

THERAPEUTIC SECTION

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Kyiv, Ukraine²Interregional Academy of Personnel Management,
Kyiv, Ukraine**CERVICAL LESIONS OF THE TEETH
IN PATIENTS WITH GENERALIZED
PERIODONTITIS ACCORDING TO GENDER
AND AGE****ABSTRACT**

Cervical lesions of the teeth are common during the practice of dentists.

The purpose of the research was to study the prevalence of cervical lesions of the teeth in patients with generalized periodontitis, to analyze their distribution according to gender and age, functional affiliation of the teeth of the upper and lower jaws.

Materials and methods. The study involved 133 patients with periodontitis, who underwent a comprehensive examination for the presence of cervical lesions of the teeth: abfraction, erosion, root caries, and combined lesions. Each participant filled out a questionnaire on the influence of potential etiological factors. Depending on gender, patients were divided into groups of males and females, and depending on age, into groups 20 year olds, 30 year olds, 40 year olds, 50 year olds.

The results of the study showed that the prevalence of cervical lesions of the teeth in patients with generalized periodontitis was 67.67 %. The total prevalence of abfraction was 59.40 %, combined lesions – 14.29 %, erosion – 1.50 %, root caries – 12.78 %. Concomitant lesions occurred in 20.30 % of subjects. The prevalence of cervical lesions increases with age: in 20 year olds, abfraction was present in 10.53 % of subjects, in 30 year olds and 40 year olds – in 59.52 %, in 50 year olds – in 90.00 %. A comparative analysis of the prevalence of cervical lesions by gender showed significantly higher rates of caries in females (20.00 %) compared to males (4.76 %) ($p=0.009$). No significant difference in the prevalence of abfraction and erosion between males and females was found. The highest prevalence of abfraction and combined lesions was recorded on the premolars of the lower jaw, root caries – on the lateral incisors of the upper jaw, and the first molars of the lower jaw, erosion – on the canines, molars, and premolars of the upper and lower jaws.

Conclusion. The high prevalence of cervical lesions in patients with periodontitis necessitates the introduction of a protocol for the prevention of root caries and non-carious cervical lesions of the teeth, which will be an integral component of supportive periodontal treatment.

Key words: *cervical lesions of hard tissues of the teeth, abfraction, root caries, combined lesions, erosion.*

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ТКАНИН ЗУБІВ У ХВОРИХ
НА ГЕНЕРАЛІЗОВАНИЙ ПАРОДОНТИТ
ВІДПОВІДНО ДО ГЕНДЕРНОЇ
ПРИНАЛЕЖНОСТІ ТА ВІКУ****АНОТАЦІЯ**

Цервікальні ураження твердих тканин зубів часто зустрічаються під час практичної діяльності лікарів-стоматологів.

Метою даного дослідження було вивчити поширеність цервікальних уражень твердих тканин зубів у хворих на генералізований пародонтит, проаналізувати їх розподіл відповідно до гендерної приналежності та віку, функціональної приналежності зубів верхньої та нижньої щелепи.

Матеріали та методи дослідження. У дослідженні взяло участь 133 пацієнтів з генералізованим пародонтитом, яким було проведено комплексне обстеження на наявність цервікальних уражень твердих тканин зубів: абфракцій, ерозій, карієсу кореня та комбінованих уражень. Кожний учасник заповнював анкету опитувальник щодо впливу потенційних етіологічних факторів. Залежно від гендерної приналежності пацієнти були розподілені на групи жінок та чоловіків, залежно від віку – на групи двадцятирічних, тридцятирічних, сорокарічних та п'ятдесятирічних.

Результати дослідження показали, що поширеність цервікальних уражень твердих тканин зубів у пацієнтів з генералізованим пародонтитом становила 67,67 %. Загальна поширеність абфракцій склала 59,40 %, комбінованих уражень – 14,29 %, ерозій – 1,50 %, карієсу кореня – 12,78 %. Поєднані ураження зустрічались у 20,30 % обстежуваних. З віком поширеність цервікальних уражень збільшується: у двадцятирічних абфракції були присутні у 10,53 % обстежуваних, у тридцятирічних та сорокарічних – у 59,52 %, у п'ятдесятирічних – у 90,00 %. Порівняльний аналіз поширеності цервікальних уражень в залежності від статі продемонстрував вірогідно вищі показники ураження карієсом у жінок (20,00 %) порівняно з чоловіками (4,76 %) ($p=0,009$). Не виявлено достовірної різниці поширеності абфракцій та ерозій між особами чоловічої та жіночої статі. Найвища поширеність абфракцій та комбінованих уражень була зафіксована на премолярах нижньої щелепи, карієсу кореня – на бічних різцях верхньої щелепи та перших молярах нижньої щелепи, ерозій – на іклах,

молярах та премолярах верхньої і нижньої щелеп.

Висновок. *Висока поширеність цервікальних уражень твердих тканин зубів у хворих на генералізований пародонтит зумовлює необхідність впровадження протоколу профілактики карієсу кореня та некаріозних уражень твердих тканин зубів, який буде невід'ємним компонентом підтримувального пародонтологічного лікування.*

Ключові слова: *цервікальні ураження твердих тканин зубів, абфракція, карієс кореня, комбіновані ураження, ерозія.*

Introduction. Periodontal diseases are an important problem associated not only with dental health, but also with the general condition of the body. Periodontitis is an inflammation disease caused by the influence of plaque microorganisms, which is characterized by progressive destruction of the periodontal ligament and bone loss [1]. As a consequence, the exposed surface of the root becomes open to the environment of the periodontal pocket and mouth. Exposed root cementum becomes sensitive to adverse factors and undergoes structural changes and changes in the composition of its organic and inorganic components [2,3]. According to this, the risk of developing cervical lesions carious and non-carious origin of the teeth increases significantly.

Non-carious cervical lesions of the teeth – the loss of hard tissue in the area of the enamel-cementum junction of non-microbial nature, which causes not only aesthetic defects, but also in severe cases can lead to tooth loss [4]. The results of epidemiological and clinical studies show a high prevalence of these lesions, which according to the results of various authors varies from 0.8 % to 93 % [5,6]. Such a wide range of prevalence of non-carious cervical lesions may be the result of the use of different classifications and terminology for the same lesion, differences in diagnosis, the use of different methods of statistical data processing and the number of the studied population. The prevalence of non-carious cervical lesions of the teeth increases with age, due to the long period of influence of etiological factors [7,8]. Numerous scientific studies demonstrated that non-carious cervical lesions have multifactorial etiology. Grippo et al. proposed a scheme of pathodynamic mechanisms of non-carious cervical lesions of the teeth, which includes corrosion (influence of chemical factors on tooth structure), concentration of occlusal forces and deformation of the tooth hard tissue structure (microfracture of enamel prisms – abfraction) and friction (impact on hard tooth surfaces abrasive substances, as well as a result of friction «tooth-tooth», «tooth-foreign body»). Depending on the etiological factor affecting the hard tissues of the teeth, in 1991 Grippo proposed a clas-

sification of non-carious lesions. According to this classification, there are four types of damage of the hard tissues of the teeth: abfraction, erosion, abrasion and attrition [9]. Due to excessive occlusal forces that arise during masticatory loading and static compression of the jaws (swallowing), there is a concentration of biomechanical overload of the tooth in the cervical region and deformation of the crystal structure of hard tissues of the tooth, microfractures of enamel prisms and occurrence of abfraction. The stress and overload acting on the crystal structure of hard tissues depends on the magnitude, direction, frequency, place of application, and duration of the force, as well as its orientation relative to the main axes of the teeth [10]. Parafunctions of the dental system and tongue play an important role in the development of abfraction [11]. The influence of chemical (high-acid foods, bulimia, gastroesophageal reflux) and biological (decreased saliva flow rate) factors leads to corrosion/erosion of hard tissues of the teeth [9]. Friction from external materials, such as excessive cleaning of the teeth, using an abrasive toothpaste and a toothbrush with unrounded bristles leads to abrasion of hard tooth surfaces [9]. Unmodified (age and gender) and modified (bad habits) factors modulate the development of non-carious cervical lesions in accordance with their intensity, duration and frequency [12,13].

Root caries is a lesion of the hard tissues of the tooth, which is located within the exposed enamel-cementum junction or root cementum, due to the influence of microbial factors. Morphologically root caries is presented in the form of a spot or a cavity. Data from studies have shown that the prevalence of root caries varies from 9,8 % to 71% and increases with age [14,15]. It has been established that root caries is one of the main causes of tooth loss in the elderly [16].

Supportive periodontal treatment, as part of a comprehensive treatment of patients with periodontal disease, aims to control the formation of microbial biofilm on the surface of the teeth, including the tooth roots. Influence of microbial factor, saliva, instrumental treatment of tooth surfaces has a negative effect on the root cementum. It is also necessary to take into account the anatomical features of the cementum in the cervical part of the tooth, the predominance of acellular cementum and its low regenerative properties. Due to chemical (saliva, food composition), physical (increased occlusal load), microbial (the impact of biofilm) effects on the cervical part of the teeth, and iatrogenic trauma, the development of cervical lesions of the teeth in patients with periodontal disease increases. Such lesions have a negative impact on the prognosis of periodontal teeth, aesthetics and require the use of measures to prevent their formation.

Purpose of the research. To study the prevalence of cervical lesions of the teeth in patients with periodontitis depending on gender and age, the functional affiliation of the teeth of the upper and lower jaws.

Materials and methods. The study included 133 patients with a mean age of 42.02 ± 10.47 (M \pm SD) years. Inclusion criteria for this study were the presence of periodontitis, age from 20 years, the presence of 20 and more teeth in the oral cavity; exclusion criteria – severe systemic diseases and less than 20 teeth in the oral cavity (excluded third molars).

According to gender, patients were divided into a group of males, which included 63 subjects, with a mean age of 42.55 ± 9.82 (M \pm SD) years, and a group of females, which included 70 subjects with a mean age of 41.54 ± 11.05 (M \pm SD) years.

According to age, patients were divided into four age groups: group I – 20 year olds (20-29 years) – included 19 subjects, whose average age was 27.84 ± 1.67 (M \pm SD) years, group II – 30 year olds (30-39 years) – 42 subjects with an average age of 35.57 ± 2.40 (M \pm SD) years, group III – 40 year olds (40-49 years) – 42 subjects with an average age of 43.93 ± 2.75 (M \pm SD) years and group IV – 50 year olds (50-59 years) – 30 subjects, with an average age of 57.37 ± 6.09 (M \pm SD) years.

Prior to the study, patients fill out a questionnaire and gave informed consent. All participants underwent an X-ray (orthopantomogram) and clinical examination. To establish the diagnosis of periodontitis the classification of MF Danilevsky (1994) was used. During the clinical examination, the presence of cervical lesions of the teeth was recorded: abfraction, root caries, combined lesions, erosion, and concomitant lesions. In the presence of orthopedic structures, those teeth were taken into account in which it was possible to assess the condition of the enamel-cementum junction. Teeth with cervical restorations were not considered. Determination of cer-

vical lesions of the teeth was performed instrumentally by visual inspection of the oral cavity, after which the data were entered into the medical history. Abfraction was defined as visible defects of hard tissues of different shapes of the surface with saucer-shaped or wedge-shaped cross-sections without gradation of the depth of the lesions. Combined lesions were considered as abfraction complicated by the carious process. Root caries was recorded as a lesion that is located within the exposed enamel-cementum junction and root cementum. Erosion was defined as the loss of hard tissue on the vestibular or oral surfaces of the tooth; erosion was diagnosed by referring to surveys of patients on eating habits and life history. If one patient had different types of cervical lesions, they were classified as concomitant lesions.

Statistical analysis was performed using the R programming language (R version 3.6.3). Descriptive statistics was conducted for all indicators studied. For age presentation the mean and standard deviation (M \pm SD) were used. For presentation discrete variables number of patients (n) and percentage (%) were used, and when comparing them, Fisher's exact test was used. The Holm method was used for multiple comparisons. The difference of parameters at a significance level of $p < 0.05$ was considered statistically significant.

Results of the research. According to the results of the survey, it was found that among the surveyed patients, 20 % of males and 14 % of females are currently smokers. In the complex of individual oral hygiene, 95 % of the subjects used a manual toothbrush. Only 16 subjects had a history of orthodontic treatment. None of the interviewed patients has a tongue and lip piercing and none of them have abuse of acidic foods and beverages in the diet. The presence of gastroesophageal reflux disease was noted in 2 people. The results of the survey of patients from the study group are presented in table 1.

Table 1

The results of the survey of periodontal patients according to the questionnaire, where n is the number

Factors	Males	Females	Group I (20-29 years)	Group II (30-39 years)	Group III (40-49 years)	Group IV (50-59 years)
1	2	3	4	5	6	7
Smoking	n (%)		n (%)			
smoker	13 (20.63 %)	10 (14.29 %)	1 (5.26 %)	5 (11.90 %)	9 (21.43 %)	8 (26.67 %)
non-smoker	50 (79.37 %)	60 (85.71 %)	18 (94.74 %)	37 (88.10 %)	33 (78.57 %)	22 (73.33 %)
Toothbrush	n (%)		n (%)			
electric	2 (3.17 %)	3 (4.29 %)	1 (5.26 %)	3 (7.14 %)	1 (2.38%)	-
manual	61 (96.83 %)	67 (95.71 %)	18 (94.74 %)	39 (92.86 %)	41 (97.62 %)	30 (100 %)

Continuation of the table 1

1	2	3	4	5	6	7
Previous orthodontic treatment	n (%)		n (%)			
yes	3 (4.76 %)	13 (18.57 %)	3 (15.79 %)	9 (21.43 %)	4 (9.52 %)	-
no	60 (95.24 %)	57 (81.43 %)	16 (84.21 %)	33 (78.57 %)	38 (90.48 %)	30 (100 %)
The presence of gastroesophageal reflux disease, eating disorders	n (%)		n (%)			
yes	-	2 (2.86%)	-	-	-	2 (6.67%)
no	63 (100 %)	68 (97.14 %)	19 (100 %)	42 (100 %)	42 (100 %)	28 (93.33 %)

According to the results of the clinical examination, it was found that cervical lesions of the teeth were present in 67.67 % of the examined patients with periodontitis. The total prevalence of abfraction was 59.40 %, combined lesions – 14.29 %, erosion – 1.50 %, root caries – 12.78 % (Fig. 1). The presence of concomitant lesions was observed in 20.3 % of patients.

According to gender, there is a significant difference in the prevalence of root caries between males and females ($p=0.009$) (Fig. 2). The preva-

lence of abfraction in males was 65.08 %, while in females abfraction were observed in 54.29 % of subjects, but there was no significant difference between the two groups ($p=0.221$) (Table 2). There was no significant difference in the prevalence of combined lesions between males and females ($p=0.457$): among females, combined lesions were present in 17,14 % of the subjects, among males – in 11.11 %. Erosion occurred only in females in 2.86 %.

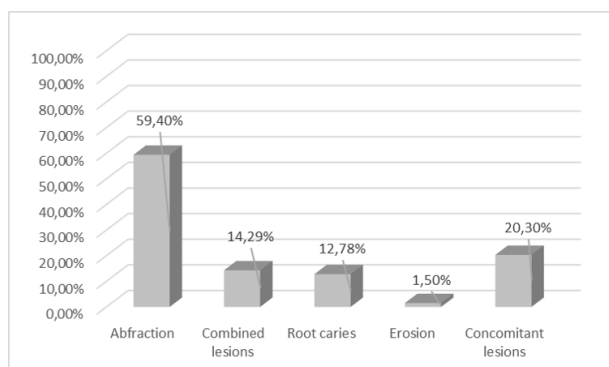


Fig. 1. The prevalence of cervical lesions of the teeth (%)

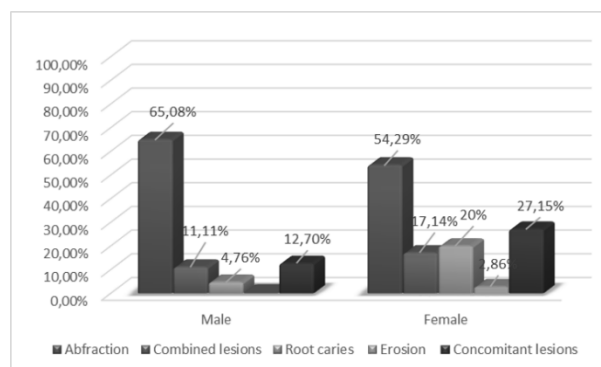


Fig. 2. The prevalence of cervical lesions of the teeth according to gender (%)

Table 2

The prevalence of cervical lesions of the teeth in males and females, where n is the number of patients

Gender	n (%)	n with cervical lesions (%)	n with concomitant lesions (%)	Abfraction	Combined lesions	Root caries	Erosion
				n (%)	n (%)	n (%)	n (%)
Male	63 (47.37 %)	43 (68.25 %)	8 (12.70 %)	41 (65.08 %)	7 (11.11 %)	3 (4.76 %)	-
Female	70 (52.63 %)	47 (67.14 %)	19 (27.15 %)	38 (54.29 %)	12 (17.14 %)	14 (20 %)	2 (2.86 %)

The results of the study showed that the prevalence of abfraction in patients with periodontitis increases with age: there is a significant difference between the groups of 20 year olds (10.53 %) and 30 year olds (59.52 %) ($p=0.003$), 20 year olds and 40 year olds (59.52 %) ($p=0.003$), 20 year olds and 50

year olds (90.00 %) ($p<0.001$), 30 year olds (59.52 %) and 50 year olds ($p=0.02$), 40 year olds (59.52 %) and 50 year olds ($p=0.02$) (Fig. 3). The prevalence of combined lesions increases with age: in the group of 20 year olds combined lesions occur in 5.26 % of subjects, in the group of 30 year olds and

40 year olds – in 19.05 %, but there is no significant difference in the prevalence of combined lesions between groups ($p=0.264$). High prevalence of root caries was registered in the group of 20 year olds and 30 year olds – 15.79 % and 16.67 %, respectively, but in 40 year olds and 50 year olds the frequency of these lesions decreases to 9.52 % and 10.00 %, a significant difference in the prevalence of root caries between groups was not observed ($p=0.723$) (Table 3).

The study of the prevalence of cervical lesions depending on the affiliation of teeth to functional

groups showed that on the upper jaw the most prone to the formation of abfraction were canines (18.05 %), on the lower jaw – the first premolars (right – 29.32 %, left – 30.83 %) (Fig. 4). Abfraction was most often complicated by the development of caries on the canines of the upper jaw (right – 2.26 %, left – 1.5 %) and the first premolars on the lower jaw (right – 7.52 %, left – 5.26 %). The highest frequency of root caries was registered on the right lateral incisor of the upper jaw (4.51 %) and on the right first molar of the lower jaw (3.76 %).

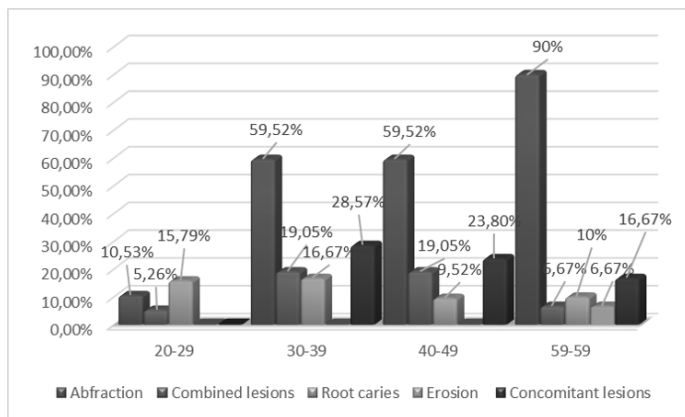


Fig. 3. The prevalence of cervical lesions of the teeth in different age groups (%)

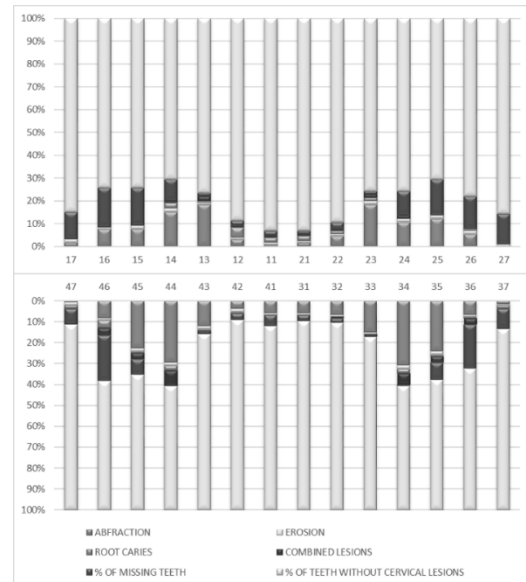


Fig. 4. The prevalence of cervical lesions depending on the affiliation of teeth to functional groups in patients with periodontitis

Table 3

The prevalence of cervical lesions of the teeth in people of different ages, where n is the number of patients

Age of patients	n, (%)	n with cervical lesions (%)	n with concomitant lesions (%)	Abfraction	Combined lesions	Root caries	Erosion
				n (%)	n (%)	n (%)	n (%)
Group I (20-29 years)	19 14.28	6 (31.56 %)	-	2 (10.53 %)	1 (5.25 %)	3 (15.78 %)	-
Group II (30-30 years)	42 31.58	28 (66.67 %)	12 (28.57)	25 (59.52 %)	8 (19.05 %)	7 (16.67 %)	-
Group III (40-49 years)	42 31.58	27 (64.29 %)	10 (23.80 %)	25 (59.52 %)	8 (19.05 %)	4 (9.52 %)	-
Group IV (50-59 years)	30 22.56	29 (96.67 %)	3 (16.67 %)	27 (90.00 %)	2 (6.67 %)	3 (10.00 %)	2 (6.67 %)

The study of the prevalence of abfraction depending on the affiliation of teeth to functional groups showed that in males the highest frequency of abfraction on the upper jaw was registered on the canines (right – 17.46 %, left – 20.63 %), on the lower jaw – on the first premolars (right – 31.75 %, left – 38.10 %) (Fig. 5). The right canine of the up-

per jaw (3.17 %) and the right first molar of the lower jaw (6.35 %) had the highest frequency of combined lesions, the central incisors (3.17 %) and the right lateral incisor (3.17 %) of the upper jaw – the highest frequency of root caries. Erosion of hard tissues of the cervical region of the teeth in males was absent.

In females, the canines on the upper jaw were most prone to the development of abfraction (right – 18.57 %, left – 15.71 %), on the lower jaw most prone to the development of abfraction were the first premolars (right – 27.14 %, left – 24.29 %) (Fig. 6). The highest frequency of combined lesions on the upper jaw was diagnosed on the canines (right and left – 1.43 %) and the first premolars (right and left

– 1.43 %), on the lower jaw – on the right first premolar (7.41 %), while the most inclined to the development of root caries on the upper jaw was the right lateral incisor (5.71 %), on the lower jaw – the right first molar (7.41 %). Erosion of hard tissues of the cervical region occurred more often on the canines, premolars, and molars on both the lower and upper jaws (2.86 %).

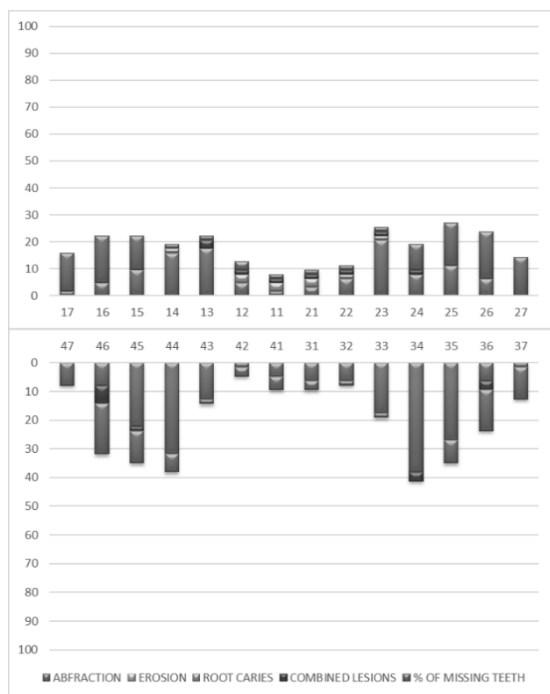


Fig. 5. The prevalence of cervical lesions of the teeth in males

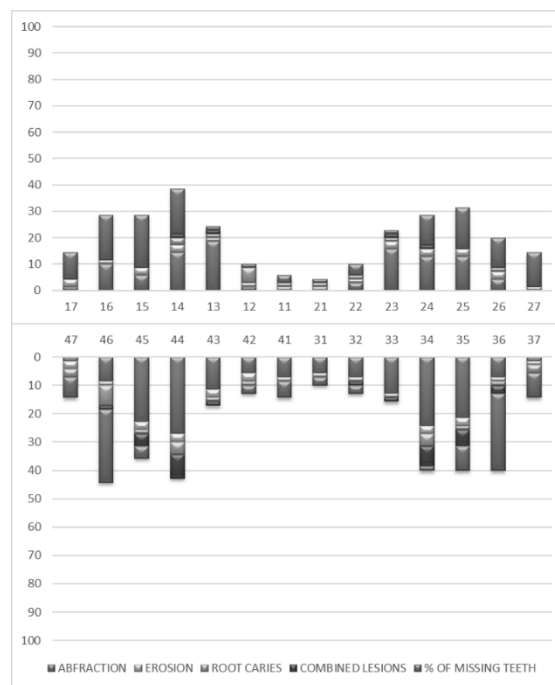


Fig. 6. The prevalence of cervical lesions of the teeth in females

In males, the prevalence of abfraction was higher in the lower jaw and was 57.14 %, while in the upper jaw this figure was 41.27 %, however, there is no significant difference in the prevalence of abfraction between the upper and lower jaws ($p=0.108$). In females, the prevalence of abfraction in the lower jaw was 45.71 %, in the upper jaw – 40%, a significant difference in the prevalence of abfraction between the upper and lower jaws is not observed ($p=0.609$). A comparative analysis of the prevalence of abfraction on the lower jaw between males and females showed no significant difference ($p=0.225$). There is no significant difference in the prevalence of abfraction between males and females on the upper jaw ($p=1.000$).

The prevalence of combined lesions on the upper jaw in females was 4.29 %, on the lower jaw – 17.14 %; in females, there is a significant difference in the prevalence of combined lesions between the upper and lower jaws ($p=0.026$). The prevalence of combined lesions on the upper jaw in males was 6.35 %, on the lower jaw – 7.94 %; there is no sig-

nificant difference in the prevalence of combined lesions between the upper and lower jaws in males ($p=1.000$). Comparative analysis of the prevalence of combined lesions on the upper jaw between males and females showed no significant difference ($p=0.707$). In the lower jaw, there is no significant difference in the prevalence of combined lesions between males and females ($p=0.127$).

Root caries in males were diagnosed mainly on the upper jaw (4.76 %). The prevalence of root caries in the upper jaw in females was 10.00 %, in the lower jaw – 12.86 %, but no significant difference between the groups was observed ($p=0.791$).

The prevalence of cervical lesions of the teeth increases with age in both females and males. Age-related changes in cervical lesions of the teeth of different functional groups in patients with periodontitis are presented in Fig. 7 – 10.

A significant difference in the prevalence of abfraction on the upper jaw is present between all age groups ($p<0.001$). The study of the prevalence of abfraction on the upper jaw showed a significant

difference in the prevalence of abfraction between 20 year olds and 30 year olds ($p=0,047$), 20 year olds and 40 year olds ($p=0.028$), 20 year olds and 50 year olds ($p<0,001$). Between the groups of 30 year olds and 40 year olds there is no significant difference in the prevalence of abfraction on the upper jaw.

There is a significant difference in the prevalence of abfraction on the lower jaw between all age groups ($p<0.001$). The study of the prevalence of

abfraction on the lower jaw showed a significant difference between 20 year olds and 30 year olds ($p=0.002$), 20 year olds and 40 year olds ($p=0.002$), 20 year olds and 50 year olds ($p<0.001$), 30 year olds and 50 year olds ($p=0.040$), 40 year olds and 50 year olds ($p<0.049$), between 30 year olds and 40 year olds there is no significant difference in the prevalence of abfraction ($p=1.000$).

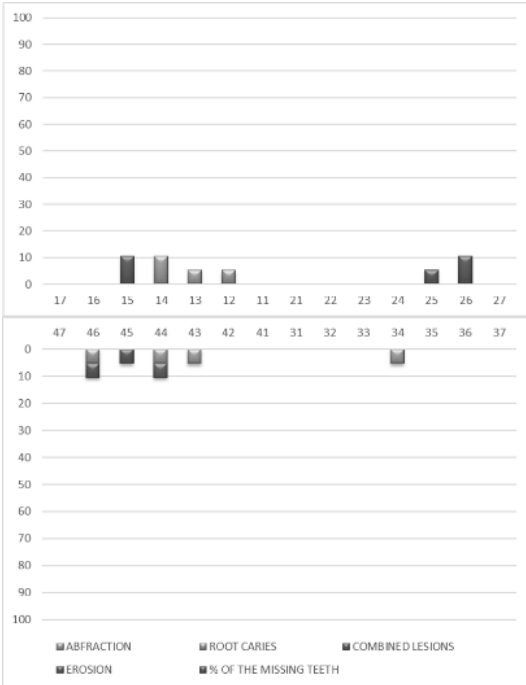


Fig. 7. The prevalence of cervical lesions of the teeth in 20 year olds

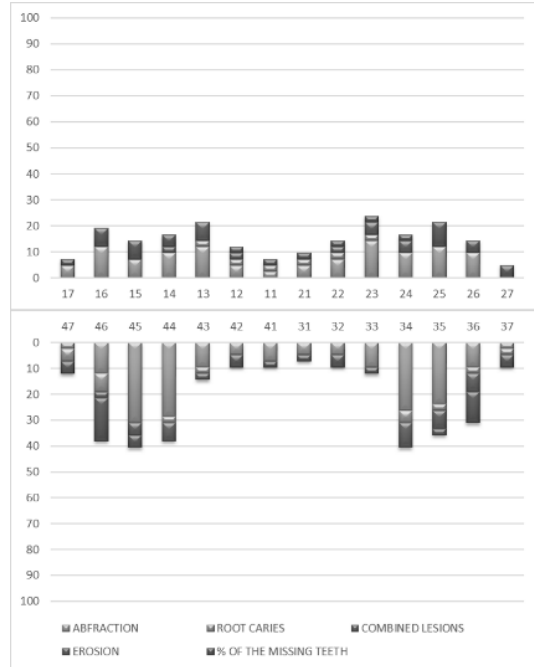


Fig. 8. The prevalence of cervical lesions of the teeth in 30 year olds

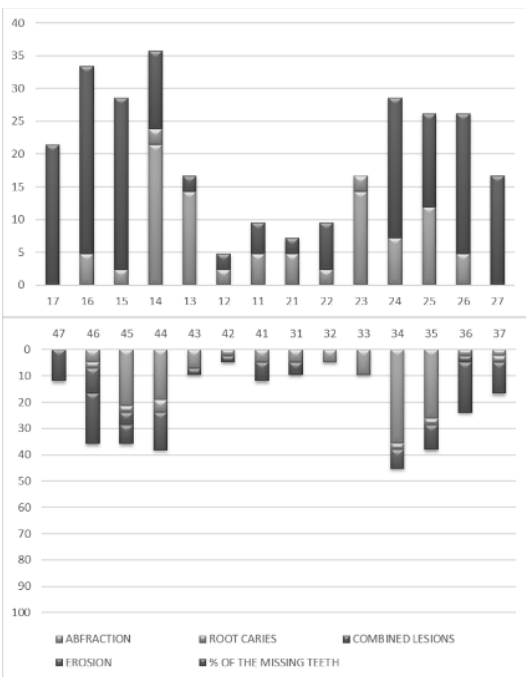


Fig. 9. The prevalence of cervical lesions of the teeth in 40 year olds

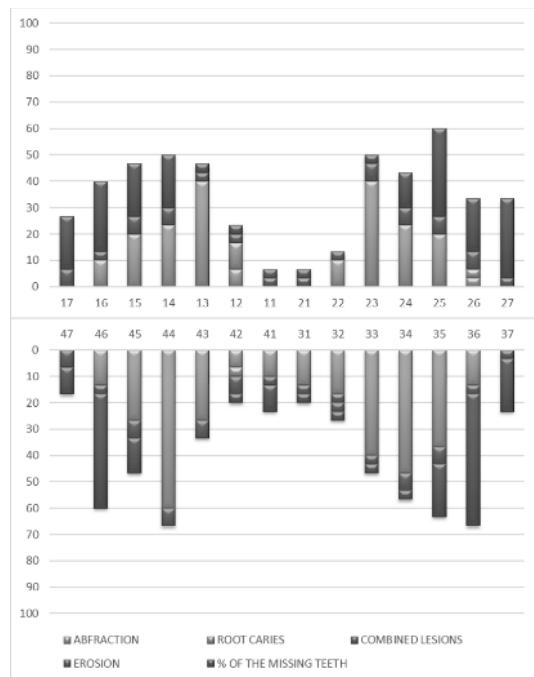


Fig. 10. The prevalence of cervical lesions of the teeth in 50 year olds

The study of the prevalence of combined lesions and root caries on the upper and lower jaws showed no significant difference between all age groups ($p=1.000$).

Discussion. According to the literature, there is a high prevalence of non-carious cervical lesions and root caries among the general population. The range of non-carious cervical lesions of the teeth is quite wide: the study of Yoshizaki et al. determined that the prevalence of these lesions is 67.8 %, the data obtained by Yang et al. indicated that non-carious cervical lesions of the teeth occur in 63 %, but the results obtained by Lai et al. showed the presence of these lesions in 79 %, while studies by Tsiggos et al. demonstrated that prevalence of non-carious cervical lesions is 24.5 % [17,18,19,20]. The use of various diagnostic criteria and the lack of a single classification and terminology complicate the comparative analysis of the prevalence of non-carious cervical lesions between studies. The prevalence of root caries according to the literature varies from 9.8 % to 71 % and increases with age [14,15]. The results of this study showed a decrease in the prevalence of root caries in patients older than 50 years, due to the measures taken to restore the affected tissues with restoration materials, orthopedic structures, and the fewer number of teeth. According to the results of the study, the prevalence of cervical lesions of the teeth in patients with periodontitis is 67.67 %.

There is a significant correlation between age and the prevalence of abfraction: the lowest prevalence was recorded in the group of 20 year olds, the highest – in the group of 50 year olds. According to the studies conducted by Alvarez-Arenal et al., Bernhardt et al., Zuza et al. the prevalence of abfraction increases with age [12,13,21], which is consistent with the results of our study. This is due to the fact that with age the influence of various etiological factors on the hard tissues of the teeth accumulates.

Changes in the hard tissues of the teeth in the cervical region are associated with the progression of generalized periodontitis, a decrease in the height of the alveolar process with the exposure of the cervical region of the teeth, the overload of the teeth due to traumatic occlusion. Overloading of teeth in the cervical region under the influence of functional occlusal forces determines the concentration and formation of overexertion zones in the cervical region of the tooth with the subsequent formation of pathological processes – abfraction, and in case of poor hygiene – combined lesions.

Excessive occlusal contacts, which occur both during parafunction and during dynamic function, cause deformation in the cervical region of the tooth, as a result of which the connections between hydroxyapatite crystals are destroyed and

microfractures, enamel prism cracking, and hard tissue loss develop [22]. This is due to the fact that the enamel is strong during compression, but weak in deformation and stress, as a result, in places where there is increased tensile stress, the enamel is prone to cracking. Areas with microfractures of enamel prisms are affected by saliva, chemical components of the food, microbial factor, as well as abrasive substances that enhance the destruction of the hard tissues of the teeth [23].

The first premolars have the highest frequency of abfraction formation. Analysis of the literature has shown that abfraction occurs on all teeth, however, the data of most studies indicate that these teeth are most prone to the development of these lesions [4, 8, 21]. This can be explained by the presence of premature occlusal contacts, and the influence of external abrasive factors.

Limitation. Only patients with periodontitis were included in the study.

Conclusions. 1. The results of the clinical study revealed a high prevalence of cervical lesions of the teeth in patients with periodontitis, which was 67.67 %.

2. In the structure of cervical lesions of the teeth in patients with periodontitis, the highest prevalence was observed in abfraction (59.40 %). Combined lesions occurred in 14.29 % of subjects, root caries – in 12.78 %, erosion – in 1.5 %.

3. The prevalence of root caries in females (20 %) was significantly higher ($p=0.009$) compared to males (4.76 %).

4. Significantly higher incidence of abfraction was found in older age groups: the prevalence of abfraction in 20 year olds was 10.53 %, in 30 year olds and 40 year olds – was 59.52 %, and in 50 year olds – was 90 %.

5. The highest frequency of abfraction and combined lesions is observed on the first premolars of the lower jaw, the highest frequency of root caries – on the lateral incisors of the upper jaw and the first molars of the lower jaw.

6. High rates of prevalence of cervical lesions of the teeth of carious and non-carious origin require the introduction of not only therapeutic but also preventive measures to prevent their development and progression. The protocol for the prevention of root caries and non-carious cervical lesions of the teeth should be an integral part of supportive periodontal treatment.

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ELECTRO-MYOGRAPHIC CHARACTERISTICS OF THE CHEWING MUSCLES OF PERSONS WITH PERIODONTAL TISSUE DISEASES COMPLICATED BY PARTIAL TOOTH LOSS

ABSTRACT

Diseases of periodontal tissues complicated by defects of the tooth rows are accompanied by functional changes of the dental system, which are accompanied by disturbances of bioelectrical activity of chewing muscles.

The degree of functional change of chewing muscles is directly related to the clinical form of parodontitis and the size and topography of the defects of the tooth rows.

The purpose of our research was to study the electromyographic characteristics of chewing muscles in persons with periodontal tissue diseases, complicated by partial loss of teeth of different size and localization.

Materials and methods. In order to achieve this goal, we have conducted clinical and electro-myographic studies of chewing muscles (m. Masseter) in 82 people between 30 and 69 years of age with periodontal tissue diseases, complicated by partial loss of teeth of different size and localization, including the control group of the same age with 10 patients with intact tooth rows and physiological forms of bite without clinically diagnosed diseases of periodontal tissues. Electromyographic research was carried out with the help of the computer neuroelectrical romograph M-Test, the production of the combination of the «DH-system» (Ukraine) and the computer system for the analysis of electromyographic records.

Results and discussion thereof. The results of electromyographic studies showed the prolongation of the chewing period, the reduction of the chewing rhythm, the deterioration of chewing efficiency under generalized parodontitis, compared to the norm, which increased in dynamics. The relationship between exciting and braking processes deteriorated sharply with the increase of the activity time due to the shortening of the relative bioelectric rest period. The biopotency amplitude decreased