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FREQUENCY AND STRUCTURE OF PATHOLOGICAL PROCESSES OF PERIODONTAL TISSUES IN THE POPULATION OF THE FAR EASTERN REGION

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ABSTRACT

The prevalence and intensity of periodontal diseases among the population of the Far East of Russia has been studied. At the same time, an unfavorable morbidity situation was identified, associated with an increase in the severity of the clinical course of periodontal disease with age. The high prevalence of pathological processes of periodontal tissues of inflammatory-destructive nature dictates the need to develop and implement a comprehensive program for the prevention of periodontal diseases.

Clinical-epidemiological examination of the population has been performed to study the prevalence of pathological processes of periodontal tissues with the analysis of possible risk factors of their development. The obtained data have proved the existence of certain features. Thus, young patients have inflammatory processes of marginal gingiva without dentogingival attachment deformation but pathological processes of tissues of inflammatory-destructive character become more expressed with age. At the same time, these examined groups of the population showed insufficient level of dental hygiene that leaves a negative impact on the level of frequency and intensity of inflammatory process of periodontal tissues. Moreover, a part of the examined patients were diagnosed with various somatic diseases mainly chronic, affecting the clinical course of pathological processes of periodontal tissues. Meanwhile, age, physiological changes in organs and systems of the organism become the cause of substantial increase of sensitivity of periodontal tissues to infectious agents, aggravating the course of inflammatory processes. People over 45 have moderate and severe stage of periodontal diseases and rapidly progressing pathological process with the loss of externally intact teeth promoting dysfunction of the temporal-mandibular joint and all dentoalveolar system in general. That requires obligatory systemic approach of medical prevention of pathological processes in periodontal tissues of inflammatory-destructive and metabolic-dystrophic character.

The obtained data confirmed an unfavorable clinical-epidemiological situation with periodontal diseases in the population of the Far East. Such situation necessitates the development of a complex preventive program of periodontal diseases in various age groups of the population including better availability and improvement of the parodontological care in dental clinics of the Far Eastern Federal District. Those preventive measures are aimed at the improvement of patients' quality of life.

Keywords: periodontal diseases, prevalence, intensity, risk factors, somatic diseases, level of sanitary hygiene, quality of life, treatment, prevention.

Periodontal diseases are one of the most common and complicated pathologies of the oral cavity organs and tissues. Those pathologies deteriorate with age leading to a severe disease requiring complex therapeutic, surgical and prosthetic treatment [10, 18]. In addition to well-known local factors determining incidence, chronic damage of periodontal tissues, there are other harmful factors such as: climate, fluoride content in drinking water and food, gastrointestinal diseases and endocrine disorders, age changes of the dento-maxilla system [3, 9, 11, 12, 21]. At the same time, morbidity rate and diseases incidence are directly affected by sanitation, hygiene, patients' education and lack of motivation, on the patients' side, to prevent oral diseases [1, 17, 18].

It is necessary to emphasize that the main factors of destructive changes in periodontal tissues may be soft food, poor oral hygiene, saliva secretion decrease, poor marginal restoration, orthodontic appliances, anomalies of the frontal part of the oral activity and teeth location, mechanical trauma, prosthetic treatment mistakes, accompanying pathologies of internal organs [2, 3, 4, 5, 6, 10, 14, 22]. Consideration of etiologic factors and their prevalence with age helps prevent and stop the development and progress-

ing of periodontal pathology that will apparently lead to morbidity rate decrease and patients' life quality improvement [9, 12, 14, 15, 18, 19].

Improvement of complex dental care as a rule is based on the knowledge of clinical-epidemiological peculiarities of pathological process in the oral cavity organs and tissues. That is why studies aimed at those problems that have an important theoretical, scientific and practical application.

The goal of the research. To work out recommendations aimed at the improvement of dental services to the population based on complex clinical-epidemiological studies of periodontal diseases.

Materials and methods. The object of the research was patients with periodontal pathologies. The research was being performed in the dental clinic of Medical institute of Northern-Eastern federal university named after M.K. Amosov, dental clinic "Eurodent" (Yakutsk), and a dental clinic "Uni-stom" of the Far Eastern state medical university (Khabarovsk). The study included 467 patients. They were divided into 5 age groups: 15-19 – 88 people, 20-34 – 93 patients, 35-44 – 85 persons, 45-64 – 134 people, 65 and older – 67 people. Gender distribution: males – 251, females – 216.

A clinical examination was performed

according to a standard procedure including complaints on tenderness, swelling, gums bleeding, unpleasant odor from the oral cavity, dental necks and roots exposure, teeth mobility, adentia, loss of teeth, periodontal pockets, presence or absence of accompanying somatic diseases (blood pathologies, cardio-vascular diseases, gastrointestinal disorders, endocrine pathologies.) To assess periodontal tissues the authors used the following indexes: periodontal index PI (Rassel A., 1956), bleeding index according to Mullen (Mullen H.R., 1971). Incidence and severity of the disease and periodontal tissues damage were evaluated on the basis of indexes of common periodontal index CPI (1995). The depth of periodontal pockets was measured with a graduated periodontal probe.

The examination was performed according to the ethical principles of research including humans approved by Helsinki Declaration of the WMA (1964, ed. 2000), and the requirements of the Russian Federation documents on clinical studies.

Statistical processing of the findings was conducted according to the standard methods of variable statistics calculating average value, error ratio, the arithmetic average, standard square deviation, variation ratio with packages of stan-

dard software «Microsoft Excel» 2009 (Microsoft Corporation, 2000-2016). The received findings were grouped according to the set of similar characteristics

The results and discussion. The conducted research revealed several peculiarities. The overall average index of periodontal diseases incidence in the studied groups comprises $62,76 \pm 0,28\%$, out of them, males – 179 (59,45 $\pm 0,31\%$), females – 113 (40,55 $\pm 0,45\%$). At the same time, data of epidemiological indexes of periodontal diseases vary in different age groups. In the group 15-19 the incidence of periodontal tissues pathologies was $89,15 \pm 0,08\%$, and there is a tendency of its going up with age up to the group 35-44 and it declines in the group of 65 years and older. The frequency of periodontal diseases incidence in the age group 20-34 was $94,35 \pm 0,04\%$, in the age group 35-44 and 45-64 the findings were $96,67 \pm 0,02\%$ and $79,81 \pm 0,15\%$ respectively. At the same time, the minimum incidence index was observed in the age group of 65 and older where it ranged $64,53 \pm 0,27\%$.

It is necessary to underline that in the age groups 15-19, 20-34 and 35-44 there are maximum indexes of sub and under gingival tartar ranging from $43,25 \pm 0,45\%$ to $48,12 \pm 0,39\%$. In the age groups 45-64, 65 and older findings reveal their significant decrease with the indexes $30,87 \pm 0,52\%$ and $12,78 \pm 0,67\%$. The finding characterizing pathological periodontal pockets demonstrate oppositional changes connected with the tendency of its depth increase with age. In the age group 15-19 the index was $9,54 \pm 0,73\%$, but in the group 65 and older – $81,96 \pm 0,14\%$. At the same time, in the dynamics of the indexes of bleeding and healthy gums there are certain clinical features that decrease with age. In the group 15-19 the indexes of a healthy gum and bleeding comprised $10,85 \pm 0,69\%$ and $36,36 \pm 0,49\%$, whereas in the group of 65 лет and older they were $0,70 \pm 0,09\%$ and $4,56 \pm 0,73\%$ respectively.

We should emphasize that in the dynamics of indices concerning the severity of periodontal tissue damage according to CPI index certain clinical characteristics were demonstrated. In the parameters of healthy gums and bleeding we also observed the same tendency – their decline with age when in the group 15-19 the index was $0,58 \pm 0,76$ and $2,14 \pm 0,74$, but in the group 65 and older they were at the level of $0,02 \pm 0,01$ and $0,14 \pm 0,04$ ($p < 0,05$) respectively. However, the parameters of the parts having tartar above or under gingiva demonstrated an apparent decrease with age. In the group 15-19, the index was $2,87 \pm 0,02$, but in

the patients of 65 and older it reached $0,54 \pm 0,04$ ($p < 0,05$). The data characterizing pathological periodontal pocket and unrecorded sextants revealed the following data, a significant increase in the group 15-19 where they comprised $0,39 \pm 0,04$ and $0,02 \pm 0,01$ respectively, but in the group 65 and older they made up $2,95 \pm 0,02$ and $2,35 \pm 0,03$ ($p < 0,05$).

It is important to stress that in the morbidity structure of periodontal diseases there are certain features associated with age manifestations. In the age group 15-19, $84,61 \pm 0,33\%$ had chronic catarrhal gingivitis but hypertrophic gingivitis comprised $4,54 \pm 2,06\%$. Less frequently, in all examined groups paradontosis was diagnosed – $3,87 \pm 0,73\%$. The cause determining the severity of the periodontal diseases in the patients of 65 and over ($64,53 \pm 0,27\%$) is a polymorbid character of underlying and accompanying somatic diseases. The received data show that in the young age the most common periodontal pathologies are mild, sometimes moderate and very rarely severe. With age, the patients usually have pathological changes of periodontal tissues predominantly of inflammatory-destructive or rarely of metabolic-dystrophic character.

It has to be said that paradontomas and idiopathic diseases of periodontal tissues were not revealed during our study. $58,32 \pm 0,31\%$ of examined patients had poor oral hygiene. An average value of hygiene index according to Green-Vermilion was 3,15, a periodontal index – 1,54, bleeding index according to Millemann H.R.–1,2. Such situation results in an unfavorable tendency causing a negative effect on the diseases' incidence.

Conclusion

The received data characterize the incidence of periodontal diseases in different age groups of population. Low level of sanitary culture results in a poor oral hygiene. It necessitates a further development and improvement of dental services and working out and implementation of a complex program of periodontal diseases prevention.

References

1. Semenov A.D. Ushnitsky I.D. Rogaleva A.S. [et al.]. Analiz i ocenka potrebnosti v stomatologicheskoy pomoshchi zhiteley promyshlennyyh rajonov Yakutii [Analysis and assessment of need for dental care of inhabitants of industrial regions of Yakutia]. Yakutskij medicinskij zhurnal [Yakut medical journal]. Yakutsk, 2016, №1, V.53, P. 40-42.
2. Mukhlayev S. Yu. Pervov Yu.Yu. Yurkevich A.V. Vlijanie akrilovyh basisnyh plastmass raslichnyh proisvoditelej na parametri immunnogo gomeostasa slisistoi obolochki rta [Influence of acrylic basic plastic of various manufactures on parameters of immune homeostasis of oral mucosa]. Tichookeanskij medicinskij zhurnal [Pacific medical journal]. 2014, №3, P. 56-58.
3. Oskolsky G. I. Nepomnyashchy L.M. Yurkevich A.V. [et al.] Isuchenie strukturno-proliferativnyh prozessov v epitelii desni pri ismenenijach sostojanij parodonta [Study of structural and proliferative processes in gingiva epithelium at parodontium condition changes]. Yakutskij medicinskij zhurnal [Yakut medical journal]. Yakutsk, 2011, №4, P.92-94.
4. Ushnitsky I.D. Ivanov A.V. Ivanova A.A. [et al.]. Kliniko-epidemiologicheskaja charakteristika patologicheskijh prozessov tkanej parodonta vospalitelno-destruktivnogo charaktera [Kliniko-epidemiologicheskaja Clinical-epidemiological characteristic of pathological processes of parodontium tissues of inflammatory-destructive character]. Yakutskij medicinskij zhurnal [Yakut medical journal]. Yakutsk, 2018, V.61, №1, P.83-86.
5. Yurkevich A.V. Oskolsky G.I. Shcheglov A.V. [et al.]. Klinicheskaja ocenka resultatov lechenija bolnyh posle uvelichenija mezhalveolarnogo rasstojaniya [Clinical assessment of treatment results of patients after augmentation of interalveolar distance]. Fundamentalnye issledovaniya [Basic researches]. 2013. №7-1, P. 204-206.
6. Ushnitsky I.D. Rogaleva A.S. Chizhov Yu.V. Klinicheskaja charakteristika sostojanija organov i tkanej polosti rta u liz pozhilogo vozrasta Respubliki Sasha Yakutija [Clinical characteristic of condition of organs and tissues of the oral cavity at elderly people of the Sakha Republic]. Klinicheskaja gerontologija [Clinical gerontology]. 2013, №1-2, V.19, P. 48-52.
7. Masheyko A.V. Khristenko A.S. Masheiko A.V. Osobennosti stomatologicheskogo statusa zhenschin v raslichnye trimestry beremennosti. Stomatologija – nauka i praktika, perspektivi rasvitija. Materialy nauchno-prakticheskoi konferencii posvjashchennoi 50 letiju so dnja rozhdenija L.P.Ivanova (v ramkach Vserossiiskoi studencheskoi olimpiadi s mezhdunarodnim uchastiem "Stomatologija Yuga-2017" [Features of the dental status of females in various trimesters of pregnancy. Dentistry – science and practice, prospects of development. Materials of the scientific and practical conference devoted to the 90 anniversary since the birth of L.P. Ivanov (Russian stude n't's Olympic Games with the international participation "South-2017 Odontology").2017,P.104-107.
8. Ushnitsky I.D. Semenov A.D. Nikiforova E.Yu.[et al.]. Mediko-geograficheskaja charakteristika Severa i sovremennie aspekti soverchenstvovanija stomatologicheskoi pomoshchi [Medical-geographical characteristic of the North

and modern aspects of improvement of the dental care]. Yakutskij medicinskij zhurnal [Yakut medical journal]. 2016, V.55, №3, P.49-53.

9. 9.Yurkevich A.V. Oskolsky G.I. Pervov Yu.Yu. Morfologicheskie i molekuljarno-geneticheskie aspekti jadrischkovogo organisatora ribosom [Morphological and molecular and genetic aspects of the nucleolar organizer of ribosomes]. Tichookeanskii medicinskii zhurnal [Pacific medical journal]. 2005, №1, P.85-87.
- 10.Oskolsky G. I. Yurkevich A.V. Morfometricheskaja charakteristika strukturi epitelija desni v norme i pri chronicheskikh sabolevanijach parodonta [The morphometric characteristic of structure of gingiva epithelium at normal and chronic diseases of parodontium]. Dalnevostochni medicinski zhurnal [Far East medical journal].2004,№1,P. 19-23.
- 11.Yurkevich A.V. Matsyupa D.V. Oskolsky G.I. Patomorfologicheskoe issledovanie slisistoi obolochki desni pri jasvennoi bolesni zheludka [A pathomorphologic research of gingiva mucosa at peptic ulcer of the stomach]. Sibirski konsilium [Siberian Consultation]. 2005,№4,P. 37-40.
- 12.Dybov D.A. Yurkevich A.V. Mikhalkenko A.V. [et al.]. Primenenie preparatov selena v lechenii vospalitel'nykh sabolevani parodonta [Use of selenium medication in treatment of inflammatory diseases of parodontium]. Klinicheskaja stomatologija [Clinical odontology]. 2017,V.84, №4,P.26-29.
- 13.Sadulayeva A.S. Ushnitsky I.D. Klinicheskaja charakteristika ortopedicheskogo statusa liz starschei vozrastnoi gruppi prozhivayischiich v uslovijach Severa [Clinical characteristic of orthopedic status of senior age group patients living in conditions of the North]. Yakutskij medicinskij zhurnal [Yakut medical journal]. 2011, №2,P.53-55.
- 14.Ushnitsky I.D. Semenov A.D. Nikiforova E.Yu. [et al.]. Sovershenstvovanie organizacii stomatologicheskoi pomoschchi v promyshlennyh rajonach Respubliki Sasha Yakutija. Aktualnie voprosi stomatologii i chelustno-lizevoi chirurgii. Materiali kraevoi nauchno-prakticheskoi konferenzi stomatologov i chelustno-lizevzch chirugov [Improvement of the organization of the dental care in industrial regions of the Sakha Republic. Topical issues of dentistry and maxillofacial surgery. Materials of regional scientific and practical conference of dentists and maxillofacial surgeons]. Chita, 2016,P.116-123.
- 15.Oskolsky G. I. Yurkevich A.V. Pervov Yu.Yu. Sovremennie predstavlenija o strukturnich reakzijach slisistoi obolochki polosti rta v processe ontogenesa [Modern issues of structural reactions of oral mucosa in ontogenesis]. Tichookeanskii medicinskii zhurnal [Pacific medical journal].2005, №2,P.17-19.
- 16.Sadulayeva A.S. Ushnitsky I.D. Trifonov S.A. Sozialno-gigienicheskie aspekti formirovaniya stomatologicheskogo statusa u liz pozhilogo i starcheskogo vosrasta v Yakutii [Social-hygienic aspects of dental status development at patients of old and senile age in Yakutia]. Yakutskij medicinskij zhurnal [Yakut medical journal]. 2012,V.38, №2,P. 27-30.
- 17.Suvyrina M.B. Masheyko A.V. Khristenko A.S. [et al.]. Stomatologicheskij status beremennyh zhenschchin v rasnie sroki beremennosti [Dental status of pregnant women in different periods of gestation]. Dalnevostochni medicinski zhurnal [Far East medical journal]. 2017,№4,P. 104-108.
- 18.Semenov A.D. Ushnitsky I.D. Egorov R.I. Stomatologicheskij status zhitelei promyshlennyh rajonov Respubliki Sasha Yakutija. Aktualnie problemi i perspektivi rasvitija stomatologii v uslovijach Severa. Sbornik statei mezhregionalnoi nauchno-prakticheskoi konferenzi, posvjaschchennoi 95-letiju stomatologicheskoi sluzhbi Respubliki Sasha Yakutija [The dental status of inhabitants of industrial regions of the Sakha Republic. Contemporary issues and prospects of dentistry development in the conditions of the North. The collection of articles of the regional scientific and practical conference devoted to the 95 anniversary of dental service of the Sakha Republic]. Yakutsk, 2015,P. 86-90.
- 19.Baginsky A.L Chizhov Yu.V. Ushnitsky I.D. [et al.]. Stomatologicheski status i sozialno-gigienicheskaja ozenka korennyh zhitelei Dolgano-Nenezkogo medizinskogo rajona Krasnojarskogo kraja i Respubliki Sasha Yakutija [The dental status and social-hygienic assessment of aborigines of the Dolgan-Nenets municipal district of Krasnojarsk Krai and the Sakh Republic (Yakutia). Contemporary problems and prospects of dentistry development in the conditions of the North. The collection of articles of the regional scientific-practical conference devoted to the 95 anniversary of dentistry of the Sakha Republic]. Yakutsk, 2015,P. 100-107.
- 20.Suvyrina M.B. Kliniko-laboratornoe obosnovanie stomatologicheskoi pomoschchi zhenschchin v perimenopause: avtoreferat diss.kandidata medizinskikh nauk [Clinical laboratory data of dental care to women in perimenopause: thesis...candidate of medical sciences]. Ekaterinburg, 2002, 23 p.
- 21.Yurkevich A.V. Patomorfologicheskij analis slisistoi obolochki desni pri sacharnom diabete i jasvennoi bolesni zheludka avtoreferat diss.doktora medizinskikh nauk [The pathomorphological analysis of gingiva mucosa at diabetes mellitus and peptic ulcer of the stomach: thesis...doctor of medical sciences]. Novosibirsk, 2005, 36 p.
- 22.Yurkevich A.V. Strukturno- proliferativnie prozessi v slisistoi obolochki desni pri insulinnesavisimom sacharnom diabete avtoreferat diss.kandidata medizinskikh nauk [Structural and proliferative processes in gingiva mucosa at non-insulin-dependent diabetes mellitus: thesis...candidate of medical sciences]. Novosibirsk,1999, 22 p.

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