SCHOLASTIC:
Journal of Natural and Medical Education
Volume 2 Issue 9, Year 2023 ISSN: 2835-303X
https://univerpubl.com/index.php/scholastic

Modern Methods of Early Diagnosis of Inflammatory Periodontal Diseases

Abdullaeva N. I., Akhmedov A. A.
Samarkand State Medical University

Article Information

Received: July 07, 2023
Accepted: Aug 08, 2023
Published: Sep 09, 2023

Keywords: *X-ray method, functional method, biochemical methods, microbiological method.*

ABSTRACT

The development of scientific and technological progress has made it commonplace in the clinical practice of a periodontist to use often technically rather complex and expensive paraclinical methods, which, with a certain degree of conventionality, can be divided into radiological, laboratory and functional.

X-ray method. This method is recognized in periodontology as one of the most informative. It allows you to explore the state of the bone tissue of the alveolar processes and visualize its relationship with the roots of the teeth. Of the various radiological methods, orthopantomography has received the greatest justification and distribution in the diagnosis of periodontal diseases [95,138]. Undoubtedly, computed tomography is the optimal method for diagnosing periodontal diseases, since it provides a more complete and visual, and, very importantly, volumetric display of periodontal tissue structures [96]. However, radiography does not make it possible to detect inflammatory periodontal diseases at an early or prenosological stage, since destruction of more than 25% of the bone tissue becomes visible with this research method.

Microbiological method. The method in some cases can be useful in the differential diagnosis of certain forms of inflammatory-destructive lesions of the periodontium [29,176]. It is more often used to study the microbial population of periodontal pockets, to determine species ratios in microbial associations, especially in patients with aggressive forms of periodontitis. Information about the nature of the microflora in the periodontal area and its sensitivity to various types of antibiotics is very useful for developing adequate treatment tactics in the absence of a positive effect from traditional methods of treatment in a patient [29]. However, the existing microbiological studies (inoculation of washings of the contents of periodontal pockets on nutrient media, determination of sensitivity to antibiotics, etc.) are quite long-term, and the available express diagnostic tests are expensive.

Immunological methods. These methods (determination of the phagocytic number, macrophage activity, the level of interleukin in the gingival fluid, etc.) have recently begun to attract special

attention due to the increase in the incidence of aggressive periodontal disease, in the pathogenesis of which the immunological link plays an important role, as well as in connection with the development of new special methods for the treatment of these forms of pathology [115,188]. However, these diagnostic methods require the availability of specially equipped laboratories, and therefore cannot be used everywhere.

Biochemical methods. Determination of the concentration of malonic dialdehyde (MDA), the state of the total antioxidant activity of the blood (OAA), etc., unfortunately, they are used in clinical periodontology, mainly for scientific purposes. Their use in the clinic is limited by the lack of sufficient information from practitioners about the possibilities of these methods and how to interpret the data obtained with their help. At the same time, the problem of improving existing and developing new clinical and biochemical methods remains relevant: simple, accessible (cheap) and informative, fully meeting the requirements of clinical periodontology .

The data obtained in biochemical studies undoubtedly allow us to obtain new and interesting facts, especially with regard to the subtle mechanisms of the pathogenesis of inflammatory periodontal diseases, but in the practice of a practical doctor, for one reason or another, they still do not play a significant role as an aid to successful diagnosis of periodontal disease [58,121,136].

Functional methods. This type of study allows you to obtain important information about the state of the periodontal complex in real time. What is very important, they are noninvasive and are well suited for dynamic monitoring of both the results of immediate treatment and in the long term [122].

Cytological method. The method for determining the state of the periodontium according to cytomorphometry was developed at the Central Research Institute of Dentistry [107]. Its undoubted advantage is non-invasiveness , ease of sampling, as well as information content and high sensitivity in order to determine the nature of pathological processes in the periodontium, taking into account their topics and intensity. However, this method of diagnosis can only be carried out with the participation of a specialist - a cytologist , therefore, the material taken for examination requires transportation to a special institution, which is neither possible nor expedient in a remote location.

It should be emphasized once again that the ever more intensive development and widespread use of special diagnostic methods in the practice of clinical periodontology , with all their promise, should in no way be accompanied by a substitution of them for the diagnostic activity of a doctor.

The interpretation of the results of instrumental research, laboratory, X-ray and other objective research methods is influenced by such subjective factors as the level of professional training and diagnostic experience of the doctor and the quality of his clinical thinking.

When a doctor constructs a diagnostic hypothesis that reflects his idea of the general picture of the disease, both underestimation and overestimation of the diagnostic examination data are possible.

With regard to periodontology, in particular, in the differential diagnosis of periodontal diseases, it is possible to underestimate some diagnostic signs obtained during the clinical examination of the patient. So, the doctor may make an incorrect diagnosis of "gingivitis" with mild periodontitis or not identify an aggressive form of periodontitis due to the fact that he does not adequately take into account the patient's age and the severity of destructive processes in the periodontium.

On the other hand, overestimation of the significance or misinterpretation of the results of

individual studies can lead to errors in the diagnosis. So, instead of gingivitis, a diagnosis of periodontitis can be made if, when probing, it is mistaken for periodontal false pockets, which are formed due to pronounced edema of the gingival margin. The variety of continuously developing special methods involves the improvement of the diagnostic process due to the knowledge of the methodological foundations of diagnosis by dentists.

The search for new diagnostic methods aimed at detecting pathology at an early stage of development and their introduction into practical dentistry will allow developing new methods for the treatment and prevention of gingivitis and periodontitis , and thereby help to reduce this pathology, both among the adult and child populations.

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