

THE DIAGNOSTIC VALUE OF OSTEODENSITOMETRY IN THE TREATMENT OF PATIENTS WITH GENERALIZED PERIODONTITIS OF II – III DEGREE

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ABSTRACT

The results of osteodensitometric examination of patients with generalized periodontitis are described in this article. The author has shown that the course of this disease in patients older than 40 is often accompanied by a reduction of mineral density in osseous tissue of different degree of expressiveness in the whole skeleton. The osteodensitometric diagnostics carried out give grounds for the necessity to use complex therapy - surgical methods and general osteotropic preparations.

Key words: Generalized periodontitis, surgical treatment, osteodensitometry, mineral density of osseous tissue

Of all periodontal tissue diseases, the generalized periodontitis is the most severe and most often met disease among the population.

In the last decade, studies of different authors have pointed out that there is a relation between the status of the bone of the alveolar process in patients with generalized periodontitis and the status of their bone system as a whole. It has been ascertained that the destructive and dystrophic processes in the periodontal tissues, the exchange processes in the osseous tissues of the alveolar crest are closely interrelated to the structural and functional condition of the bone system, to the metabolic activity and the intensity of remodeling of skeleton bones. It has been established that the reduction in mineral density in osseous tissue in system osteoporosis is accompanied by a progression of the dystrophic and resorbitive processes in the periodontal tissues, destruction of the osseous plates between teeth, damage in the bone remodeling processes.

Clinical tests and surgical treatment of patients with generalized periodontitis of II – III degree were carried out in the Clinic of Maxillofacial Surgery at the Institute of Stomatology under the Academy of Medical Sciences of Ukraine in the city of Odessa.

Osteodensitometry was carried out in order to be evaluated the structural and functional status of the skeleton osseous tissue. The MDBT (mineral density of bone tissue) of the heel bone were evaluated using a

multidetector osteodensitometer “UBIS-5000” (France).

There were evaluated the T-criterion which is a ratio of the results obtained in the case of a particular patient to the ideal result which is considered to be 100%, the Z-criterion in % of the established gender and age rates, as well as the following indicators in osteodensitometry: Broadband Ultrasound Attenuation (BUA, dB/MHz), Speed Of a Sound of ultrasound wave (SOS, m/s), Relative Risk of Fracture (RRF), Expected Age of Osteoporosis (EAO), Time to Osteoporosis (TTO) and Physiological Age of Bone (PAB).

Based on the osteodensitometric results, patients were divided into two groups: 1st group – 32 patients with generalized periodontitis of II-III degree with MDBT within the normal rates and a 2nd group of 25 patients in whom the course of generalized periodontitis involved a reduction of MDBT (osteopeny and osteoporosis). Thereafter, the analysis of the clinical and laboratory values was carried out in a comparative aspect between the two groups, i.e. depending on the structural and functional condition of the osseous tissue.

The comparative results of the osteodensitometric values in patients of the first and second group that were observed are presented in Table 1. It should be noted that the physiological age of bone in patients of the 2nd group is practically twice higher than the values in patients of the 1st group and does not depend on their actual biological age. Furthermore, there was noted a much earlier development of generalized periodontitis in patients with reduced MDBT.

Comparative studies of periodontal status in patients of the 1st and 2nd group did not reveal significant differences between the indicators' values even though there was observed a tendency of deterioration of the values of the 2nd group. In our opinion, this could be explained as follows: the average age of the patients of group 1 is 47±8 years, and of the patients of group 2 - 38±6 years, i.e. in patients with generalized periodontitis against the background of a systematic pathology of osseous tissue in quite a young age, the indicators that are characteristic of the degree of inflammatory and dystrophic processes in the periodontal tissues are practically the same as those of people of a more

mature age but without pathological processes in their osseous tissue. In this way we discovered a much more unfavorable option for the course of periodontitis in the patients of the 2nd group who have a reduced MDBT in comparison to that of the patients of the 1st group.

This is confirmed by the data obtained from the rentgenological test. Ortopantograms of patients of the 1st group showed considerable destruction of the alveolar bone, active foci of spotted osteoporosis, resorbition of the inter-alveolar septa within 1/2 and more than 2/3 of the length of the tooth root, vertical type of bone resorbition – multiple osseous pouches.

In the analogous x-ray test of the patients with generalized periodontitis of the 2nd group (against the background of a reduced MDBT), in addition to the symptoms listed above, there was noticed a sclerotic

reconstruction of the osseous tissue and a mixed type of bone resorbition - a combination of horizontal and vertical resorbition. This leads to gloomier prognostications for surgical treatment of periodontitis.

In this way, the osteodensitometric results give grounds for the necessity of a complex treatment of generalized periodontitis to be carried out, including a combination of surgical methods and general osteotropic therapy. When seeking help from a dentist, the category of patients for whom the risk to develop osteoporosis is increased (women in the post-menopause period, patients with accompanying diseases such as diabetes mellitus, hyperthyroidism, hypertension, kidney, blood and gastrointestinal etc. diseases, elderly people) have to undergo extensive complex examinations that include osteodensitometry.

Table 1. Comparative characteristic of the basic parameters in osteodensitometry of patients with generalized periodontitis

STUDIED INDICATORS	Patients with generalized periodontitis	
	1 st group(MPKT within N)	2 nd group(MPKT < N)
T-criterion	-0.85±0.10	-1.59±0.17***
Z-criterion	0.37±0.09	-1.19±0.14***
Broadband Ultrasound Attenuation, dB/MHz	68.4±2.1	57.5±2.3**
Speed Of Sound, m/s	1517±21	1468±27
Relative Risk of Fracture	0.98±0.16	2.74±0.19***
Expected Age of Osteoporosis	(not determined)	66.4±6.3**
Time To Osteoporosis	(not determined)	42±5**
Physiological Age of Bone	37.8±5.1	67.5±6.5***

Notes: ** - p<0.01 and *** - p<0.001 – significant differences of the studied indicators between the observed groups of patients (ANOVA criterion with a post hoc Neumann – Kulz test).

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