METHODS FOR DIAGNOSTICS OF INFLAMMATORY – DESTRUCTIVE PERIODONTAL LESIONS

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The purpose of the research

The aim of this study is to expand the diagnostic capabilities of clinical and laboratory medicine in identifying inflammatory–destructive periodontal lesions, as well as to improve diagnostic panels based on modern interdisciplinary approaches. Significant advances in fundamental sciences, including molecular biology, biochemistry, and immunology, along with the integration of innovative diagnostic technologies, create prerequisites for revising the role of oral fluid (OF) as a highly informative biological medium reflecting both local and systemic processes in the body.

Oral fluid contains a wide spectrum of biomarkers, including enzymes, cytokines, immunoglobulins, and products of oxidative stress, which makes it a promising non-invasive diagnostic tool for assessing the state of periodontal tissues. Contemporary research (Avdeev A.V., 2012; Zakharova N.B., 2015; Kazarina L.N., 2016; Kondyurova E.V., 2018; Averyanov S.V., 2018; Beloklitskaya G.F., 2019; Furuichi Y., 2019) confirms its high diagnostic and prognostic value.

Materials and methods of research

To achieve the objectives of the study, a комплексный диагностический подход was applied, including:

Clinical methods: assessment of periodontal status using indices (OHI-S, PMA, CPI, bleeding on probing, periodontal pocket depth, clinical attachment loss);

Hygienic evaluation: determination of oral hygiene level and identification of local contributing factors;

Microbiological methods: qualitative and quantitative analysis of periodontal pathogenic microflora (including key periodontopathogens);

Biochemical studies: determination of enzymatic activity (alkaline phosphatase, lactate dehydrogenase), inflammatory mediators (interleukins, TNF-α), markers of oxidative stress and antioxidant defense in oral fluid;

Immunological methods: assessment of local immunity indicators (secretory IgA, lysozyme activity);

Statistical analysis: processing of obtained data using modern statistical methods to determine reliability and correlations between indicators.

Results of the research

The analysis of modern literature and obtained data indicates that the etiology and pathogenesis of periodontal diseases, especially in children and adolescents, are multifactorial and heterogeneous. The leading role belongs to the microbial factor; however, traumatic, immune, vascular, endocrine, and metabolic disturbances also have a significant influence.

It has been established that periodontal pathology develops as a result of a complex interaction between external (microbial biofilm, mechanical trauma, poor oral hygiene) and internal factors (immune response, genetic predisposition, systemic diseases). This concept was first emphasized by **Arkovy (1903)** and remains relevant today.

Biochemical analysis of oral fluid revealed significant changes in enzyme activity and levels of inflammatory mediators in patients with inflammatory–destructive periodontal lesions. An increase in proteolytic enzyme activity and pro-inflammatory cytokines correlates with the severity of tissue destruction, while alterations in antioxidant systems indicate oxidative stress involvement in periodontal tissue damage.

Thus, oral fluid serves as a sensitive indicator of pathological processes, allowing early detection of disease progression even before pronounced clinical manifestations.

Conclusion

The use of modern diagnostic methods, especially biochemical and immunological analysis of oral fluid, significantly enhances the accuracy and objectivity of diagnosing inflammatory–destructive periodontal lesions.

These approaches allow:

- early detection of periodontal pathology;
- assessment of the severity and activity of the inflammatory process;
- monitoring the effectiveness of ongoing anti-inflammatory and комплексной терапии in dynamics;
- development of personalized treatment strategies.

The integration of clinical and laboratory diagnostic methods represents a promising direction for improving the quality of periodontal care and preventing disease progression.