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THE EFFECT OF KIDNEY PATHOLOGY ON DENTAL MORBIDITY

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Abstract: *Chronic renal failure (CRF) is a symptom complex caused by irreversible gradual death of nephrons due to primary or secondary chronic progressive kidney disease. The number of patients with CRF in the world has increased 4.7 times.*

Key words: *Chronic renal failure, tubulointerstitial kidney damage, chronic generalized periodontitis.*

Introduction

One of the urgent problems of modern dentistry today is the influence of systemic disorders characteristic of various somatic pathologies. According to the World Health Organization, the prevalence of periodontal diseases among the population aged 33-44 years is about 65-98%. The study of periodontal status in people of different ages has shown its clinical stability in only 4-5% of the population aged 24 to 44 years. At the same time, the methods of comprehensive dental rehabilitation of people suffering from various diseases of the organs and tissues of the oral cavity have improved significantly recently, due to the introduction of new technologies, equipment, tools and materials into practical dentistry. It should be noted that there is still insufficient data to study the mechanism of development of clinical and biochemical disorders in chronic generalized periodontitis associated with chronic kidney disease, which indicates the need for detailed clinical and laboratory studies on this problem.

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Large-scale scientific events are being conducted worldwide to study the progression of periodontitis, which is spreading through chronic kidney disease on a global scale, and to conduct research on its diagnosis and treatment. In this regard, the etiology and pathogenesis of the origin of periodontal tissue diseases are being studied; in patients with inflammatory periodontal diseases, including metabolic disorders, obesity, cardiovascular diseases, renal diseases and diabetes mellitus are observed.; biomarker function of fermenturia in the pathogenesis of dental diseases accompanied by lesions of tubulointerstitial kidney tissue; proteolysis in the development of periodontal lesions, lipoperoxygenation and cytokine balance processes are based on the dynamics of activity markers.

Research methods

The examined patients underwent an oral cavity examination using a dental mirror and a probe. The intensity of dental caries was calculated by the CPI index, the frequency of caries, non-carious lesions, and chronic periapical foci of odontogenic infection, as well as the need for dental treatment and dentures, expressed as a percentage. To identify chronic periapical foci of odontogenic infection, the conclusions of radiologists were studied, which they established based on the study of orthopantomograms. The frequency of periodontal pathology and oral mucosa was expressed as a percentage. The intensity of inflammatory processes in the gums was determined using the iodine number of S. Svrakov, the intensity of periodontal diseases was determined by the KPI index (P.A. Leus, 1976; Yu.V. Chizhov, 2008; T.S. Martyanova, 2009), the hygienic condition of the oral cavity was assessed using the generally accepted index of Yu.A. Fedorov-V.V. Volodkina (L.Yu. Orekhova, M.V. Osipova, 2010; P.V. Lionenko, G.P. Leonenko, 2014). Laboratory examination of oral fluid, blood and urine was performed at the Central Clinical Laboratory of TSSI.

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To study the indicator of secretory immunity of saliva, a laboratory examination of oral fluid was performed in patients suffering from CKD. In the examined patients on an empty stomach before and after HD treatment, before and after rinsing the oral cavity, before and after brushing teeth with toothpastes, mixed saliva was collected for 10 minutes without stimulation, by spitting into a test tube according to the method of V.K. Leontiev and Yu.A.Petrovich (1976). Saliva samples were collected in the morning (08.00). Patients abstained from smoking, drinking, eating, and brushing their teeth 1 hour before sampling. Prior to the start of the study, test tubes with samples were stored in the cold at $t = -30^{\circ} \text{C}$. The mixed saliva was centrifuged at 3000 rpm for 15 minutes and activity was determined in the supernatant. Laboratory examination of oral fluid was performed at the Central Clinical Laboratory of TSSI. The content of secretory immunoglobulin A (sIgA) in saliva was determined by enzyme immunoassay using kits from Vector Best (Russia). The content of pro-inflammatory cytokines [interleukin-1p (IL-1p), interleukin-6 (IL-6), interleukin-8 (IL-8), tumor necrosis factor- α (TNF α)] was studied in oral fluid, blood serum, and urine] and anti-inflammatory interleukin-2, -4 (IL-2, IL-4), interleukin-10 (IL-10)] were determined by enzyme immunoassay using kits from Vector Best (Russia). Lysozyme levels, lactoferrin, cystatin, and lipocalin-2 levels in blood, oral fluid, and urine were also determined by enzyme immunoassay. The studies were conducted in accordance with the recommendations of the manufacturer of the HUMAN test systems. Enzyme immunoassay and biochemical studies were performed using the company's automatic analyzers. «Mindray».

Discussion results

In the course of the clinical study, the following features were studied:

The dental status of patients with chronic kidney diseases made it possible to establish the features of the clinical course of dental hard tissue

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pathology, assess the level of dental care provided to such patients, as well as clarify information on the frequency of caries, non-carious dental lesions and the need for treatment. To improve the accuracy and reliability of the ongoing clinical study on the features of the clinical course of diseases of the hard tissues of teeth, and the frequency of their occurrence in chronic kidney disease (CKD), at the same time, the dental status of practically healthy individuals (of the same age group and gender) was studied.

The study found that in healthy middle-aged people (the control group), the incidence of caries and non-carious dental lesions was 87% and 31%, respectively.

82% of the control group needed dental treatment, 57% needed dental prosthetics. The level of dental care in the control group was satisfactory (USP index=49%).

The study of dental morbidity in people suffering from CKD showed that its indicators did not differ significantly from those obtained during the examination of the control group. Thus, the incidence of caries and non-carious dental lesions in people with CKD was 94%, respectively. At the same time, people with CKD were more likely to suffer from non-carious lesions of the hard tissues of the teeth (wedge-shaped defects, increased tooth wear, dental hyperesthesia), respectively, in 29% and 35% of cases. There were no significant differences in the intensity of the carious process in CKD compared with the control group. For each examined person suffering from CKD, there were, respectively, 0.83 ± 0.09 teeth with chronic periapical foci of odontogenic infection.

Conclusion

Thus, the study of the dental status of patients suffering from chronic kidney disease showed that the presence of somatic pathology affects both the incidence of dental hard tissue pathology and the clinical picture of the course

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of major dental diseases. With CKD, with a satisfactory level of dental care, the frequency of non-carious lesions increases, and the need for treatment of hard tissue pathology and dental prosthetics does not differ from the needs of healthy people of the same age group for dental care. The indicator of the level of dental care for patients in the control group and those suffering from CP was unsatisfactory.. This is obviously due to metabolic processes that lead to changes in the mineralization of hard dental tissues, as well as the difficulty of combining dialysis therapy with dental treatment. The data obtained indicate the need to improve organizational and dental treatment and preventive measures aimed at improving the dental health of people suffering from chronic kidney disease.

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