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INCIDENCE, ETIOLOGY, AND PATHOGENESIS OF ORAL DISEASES IN PATIENTS ON HEMODIALYSIS

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ANNOTATION
Introduction: Hemodialysis (HD) is one of the main methods of treatment for patients with end-stage renal failure. Although this procedure is aimed at improving the quality of life of patients, long-term hemodialysis can lead to various pathological changes in the oral cavity. **Objective:** The aim of this study was to determine the incidence of oral diseases in hemodialysis patients and to analyze the pathogenesis of these diseases . **Materials and methods:** 158 patients were recruited for the study. Of these, 108 were hemodialysis patients, 30 were patients with renal failure but not undergoing HD, and 30 were healthy controls. During the study, the dental condition of the patients was assessed through clinical and laboratory tests. **Results and discussion:** According to the results of the study, oral diseases were observed in 70% of hemodialysis patients. In particular, a high incidence of xerostomia (dry mouth syndrome), gingivitis, stomatitis and mucositis was found. Uremic toxins and electrolyte imbalance were the main factors in the development of these pathological processes. **Conclusion:** A high incidence of oral diseases was observed among hemodialysis patients. It is necessary to develop individual dental care programs for these patients. At the same time, it is important to ensure hydration and recommend rinsing the oral cavity with antiseptic agents.
Keywords: hemodialysis, oral cavity, xerostomia, stomatitis, gingivitis, mucositis

Chronic renal failure (CRF) is currently one of the most pressing challenges facing the global healthcare system. As a result of the gradual decline in kidney function, various pathological processes develop in the body, including a high incidence of oral diseases. In the final stage of CRF, hemodialysis is recommended for patients. Although this method is of vital importance, patients undergoing long-term hemodialysis experience significant changes in various organs and systems, in particular, in the oral cavity[1.2.4].

Oral diseases are one of the most common problems in hemodialysis patients. Studies show that dental pathologies are much more common in such patients than in the general population. In particular, xerostomia (dry mouth), gingivitis, periodontitis, mucosal inflammation, caries and other diseases are more common. This condition can negatively affect the overall quality of life of patients and lead to impaired chewing, swallowing and speech functions [3.5].

Several factors contribute to the high incidence of oral diseases in hemodialysis patients. These include fluid and electrolyte imbalances, metabolic changes, drug interactions, decreased immunity, and difficulty in maintaining hygiene. In particular, hemodialysis patients experience significant changes in the oral microflora due to decreased salivary secretion. This predisposes to

the development of caries and inflammatory diseases[2.5.6].
Recent medical and dental research suggests that the prevention and treatment of oral diseases in hemodialysis patients requires a comprehensive approach. This includes regular dental check-ups, the use of personal hygiene products, metabolic rebalancing treatments, and the use of modern therapeutic methods. In addition, it is important to raise the awareness of doctors and patients about oral health [7,8].
This article provides a comprehensive overview of the causes of oral diseases in hemodialysis patients, their clinical manifestations, and effective treatment and prevention methods. The results of the study will serve to develop measures aimed at improving the quality of life of patients and reducing dental problems.

MATERIALS AND METHODS

This study aimed to assess the incidence of oral diseases in hemodialysis patients, their causes, and treatment methods. The study was conducted in the Vobkent District Medical Association, Bukhara Region.

Research participants:

A total of 108 hemodialysis patients participated in the study. In addition, 30 patients with chronic renal failure (CKD) who did not require dialysis and 30 healthy controls were recruited. The patients were aged between 18 and 75 years , and 59 were male and 49 were female.

Research methodology :

1. Clinical examination:
   - The patients' oral mucosa, gum condition, dental hygiene, and inflammatory processes were visually assessed.
   - The degree of xerostomia was determined using a salivary secretion test.
   - The degree of periodontal inflammation was assessed using the Periodontal Index .
2. Laboratory tests:
   - The pH level of saliva was measured.
   - Saliva inflammatory markers (IL-6, TNF- α) were examined using enzyme-linked immunosorbent assay (ELISA).
   - Blood biochemical parameters (urea, creatinine, phosphorus-calcium balance) of patients on hemodialysis were evaluated.
3. Questionnaires and subjective assessments:
   - A questionnaire was taken from patients regarding symptoms of dry mouth, bad breath, pain, or inflammation.
   - OHIP-14 (Oral Health Impact Profile-14) test was conducted to determine the impact of oral diseases on the quality of life and overall health of patients .

Statistical analysis: The obtained data were processed using SPSS 25.0 software, and differences between groups were assessed using ANOVA and Student's t-test . A value of $p<0.05$ was considered statistically significant.

RESULTS AND DISCUSSION

The results of the study showed that a large proportion of hemodialysis patients (82%) experience various oral diseases. In particular, xerostomia was noted in 70% of patients, which negatively affected their quality of life. Periodontal diseases (gingivitis and periodontitis) were detected in 65% of patients. The study showed that the patients had a low level of compliance with oral hygiene, which further aggravated their diseases.
Laboratory studies revealed that salivary pH was significantly lower in hemodialysis patients than in the control group ($p<0.05$). This suggests that this is one of the factors leading to demineralization of tooth enamel and the development of caries. It was also found that the balance of the oral microflora was disturbed due to the weakening of the immune system in patients.
In the discussion section, it should be noted that a comprehensive approach is required to prevent oral diseases in hemodialysis patients. Regular dental examinations, the use of personal hygiene

products, a balanced diet and maintaining metabolic balance are important. In addition, it is important to constantly monitor patients in collaboration with dentists and nephrologists.
Future research should focus on further understanding the pathological mechanisms of hemodialysis-related oral diseases and developing innovative approaches to improve effective prevention and treatment.

CONCLUSION

Oral diseases are common in hemodialysis patients, and the effects of uremic toxins, decreased salivary secretion, decreased immunity, and adverse drug reactions are among the main causes of these problems. The results of the study showed that a comprehensive approach is required to prevent and effectively treat oral diseases.
Preventive measures include maintaining good oral hygiene, using artificial saliva, rinsing with antiseptic solutions, and regular dental checkups. However, anti-inflammatory and antifungal therapy, diet therapy, and an individual approach play an important role in improving oral health in hemodialysis patients.
The results of this study provide an important scientific basis for early detection and effective treatment of oral diseases in hemodialysis patients. Future research will be important in developing new innovative approaches aimed at improving the quality of life of patients.

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