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CERTAIN STRUCTURAL CHARACTERISTICS OF DENTITION SMALL DEFECTS IN THE ADULT POPULATION OF KHARKIV

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The article presents data obtained from the orthopantomogram analysis of 1269 patients aged 18 to 84 years of both genders for such a structural feature of the dental arches' small defects as their length (absence of one, two or three teeth). It was found that the maximum number of defects was with the absence of one tooth (1265 defects, 66.1 %), and the smallest share of defects was the length of three teeth (149 дефектів, 7.8 %). There is a direct correlation between the examined persons' age increase and the number of simultaneous presence of two, three, four, five and even six small defects of the dental arches with the absence of one to three teeth. Also, when analyzing the structure of the dentition small defects, which had different lengths, no significant gender-based differences were found.

Key words: dentitions, partial secondary adentia, small dentition defects, structure.

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ДЕЯКІ СТРУКТУРНІ ХАРАКТЕРИСТИКИ МАЛИХ ДЕФЕКТІВ ЗУБНИХ РЯДІВ ДОРΟΣЛОГО НАСЕЛЕННЯ М. ХАРКІВА

У статті наведені дані аналізу ортопантомограм 1 269 пацієнтів від 18 до 84 років обох статей за такою структурною ознакою малих дефектів зубних рядів, як їх протяжність (відсутність одного, двох або трьох зубів). Встановлено, що максимальна кількість дефектів була з відсутністю одного зуба (1265 дефектів, 66,1 %), а найменша частка дефектів мала протяжність на три зуба (149 дефектів, 7,8 %). Встановлено прямий кореляційний зв'язок між збільшенням віку обстежених осіб і кількістю одночасної наявності двох, трьох, чотирьох, п'яти і навіть шести малих дефектів зубних рядів з відсутністю від одного до трьох зубів. Також при аналізі структури малих дефектів зубних рядів, які мали різну протяжність, не було встановлено істотних відмінностей за гендерною ознакою.

Ключові слова: зубні ряди, часткова вторинна адентія, малі дефекти зубних рядів, структура.

The article is a fragment of the research projects "Optimization of methods for diagnosis and treatment of major dental diseases" (state registration No. 0119U002899) and "Formation and implementation of modern scientific approaches to the diagnosis, treatment and prevention of dental pathology in children and adults" (state registration No. 0118U000939).

The presence of defects in the dentition has a direct negative impact on the harmonious functioning of the entire dental system. Thus, the violation of the dentition integrity is the basis for a whole chain of disorders from the destruction of occlusal relationships, gradual occurrence of various deformations to the development of periodontal disease, temporomandibular joint dysfunction and changes in the facial skeleton or posture. No less significant are the emotional and psychological consequences of the presence

of defects in the dentition, including reduced quality of life and the need for communication, development of various types of psychological or even mental disorders [1, 2, 4, 8, 14]. Therefore, the study of this issue remains among the priorities in modern domestic and foreign dentistry [3, 6, 10, 11, 15].

At the previous stage of our study, the prevalence of small dentition defects (DD) in the adult population of the Kharkiv region and their anatomical and topographic characteristics were studied [12, 13]. To further study the need for prosthetic treatment of this region's population, the analysis was continued.

The purpose of the study was to analyze such structural characteristics of the dentition small defects as their length in the adult population of Kharkiv according to orthopantomograms.

Materials and methods. The material for the study was data obtained from orthopantomograms (OPTG) of 1269 patients who underwent a screening study of the dental apparatus in the format of digital panoramic 2D-diagnostics using the fifth-generation Vereviewepocs 3D R100 dental computed tomograph (Morita, Japan) in the WDE (World Dental Events) 3D diagnostic center (Kharkiv, head – Udovychenko N.M.). For a detailed analysis of the small DD quantitative characteristics, all material was divided by age of patients into 12 groups from 18 to 84 years. Given the small number of OPTGs belonging to persons aged 18–19 years and 80–84 years, these groups were combined with the next (20–24 years old) and previous (75–79 years old), respectively. The analysis of the dento-alveolar apparatus condition was performed according to such structural features as their length – one, two or three teeth, and the simultaneous presence of several small defects of the dentition.

Analysis of medical records (OPTG) was carried out in compliance with the principles of medical deontology while maintaining the anonymity of patients.

SPSS Statistics 19.0 and Statistica 64 version 10 software packages were used for statistical processing of the obtained results. Differences were considered reliable at the commonly accepted error in medical and biological research $p < 0.05$.

Results of the study and their discussion. Quantitative characteristic of the structural features in small DD are their length – one, two or three teeth. Among the total number of small DD detected by means

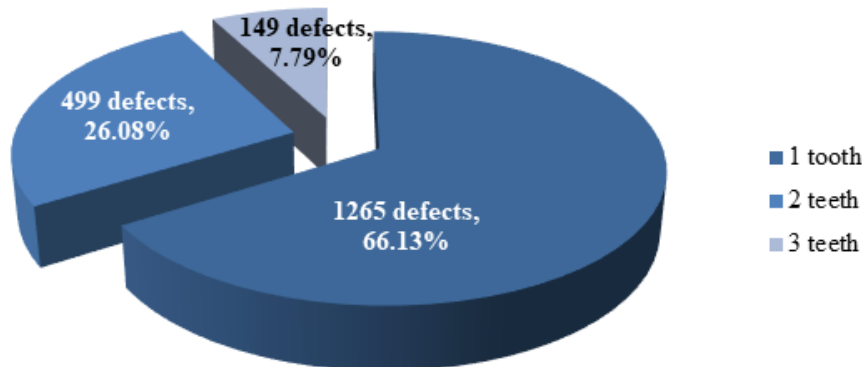


Fig. 1. Number of small DD depending on the defects' length (abs./%).

of OPTG (1913), the largest share included 1265 defects, with minimum length of one tooth (66.1 %). The second position in terms of prevalence belonged to defects with the absence of two teeth – 499 defects (26.1 %). And the smallest share of defects had the length of three teeth - 149 defects (7.8 %) (fig. 1).

Regarding the detailed analysis of the of small DD features with the absence of one tooth, it should be noted that the dynamics of their prevalence (fig. 2) was similar to the general dynamics of the small DD prevalence, namely, the growth of their number from 33 defects in group 1 to maximum values in groups 4 and 5 (176 and 171 defects, respectively) with the subsequent decrease in their number and approach to initial indices (26 defects in group 12). In general, the presence of one defect, the length of which was one tooth, was recorded in 254 persons (41.0%), two defects simultaneously with one tooth absent – in 193 persons (31.1%), three simultaneous defects – in 100 (16.1 %), four – in 52 (8.3 %), five – in 15 (2.4 %) and six – in 7 persons (1.1 %). Also, with increasing age of patients, the number of simultaneous presence of two, three, four, five and even six small DD, the length of which was equal to one tooth, increases ($r=0.0760$, $p=0.048$).

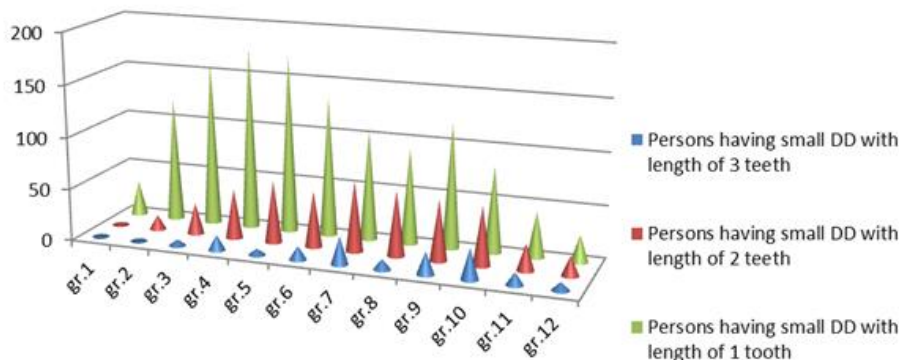


Fig. 2. Prevalence of small different length DD depending on the age. (abs.).

The presence of one defect, the length of which was two teeth, was recorded in 167 persons (54.05 %), simultaneously two defects with the absence of two teeth – in 101 persons (32.69 %), three – in 35 (11.33 %), four – in 5 (8.37 %) and five – in 1 person (0.32 %). The dynamics of changes in the number of this variant defects was in line with the general trend of the small DD prevalence and with the previous variant of the defect, the length of which was one tooth. Thus, the number of defects with the absence of two teeth increased from 2 in group 1 to the maximum values of 60, 54, 68, 63, 58, 57, respectively, in groups 5, 6, 7, 8, 9, 10, after which there is a reduction to 19 defects in group 12 (fig.2). The age dynamics of small DD, the length of which was equal to two teeth, also coincided with the previous variant of defects: with increasing age of patients, the number of simultaneous presence of such two, three, four and five small DD increased ($r=0.4063$, $p=0.00$).

Finally, the prevalence of small DD, the length of which was three teeth, was as follows: 94 people had one defect (78.99 %), two simultaneous defects with three teeth absent – 20 (16.81 %), three – 5 persons (4.20 %). In the first two groups (age categories of 18–24 and 25–29 years) there wasn't such variant of small DD at all. The growth was only recorded beginning from group 3 (6 defects), the maximum number was achieved in group 7 (27 defects), group 9 (22 defects) and group 10 (30 defects), and then there was a decrease in the number of defects up to 8 ones in persons of the oldest age group 12 (fig. 2). The age dynamics of small DD, the length of which was equal to three teeth, also generally corresponded to the previous variants of defects: with increasing age of patients, the number of simultaneously present two, three, four and five small DD increased ($r=0.3540$, $p=0.00$).

Gender features in the analysis of the small DD structure, which had different lengths, concerned the following (fig. 3).

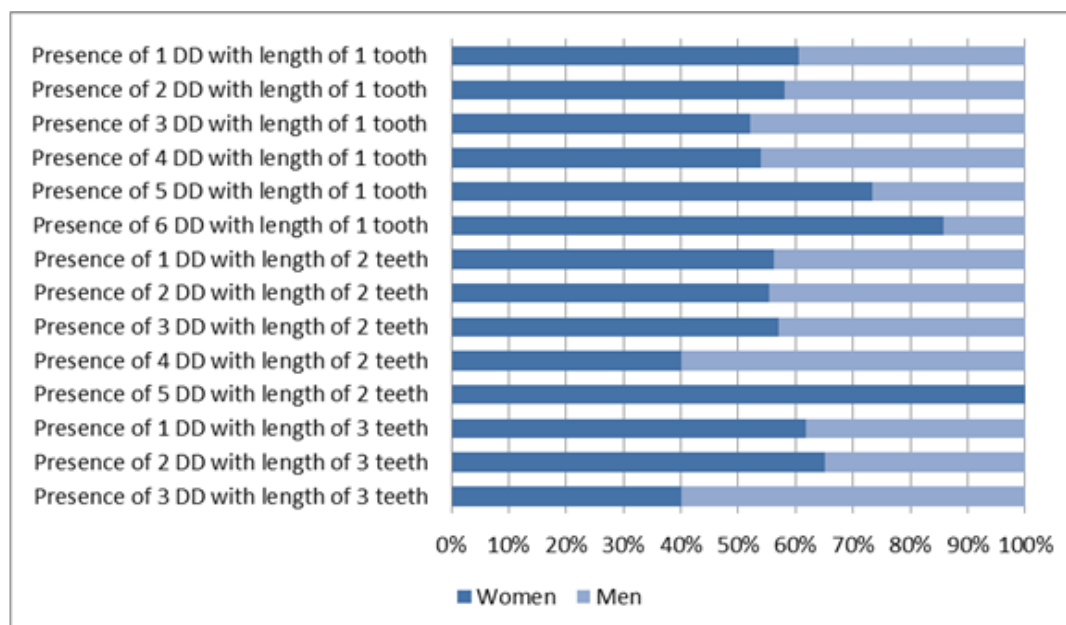


Fig. 3. Prevalence of small different length DD depending on the gender, %.

Thus, in 11 positions out of 14, the number of women was higher than that of men by 1.54, 1.38, 1.08, 1.16, 2.74 and 5.99 times, respectively, in the case of one, two, three, four, five and six small DD with length of one tooth; by 1.28, 1.24, 1.33 times in the case of one, two, three small DD with length of two teeth and by 1.61, 1.86 times in the case of one and two small DD with length of three teeth. In the 2 positions that were analyzed, on the contrary, the number of men was higher than that of women, namely in the case of simultaneous presence of four small DD with two teeth absent (by 1.5 times) and in the case of simultaneously present three small DD with absence of three teeth (by 1.5 times). In addition, the simultaneous presence of five small DD with two teeth being absent was only recorded in women ($p<0.001$) (fig. 3). However, in general, according to the averaged data, the number of women exceeded that of men by 1.41 ($\chi^2=6.849$, $p=0.335$), 1.27 ($\chi^2=2.293$, $p=0.807$), and by 1.59 times ($\chi^2=0.954$, $p=0.812$), respectively, for defects whose length was equal to one, two and three teeth absent.

Thus, the analysis of OPTG in Kharkiv residents permitted to obtain information on the small DD structure quantitative features. The structure of dentition defects indirectly indicates, on the one hand, the level of dental care, and on the other hand – the degree of patients' motivation to timely sanitation of the oral cavity. The disappointing situation is most likely due to the actual disappearance of medical

examinations, intensification of negative socio-economic phenomena and, as a result, deterioration of dental health.

The results obtained by us coincide with the data of other domestic researchers. Thus, V.A. Labunets et al. [5] also studied the structure of small bounded DD in young people of Odesa and found that defects with the absence of one tooth predominate (82.2 %). Defects with the absence of two teeth occur in 13.2 % of cases, and those with the absence of three teeth – in 4.6 %. No significant gender differences in the selected indices were identified by these authors. The fact of increase in the length of small DD with the age of the examined patients, especially with the absence of three teeth, was also recorded.

Prevalence of small DD with the absence of one tooth was recorded in the study on the structure and dynamics of the small bounded defects development in young persons' dentition of Ivano-Frankivsk and Ternopil (81.4 %). The presence of defects in the absence of two and three teeth was found in 15.5 % and 3.1 % of persons, respectively [7]. The authors also emphasize the tendency to reduce the number of small DD with one tooth absent while increasing the number of defects with the absence of two and three teeth. Regarding the gender dependence, the authors found a tendency to a greater extent of such defects in men. At the same time, in patients of Zaporizhzhya, the prevalence of small DD among women still exceeded that in men, although without statistical significance [9].

Conclusion

Thus, analyzing such a quantitative criterion of the small DD structure in population of Kharkiv as their length, we can say that the maximum number of defects was in the absence of one tooth (66.1 %), and the smallest share of defects had the maximum length of three teeth (7.8 %). There is a direct correlation between the increase in the age of the examined persons and the number of simultaneous presence of two, three, four, five and even six small DD, the length of which was from one to three teeth. Also, when analyzing the structure of small DD, which had different lengths, it was found that the prevalence of various features in structural characteristics was higher in women than in men, but without statistical significance ($p > 0.05$). The obtained data necessitate the improvement of developing new efficient approaches to the orthopedic dental care in the Kharkiv region.

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