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Dental Status of Patients with Mental Disorders

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Summary: Target. Assessment of the dental status of patients with mental disorders.

Methods. A study of 220 mentally ill and 208 practically healthy people was carried out using the CFE indices (sum of carious, filled and extracted teeth) and CPITN (from the English Community Periodontal Index of Treatment Needs - index of need for the treatment of periodontal diseases) to determine the prevalence and intensity of caries, periodontal diseases and identifying the needs of those examined for complex dental treatment. The groups were comparable in age: 35.2±0.39 and 34.3±0.40 years (p=0.115). The functional state of the salivary glands and oral fluid was studied. The psycho-emotional status was determined before the start of dental procedures using the clinical-psychological method, using the Spielberger-Khanin scale for assessing the level of reactive and personal anxiety.

Results. In the main group, the number of patients in whom various forms of caries were identified was 100%, while in the group of mentally healthy patients the number was 91.8±1.90% (p=0.001). Due to the high rates of caries disease intensity, especially in terms of the number of teeth removed, a fairly high need for dental prosthetics for mentally ill patients has been recorded. The highest level of intensity of tartar deposition and deep pathological periodontal pockets was found in the main group. Peaks of decreased salivation were more often diagnosed in patients with mental illness. When assessing the frequency of dental anomalies, deep bite and progeny had the highest proportion in both groups compared to other types of anomalies, but in the main group the frequency of crossbite was higher (p = 0.015). The indicator of reactive anxiety during dental interventions in the main group was 50.1±0.72% - versus 31.6±0.57% in the control group (p<0.001). A similar picture was revealed when assessing the level of personal anxiety in the subjects.

Conclusions. Research results indicate a high level of incidence of inflammatory-destructive diseases of periodontal tissues and hard dental tissues in the main group of patients with mental disorders; the presence of the pathology under study negatively affects the state of the acid-base balance of saliva and the frequency of development of dentofacial anomalies.

Keywords: mental illness, caries, periodontitis, saliva, anomalies.

Relevance. Over the past decades, there has been a steady increase in the prevalence of mental disorders and mental health-related problems in almost all age, gender and social groups of the population. In all countries of the world, even despite the rapid growth of the economy and incomes of the population in some of them, currently on average up to 20–25% of the population, including children and the elderly, seek help from psychiatrists [1,3]. The dynamics of growth in the number of patients with neuroses, alcoholism, mental retardation, senile disorders, and schizophrenia also turned out to be positive. The relevance and significance of this problem for modern healthcare and how important mental health is for human life as a whole is evidenced by the statistics of diseases of organs and body systems that arise due to nervous breakdowns, constant stress, in the development of which mental disorders are an important risk factor [2,4,5]. In recent decades, against the background of somatic comorbidity, limited access of patients to effective medical care, and its not always high quality, there has been growing concern about the somatic health of patients with severe mental illness. One of the important and unresolved issues in this area is the provision of specialized dental care to this population, which often, due to its physical and mental state, is not able to independently contact the necessary specialists in a timely manner. In addition, despite comprehensive examination and treatment, such patients do not comply with medical prescriptions and rules for hygienic oral care.

Thus, mental illness and long-term use of tranquilizers, antidepressants, and anticonvulsants cause negative changes in the autonomic nervous and endocrine systems and pronounced disturbances in metabolic processes. At the same time, the lack of proper hygienic care and disturbances in the functional state of organs and tissues of the mouth significantly increase the risk of developing odontogenic foci of infection [6,7,8].

Purpose of the study— assessment of the dental status of patients with mental disorders. At the Dental Clinic of the Bukhara Medical Institute and the Psychiatric Hospital in Bukhara, 428 people were examined, among whom 220 were diagnosed with mental disorders (main group), and 208 people were practically healthy and did not have any somatic pathology (control group). The groups were comparable in terms of age and gender: men, the average age in the main group was 35.2±0.39 years, in the control group - 34.3±0.40 years (p=0.1152). The criteria of the International Classification of Diseases, 10th revision, were taken into account, according to which patients were diagnosed with "schizophrenia, schizotypal and delusional disorders" or various types of borderline mental disorders, epilepsy, and congenital dementia [9,11,13,15]. The main method of dental studies of mentally ill patients, according to the recommendations of the World Health Organization, was the Community Periodontal Index of Treatment Needs (CPITN). The prevalence and intensity of damage to hard dental tissues by caries was assessed using the CFE index (the sum of carious, filled and extracted teeth). Psycho-emotional status was determined using the clinical-psychological method (Spielberger-Khanin scale for assessing the level of reactive and personal anxiety, 1970). The functional state of the salivary glands was determined using the following method. The subjects were asked to collect saliva in a graduated test tube for 5 minutes. The resulting volume was divided by 5 and the value of the background salivation rate (ml/min) was obtained. Determination of the pH value of saliva was carried out with a pH meter using measuring electrodes with normalized pH coordinates of the isopotential point and a combined electrode. The research results were processed by the method of variation statistics. To characterize a group of homogeneous units, their arithmetic means (M), standard errors (m) and range of changes (min–max) were determined [10,12,14]. For statistical processing of data, the nonparametric U test (Wilcoxon–Mann–Whitney) and the parametric Student t-test were used as a method for assessing differences in indicators. Statistical differences between groups were considered significant at $p<0.05$. Statistical processing of the obtained data was carried out on a personal computer using modern software - spreadsheet editor Microsoft Excel 2007 and application package Statistica 7.0. The average values of the PCI index in terms of the prevalence of caries disease in the examined patients with mental disorders and healthy people in the control group differed. Thus, the frequency of dental caries turned out to be significantly higher in the main group compared to the data in the control group - 2.70±0.07 and 1.14±0.03, respectively ($p<0.001$). In the main group, the proportion of patients with damage to hard dental tissues amounted to 100%,in the control group - 91.8±1.90% (p=0.001). The average number of lost teeth in the main group was higher than in the control group (7.74±0.08 points), and in mentally healthy people it was 3.5 times lower (2.47±0.10 points; $p<0.001$;Table1)

Table 1. Characteristics of the PCI index in mentally ill patients

Indicators	Main group, n=220	Control group, n=208	R
C	2.70±0.07	1.14±0.03	<0.001
F	3.83±0.07	5.11±0.09	<0.001
E	7.74±0.08	2.47±0.10	<0.001
CFE	14.28±0.16	8.72±0.12	<0.001

In the main group, the prevalence of inflammatory periodontal diseases was 95%. The average number of healthy sextants in patients already in the first age group (up to 25 years) was 9.2±3.59%. According to the CPITN index, only 0.68±0.10 and 0.40±0.07 sextants in young mentally ill patients were assessed as healthy (Table 2). Based on the results of the analysis of data from clinical studies in all age groups of patients with mental disorders, as the age of the patients increased, the need for curettage of periodontal pockets and surgical treatment increased. The prevalence of dental anomalies in patients

with mental illness and practically healthy people is presented in Table 3. When assessing the frequency of some dental anomalies, deep bite and progeny had the highest proportion in both groups in relation to other types of anomalies. However, the frequency of crossbite was higher in the main group - 3.2±1.18% versus 0% in the control group. Thus, mental abnormalities induce the development of dental anomalies, one of which is crossbite. When studying the level of reactive and personal anxiety, the Spielberger–Khanin scale was used, which is a method for diagnosing self-esteem during dental interventions and serves as a reliable and informative way to determine the level of anxiety. The rate of reactive anxiety in the main group was 50.1±0.72% - versus 31.6±0.57 in the control group ($p<0.001$)

Table 2. Intensity of periodontal diseases in mentally ill patients (CPITN index)

Age groups	Number of people examined	Average number of sextants				
		Healthy periodontium	Bleeding	Tartar	Periodontal pockets	
					4–5 mm	6 mm or more
Up to 25 years	**65**	0.68±0.10	1.49±0.14	1.94±0.15	0.98±0.12	0.51±0.09
26–34 years	**80**	0.40±0.07	1.25±0.11	1.85±0.13	1.54±0.12	0.64±0.09
35–45 years	**70**	0.13±0.04	1.03±0.11	2.12±0.14	1.60±0.13	0.65±0.09
Total	**220**	0.37±0.04	0.86±0.06	1.64±0.08	1.62±0.08	0.60±0.05

Table 3. Severity of anxiety in the subjects (Spielberger-Hanin scale)

Groups	Reactive anxiety	R	Personality anxiety	R
Main group, n=220	50.1±0.72	<0.001	47.8±0.60	<0.001
Control group, n=208	31.6±0.57		36.9±0.48	

The conducted clinical study and the results of the questionnaire show that the values of high levels of reactive anxiety in mentally ill and practically healthy people at the stages of treatment differ markedly. Taking into account the fact of the negative impact of somatic and mental pathology on the functional state of saliva, some of its indicators were studied, including fluctuations in the pH of the oral fluid. In our studies in the control group, the pH value was within normal limits. In the main group, the pH of the oral fluid was lower, and a pronounced shift in the pH of saliva to the acidic side was detected - 6.11±0.030 versus 7.02±0.041 in the control group ($p<0.001$). Thus, the presence of mental disorders and the use of potent medications lead to serious disturbances in the acid-base balance of the oral cavity and its shift to the acidic side.

CONCLUSION.

1. Research results indicate a high level of incidence of inflammatory-destructive diseases of periodontal tissues and hard dental tissues in the group of patients with mental disorders.
2. The presence of mental pathology negatively affects the frequency of development of dentoalveolar anomalies and the state of the acid-base balance of saliva with a shift in its pH to the acidic side.

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