marfan syndrome, Ehlers-Danlos and the unsatisfactory hygienic condition of the PR is determined, which indicates a physical limitation of the possibility of caring for the PR. In the structure of the phenotypic signs of CTD, defects

and deformities of the APJ were most often detected, such as adentia, tremas, deep incisal disocclusion, narrowing of the jaws, mesial occlusion, abnormal position of the teeth and transverse anomaly of occlusion, these pathologies were observed, especially in children and adolescents in 1a, 1b and 1d group. At the same time, in these patients, in the hard tissues of the teeth, periodontal tissues, as well as h / c, there are specific changes associated with the background of systemic pathologies of the body. Analysis of the R-data of patients with DCTD shows that the loss of bone tissue, a / c, is more active, especially in the horizontal type, mainly in the area of the interalveolar septa, while in patients with C/G this is imperceptible. The results once again confirm that somatic pathology as DCTD strongly affects the condition of periodontal tissue and can be considered as risk factors for the development of pathology of AP. The identified clinical features of the manifestations of DCTD in the organs and tissues of the PR, as well as the CP, require an integrated approach, while the results dictate the need for further research aimed at studying the etiopathogenetic mechanisms and the formation of pathology, in addition, in our opinion, it is necessary to develop measures to prevent dental pathologies, with DCTD, as well as improving the provision of dental care to children and adolescents.

USED LITERATURE.

1. Bakulina E.G. Features of bone and homocysteine metabolism in connective tissue dysplasia of bone tissue. candidate of medical sciences. Stavropol - 2006.
2. The effect of a mixture of furfural, formaldehyde and acetone on the state of the oral mucosa and liver / S.A. Gafforov, E.M. Baibekova, M.V. . 2004
3. Gafforov S.A. Bolalardamatrixlimetalloproteazalarningchakka-pastekijagbugimikasalliklaripatogenesisigiahiamiati. /Gafforov S.A., Olimov S.Sh., Saidov A.A.// "Dentistry" scientific-practical. magazine No. 2. 48-50 s. Tashkent -2019. 7.
4. Gafforov S.A. Features of the relationship of diseases of the oral mucosa with somatic pathology / S.A. Gafforov, Zh.N. Bakaev // Bulletin of the Tashkent Medical Academy, 15-20. 2019
5. Gafforov S.A. Features of the mineral composition of hard tissues of teeth in workers of the Fergana Chemical Fiber Plant. Russian Dental Journal, 47-49. 2004.
6. Differentiated connective tissue dysplasia (clinical observation). Authors: M.P. Limarenko. Donetsk State Medical University. M. Gor'kiy, Ukraine
7. Kadurina T.I. Modern ideas about connective tissue dysplasia / T.I. Kadurina, V.N. 2-5.
8. Kadurina T.I. Evaluation of the severity of undifferentiated connective tissue dysplasia in children / Kadurina T.I., Abbakumova L.N.// Medical Bulletin of the North Caucasus. No. 2. 2008.
9. Omelchenko L.I., Nikolaenko V.B. Connective tissue dysplasia in children // Doctor. - 2004. - No. 1. - S. 44-47.
10. General and local changes in the body, dental and immunogenetic nature in undifferentiated connective tissue dysplasia / G.A. Fazilbekova, S.A. Gafforov, U.K. Nazarov, D.N. Khen // Russian DENTAL JOURNAL 26 (1), 5-14.

11. Dental and immunogenetic features of the body of patients with undifferentiated connective tissue dysplasia / S.A. Gafforov, G.Khalimbetov, U.K. Nazarov, D. Rakhmatullaeva // European Journal of Modern Medicine and Practice 2 (5), 144-152.
12. Gafforov S. A., Shaymatova A. R., Shamsieva M. O. Survey analysis of the dental status of children and adolescents suffering from various forms of connective tissue dysplasia // Integrative Dentistry and Maxillofacial Surgery. - 2022. - Vol. 1. - No. 2. - S. 28-36.
13. Sunnatullo Amruloevich, Gafforov and Shaymatova Azizakhon Rustambekovna. «DENTAL STATUS AND DIAGNOSIS OF CHILDREN AND ADOLESCENTS WITH VARIOUS FORMS OF CONNECTIVE TISSUE DYSPLASIA». International Interdisciplinary Research Journal Galaxy 10.11 (2022): 955-962.
14. Ecological stability, dentistry and human health /OlimovS. Sh., Gafforov S.A., Atabaev Sh.T.//Guidelines for teachers, physicians, ecologists, clinical residents of universities. Tashkent-2014.
15. Yakovlev V.M., Nechaeva G.I., Viktorova I.A., Glotov A.V. Terminology, definition from the standpoint of the clinic, classification of congenital connective tissue dysplasia // Abstracts. Regional symposium "Congenital connective tissue dysplasia". - Omsk, 1990. - S. 1-3.
16. Gafforov S.A. Clinical characteristics and diagnosis of chronic generalized periodontitis in patients with connective tissue dysplasia
17. Gafforov S.A. Diagnosis, prevention and treatment of dental anomalies in children with chronic tonsillitis and chronic bronchitis/ S.A.Gafforov, N.B.Nurov, N.Sh.Nurova// Journal of Biomedicine and Practice, 71-81
18. Gafforov S.A. Clinical characteristics of the dentition in young men, the role of metalloproteinases and connective tissue markers in the development of temporomandibular joint pathology and their correction / Gafforov S.A., Ahadovich S. A., Anatolyevna B.E. //European Journal of Molecular & Clinical Medicine, 2020.
19. Gafforov S.A. Morphometric features of the formation of organs of the bones of the dentition in children with chronic pathologies of the respiratory system / Gafforov S.A., Durdiyev J.I. //Jurnal of critical reviews vol 7. ISSUE 18.20. 892-898Page2020.
20. Gafforov S.A. Prevalence of dentoalveolar anomalies in 6-16 years children according to retrospective data analysis/Gafforov S.A., OlimovS.Sh., Yakubov R.K., Saidov A.A., Badriddinov B.B. // International Journal of Psychosocial Rehabilitation. Vol 24. Lessual 09 2020. ISSN 1475-7192. C. 403-410.
21. Gafforov S.A. "Diagnosis and Treatment of Chronic Generalized Periodontitis in Connective Tissue Dysplasia Pathologies"/Gafforov S.A., U. Nazarov, G. Khalimbetov// Jundishapur Journal of Microbiology Published online 2022 January Research Article Vol. 15, No.1 (2022) Page 2119-2136.
22. Gafforov S.A. Improving the methodology for determining biocompatibility of metal alloys for the prevention of intolerance and galvanosis in people living in environmentally unfavorable/Joludev S.E., Gafforov S.A., Nazarov U.K. //International Journal of Psychosocial Rehabilitation 24 (04), 2065-2072

23. The genetic basis of the joint hypermobility syndromes / F. Malfait, A. J. Hakim, A. DePaepe [et al.] // Rheumatology. - 2006. - N 45. - P.502-507.