



Diagnostics and Provision of Specific Dental Care to Patients with Psychiatric Pathologies

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Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 13 Dec 2023	<i>We know that a number of indicators are used in assessing the health of a certain contingent: sociological assessment, medical and demographic assessment, morbidity, disability, physical health. At the same time, in a comprehensive assessment of the functional state, the following are distinguished: group I – healthy; group II – healthy individuals who do not have any chronic disease, but have various functional abnormalities, decreased immunological resistance, frequent acute diseases, etc.; Group III – patients with long-term current diseases with mainly preserved functional capabilities of the body; group IV – patients with long-term current diseases with reduced functional capabilities of the body; group V - severe patients in need of bed rest [1.3.5.7].</i>
CC License CC-BY-NC-SA 4.0	Keywords: <i>Surgical procedures, Dentistry, Renal failure, Dental treatments, Patients, Health professionals</i>

1. Introduction

We know that a number of indicators are used in assessing the health of a certain contingent: sociological assessment, medical and demographic assessment, morbidity, disability, physical health. At the same time, in a comprehensive assessment of the functional state, the following are distinguished: group I – healthy; group II – healthy individuals who do not have any chronic disease, but have various functional abnormalities, decreased immunological resistance, frequent acute diseases, etc.; Group III – patients with long-term current diseases with mainly preserved functional capabilities of the body; group IV – patients with long-term current diseases with reduced functional capabilities of the body; group V - severe patients in need of bed rest [1.3.5.7].

Also, the dependence of the occurrence of a pathological situation in the oral cavity (PR) on the general condition of the body is beyond doubt. Thus, the incidence of caries has been proven in a number of somatic diseases, including when harmful factors are exposed to the human.

The experience of dentists and their assistants in providing dental care to patients with mental disorders has shown that special training is necessary to work with this category of patients, due to the mental status of patients, problems often arise associated with unpredictable behavior of patients and communication difficulties. It is also known that various groups of psychotropic drugs are used in the treatment of mental illnesses: neuroleptics, antidepressants, tranquilizers, normotimics, nootropics and correctors. They have a different effect on the state of the ESR, causing hyper- or hyposalivation, reducing pain sensitivity, which in turn contributes to the transition of the acute form of dental diseases into chronic. [2.4.8].

The authors note a number of the most important risk factors for the occurrence of PNZ, namely: pregnancy complicated by gestosis, molecular genetic "breakdowns", unbalanced nutrition (absence of the most important components involved in the growth and development of the central and peripheral nervous systems), neuroinfections, psychological and traumatic brain injuries in the postnatal period, chronic somatic pathology, the consequence of which may be a violation of the formation and maturation of the nervous system. A number of authors believe that oxidative stress (OS) is the most important mechanism of neuron damage in the formation of pathology of the nervous

system and nerve tissue is most sensitive to changes in redox potential and damage by free radicals. In this regard, OS is considered the root cause or the leading component of the pathology of the central nervous system, including neurodegenerative conditions. The discovery of the phenomenon of excitotoxicity and OS allowed us to establish that excessive production of neurotransmitters is a key link in the pathogenesis of most types of central nervous system pathology leading to damage to the nerve cell membrane [9.11.13.15.17].

Morphofunctional changes in children with PNZ undoubtedly lead to hormonal and metabolic disorders, which contributes to a change in the general and specific reactivity of the macroorganism and is associated with a violation of protective and compensatory mechanisms with the formation of persistent multiple organ pathology. In children who have undergone perinatal hypoxia, even mild forms of damage to the nervous system with an erased clinical picture at an early age and minimal neurological disorders can contribute to the development of chronic maladaptation syndrome, which causes the occurrence and severe course of pathology of the cardiovascular and respiratory systems and various disorders of the gastrointestinal tract (gastrointestinal tract) and the functions of other organs [6]. It is known that various PNZ, including systemic ones, can occur simultaneously and comorbidally, having a common etiology and pathogenesis. However, in order to form a system of accounting for morbidity and causes of mortality, as well as to ensure the reliability and health statistics in the ICD-10 [10.12.14.16] neuropsychiatric pathology is divided into classes V and VI, namely mental disorders and behavioral disorders (F00-F99) and diseases of the nervous system (G00-G99).

According to the author, the PNZ in children tends to increase: for the southern Federal District, since over the period 2016-2017, the incidence of children with mental disorders and behavioral disorders in children for this region increased by 7.8%, and the incidence of diseases of the nervous system by 2.1% and amounted to 7574.6 people and 21226 people, respectively. At the same time, systemic and local disorders occur, and dental pathology enhances functional disorders of the antioxidant system (AOS), as a result of which the "vicious circle" closes. In addition, PNZ lead to the formation of bad habits, which in psychoneurology are considered as neurotic habitual actions and belong to the group of anxiety disorders. The role of local factors, in particular ionic and enzymatic balance, SEX processes, activity of antiradical protection enzymes in the saliva of children with PNZ. The informative, non-invasive, and economic attractiveness of oral fluid (RV) studies contributes to the priority of this direction in individual and screening homeostasis examinations of this contingent.

Pathogenetic mechanisms of dental pathology in children with PNZ may be in the sphere of changes in the physico-chemical properties of the oral fluid: a decrease in the volume of saliva production, acidic pH, violation of the microbiota of PR [15.16]. In addition, numerous studies have shown that saliva actually contains various molecular and microbial analytes, and that PR is the main entrance for gastrointestinal microorganisms. Each department of the gastrointestinal tract has a specific microbe regulated by physiological and other environmental factors. Also, oral fluid may contain molecular information capable of transmitting the current state of human health. A biomarker is an objectively measured and evaluated indicator of normal biological processes, pathogenic processes or pharmacological reactions to therapeutic intervention. [17] established the connection of the most severe PCA with cerebral palsy. Although studies have studied the prevalence of malocclusion among children with PNZ, the association of occlusion anomalies and the high prevalence of caries in children with PNZ has not been confirmed to date.

Currently, there is a tendency in domestic psychiatry to provide psychiatric care in out-of-hospital conditions, which corresponds to the world practice of treating mentally ill people. However, this problem has become particularly relevant in recent years. At the same time, although in most cases patients occupy a dependent position in the family, and relations with relatives are often quite complicated, the family provides maximum support to patients, often masking their insolvency to a large extent [15]. Also, with PNZ, morphofunctional changes in patients are often disrupted, leading to hormonal and metabolic disorders, which contributes to a change in the general and specific reactivity of the macroorganism and is associated with a violation of protective and compensatory mechanisms with the formation of persistent multi-organ pathology. In perinatal brain damage due to severe hypoxia/ischemia, irreversible damage to the nervous system is detected, which are manifested by hydrocephalus, microcephaly, cerebral palsy (cerebral palsy), convulsive syndrome and delayed psychomotor development [12.16]. Also, often, only a certain direction of dental pathology is investigated: therapeutic - caries, periodontal diseases or hygiene problems, etc.; - surgical or orthodontic. For example, according to the author dental care with PNZ is poorly optimized, untimely and is provided in insufficient volume, which may be one of the reasons for the high level of intensity

and prevalence of diseases of the hard tissues of the teeth. A high level of dental morbidity in children with PNZ is also associated with difficulties in perceiving information, a violation of the communicative sphere, as well as as a result, non-compliance with the most important hygienic standards of care for PR. In the formation of the pathological process, a number of authors see a possible pathogenetic role of dysfunction of the autonomic nervous system and central nervous system (CNS). The authors claim that many mental diseases occur against the background of somatic diseases, metabolic disorders, dysfunction of the endocrine and autonomic nervous system (ANS), organic lesions of the central nervous system, changes in the blood system, etc. However, the influence of neuropsychic factors on the maxillary system has not yet been sufficiently investigated [16].

2. Materials And Methods

Assessment of the dental status in patients with various variants of PNZ and improvement of diagnostic methods and treatment, as well as qualification of dental care provided to psychiatric patients in outpatient and inpatient settings.

The study of 124 mentally ill and 112 practically healthy people was carried out using the CPI indices (the sum of Carious, Filled and Removed teeth) and CPITN (from the English Community Periodontal Index of Treatment Needs — the index of the need for treatment of periodontal diseases) to determine the prevalence and intensity of caries, periodontal diseases and to identify the needs of the examined in 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 psychoemotional status was determined before the start of dental manipulations by the clinical and psychological method, using the scale of assessment of the level of reactive and personal anxiety of Spil Berger–Khanin.

3. Results and Discussion

In the main group, the number of patients with various forms of caries was 100%, while in the mentally healthy group, the number of such was $91.8 \pm 1.90\%$ ($p < 0.001$). Due to the high intensity of carious disease, especially in terms of the number of teeth removed, a fairly high need for dental prosthetics has been registered for mentally ill patients. The highest level of intensity of tartar deposition and deep pathological periodontal pockets was found in the main group. Salivation decline peaks were more often diagnosed in patients with mental illness. When assessing the frequency of dental anomalies, deep bite and progenia had the highest proportion in both groups compared to other types of anomalies, but in the main group, the frequency of cross-bite was higher ($p = 0.015$). The index of reactive anxiety during dental interventions in the main group was $50.1 \pm 0.72\%$ — versus $31.6 \pm 0.57\%$ in the control group ($p < 0.001$). A similar pattern was revealed when assessing the level of personal anxiety in the subjects.

The conducted clinical study and the results of the questionnaire show that the values of a high level of reactive anxiety in mentally ill and practically healthy at the stages of treatment are markedly different. Taking into account the fact of the negative influence 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 the normal range. In the main group, the pH of the oral fluid was lower, a pronounced shift in the pH of saliva to the acidic side was revealed — 6.11 ± 0.030 versus 7.02 ± 0.041 in the control group ($p < 0.001$).

The functional state of the salivary glands was determined by the following method. The subjects were offered 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 hydrogen index (pH) of saliva was carried out by a pH meter using measuring electrodes with normalized pH coordinates of the isopotential point and a combined electrode. To characterize a group of homogeneous units, their arithmetic averages (M), standard errors (m) and the range of changes (min–max) were determined. For statistical data processing, the nonparametric U (Wilcoxon–Mann–Whitney) criterion and the parametric Student t-criterion were used as a method for evaluating differences in indicators. The statistical difference between the groups was considered significant at $p < 0.05$. Statistical processing of the received data was carried out on a personal computer using modern software — an editor. The average values of the CPI index in terms of the prevalence of carious disease in the examined patients with mental disabilities and healthy people in the control group differed. Thus, the frequency of dental caries was significantly higher in the main group compared with 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 lesions of the hard tissues of the teeth was 100%, in the control group — $91.8 \pm 1.90\%$ ($p < 0.001$). 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 it was 3.5 times lower (2.47 ± 0.10 points; $p < 0.001$). 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) it was $9.2 \pm 3.59\%$. 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. Based on the results of the analysis of clinical studies in all age groups of patients with mental disorders, the need for curettage of periodontal pockets and surgical treatment increased with increasing age of patients. The prevalence of dental anomalies in patients burdened with mental illness and practically healthy people is presented. When assessing the frequency of some dental anomalies, deep bite and progenia had the highest proportion in both groups in relation to other species.

4. Conclusion

The results of the studies indicate a high level of infection with inflammatory destructive diseases of periodontal tissues and hard tissues of teeth in the main group of patients

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