ETIOPATHOGENESIS, CLINICAL PRESENTATION, AND MODERN TREATMENT STRATEGIES OF PERIODONTITIS

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Abstract: Periodontitis is a chronic inflammatory disease of the supporting tissues of the teeth that leads to progressive destruction of the periodontal ligament and alveolar bone, ultimately resulting in tooth loss if left untreated. The condition develops as a consequence of a complex interaction between pathogenic microbial biofilms and the host immune-inflammatory response, influenced by genetic, systemic, and environmental factors. Clinically, periodontitis is characterized by gingival inflammation, periodontal pocket formation, clinical attachment loss, gingival recession, and increased tooth mobility. Modern approaches to the management of periodontitis are based on early diagnosis, comprehensive risk assessment, and an individualized treatment strategy. Therapeutic measures include non-surgical periodontal therapy, surgical interventions aimed at eliminating periodontal defects, regenerative techniques, and supportive periodontal care. Timely and adequate treatment not only improves oral health outcomes but also contributes to the prevention of systemic complications associated with periodontal inflammation.

Keywords: periodontitis, etiology, clinical manifestations, periodontal treatment, inflammatory diseases, oral health, periodontal therapy.

Periodontitis is an inflammation of the tissues surrounding the tooth (periodontal), followed by the destruction of the ligaments of the tooth with the bone tissue of the jaw. It is manifested by bleeding and inflammation of the gums, pain when pressed, an unpleasant odor from the oral cavity, and tooth mobility. Further development of

periodontitis leads to the formation of gingival pockets, suppuration, loosening and loss of teeth. It can be complicated by abscesses and fistulas on the gums, periostitis and lymphadenitis. Treatment of periodontitis consists in complete sanitation of the oral cavity and cleaning of the gingival pockets, if necessary, their instrumental curettage is performed.

- Causes of periodontitis
- Symptoms of periodontitis
- Diagnosis of periodontitis
- Treatment of periodontitis
- Prevention
- Prices for treatment

General information

Periodontitis is a disease of the tooth, which results in the destruction of the gingival joint. Gingivitis, that is, gingivitis, is an early stage of periodontitis, and later the inflammatory process spreads to other periodontal tissues, which leads to the destruction of the periodontium and bone tissue of the alveolar process. Tooth loss in old age is in most cases caused by generalized periodontitis.

Causes of periodontitis

The main cause is the accumulation of plaque, which hardens and forms tartar. Smoking and chewing tobacco can contribute to the development of periodontitis for many reasons. Thus, tobacco reduces the reactivity of the immune system, as a result of which the risk of periodontal infection with pathogenic microflora increases. The substances contained in tobacco, interacting with saliva, create favorable conditions for the vital activity of pathogenic microflora. Smoking also significantly reduces the process of cell regeneration, which affects the course of periodontitis.

Hereditary predisposition is rare, but it becomes the main cause of development. In this case, despite the fact that the patient carefully cares for the oral cavity, gingivitis develops, and then periodontitis.

A decrease in saliva production can increase the formation of plaque and tartar, as the process of natural cleansing of the oral cavity is disrupted. Antidepressants and anti-inflammatory drugs, especially when taken for a long time, significantly reduce saliva production. Anticonvulsants, immunosuppressants, and calcium channel blockers can cause gum hyperplasia, which makes oral care much more difficult. As a result, tartar forms much faster, which causes periodontitis.

In patients with diabetes mellitus, periodontitis is diagnosed several times more often, while treatment practically does not bring results. Hormonal changes due to pregnancy, lactation, and menopause cause changes in the immune system, which affects the development of periodontitis, and if a woman had gingivitis before pregnancy, the inflammatory process begins to progress.

Vitamin C and B deficiency due to a violation of their digestibility or due to poor nutrition is one of the factors that can become the main pathogenetic link in the development of periodontitis. Lack of calcium negatively affects the entire bone system, including the maxillary system, as calcium is important for bones, especially those that support teeth. People who do not receive enough vitamin C are at risk of developing periodontitis due to a decrease in the strength of connective tissue. Smokers have a more pronounced vitamin C deficiency.

The constant consumption of excessively soft foods does not provide the necessary load on the teeth during chewing, which reduces the quality of self-cleaning of teeth. The development of periodontitis is also facilitated by the bad habit of chewing on one side, since in this case the functional load is unevenly distributed. People with malocclusion and irregular teeth are more likely to be diagnosed with periodontitis.

Symptoms of periodontitis

Pain syndrome is rarely observed in periodontitis. Inflammation of the gums is manifested by swelling, redness, local fever and bleeding gums. That is, gingivitis is the first stage. If left untreated, the process progresses and periodontitis affects soft and bone tissues, which can lead to tooth loss.

It is possible to diagnose periodontitis in the early stages only during a dental examination, since there are practically no clinical manifestations. And the main symptom after which patients seek medical help is bleeding gums while brushing their teeth or while eating.

Later, swelling of the gums and their increased sensitivity in response to irritation are added. If periodontitis is not treated at this stage, the gums begin to separate from the teeth, making the teeth look longer and gaps appear between the teeth. Subsequently, purulent discharge and bad breath appear with periodontitis. An unpleasant taste in the mouth and tooth loss are characteristic of the late stages of periodontitis.

Any inflammatory process in the gum area, including periodontitis, is painless, regardless of the depth of the lesion and the stage of destruction of periodontal tissues. Therefore, even painless bleeding of the gums is the first clinical manifestation of developing periodontitis. At this stage, the process is still reversible, since the periodontal ligament is not involved in the inflammatory process and the tooth is connected to neighboring teeth, which ensures a uniform load throughout the dentition, as a result of overload in periodontal tissues does not occur yet.

In the absence of treatment for periodontitis, the inflammatory process penetrates deeper, the destruction of the periodontal ligament begins, and a periodontal pocket occurs. It is in this pocket that plaque and tartar are deposited in periodontitis, which contributes to the progression of the process. Further, the periodontal tissues (gums and bone tissue) are destroyed, the tooth begins to loosen, and the bone support in the jaw

is lost. At this stage of periodontitis, the position of the teeth in the dentition changes, and gaps appear between them.

Depending on the characteristics of the patient, periodontitis occurs in different ways. Thus, the aggressive course of periodontitis is characterized by rapid, almost rapid destruction of teeth and gums. In another part of patients, periodontitis occurs sporadically, with prolonged remissions and periods of exacerbation of the process.

The chronic course of periodontitis is characterized by slow but progressive destruction of the bone and muscle tissues surrounding and supporting the tooth. Chronic periodontitis has a slower course than aggressive periodontitis. If periodontitis is one of the manifestations of systemic diseases, such as diabetes mellitus, then its symptoms usually appear at an early age and subside during the correction of the underlying disease.

Necrotizing periodontitis is the most severe form of the disease. Gingival tissues necrotize, and in the absence of treatment, necrosis of periodontal ligaments and bone tissue is observed. Necrotizing periodontitis occurs mainly in patients with severe forms of immunodeficiency, for example, AIDS patients.

Diagnosis of periodontitis

The presence of one or more symptoms is a reason to seek dental help as soon as possible to determine how deep the lesions are. Measuring the depth of the gap between the tooth and gum is the main diagnostic procedure, which, despite its simplicity, allows you to accurately determine the depth of the lesion. For the study, a periodontal test is used, which is placed between the tooth and gum and thereby the depth of the gap is measured. The results of the examination of each tooth are recorded and a periodontal scan is obtained.

If the gap depth is no more than 3mm, then there are no signs of gingivitis and periodontitis and the gum is healthy, while the gap depth of more than 5mm indicates the presence of periodontitis. Plaque accumulations and the presence of tartar are also taken into account in the diagnosis of periodontitis. For a comprehensive assessment of the condition of the jaw bone tissue, it is indicated to perform an orthopantomogram.

Treatment of periodontitis

Very often, treatment begins at the stage when the destruction of the supporting bone tissue and gums has already occurred, as a result of which the treatment of periodontitis is delayed due to the accumulation of pathogenic microorganisms in the gingival pockets. In such cases, periodontitis treatment is aimed at preventing the deepening of the gingival pockets and at preventing further destruction of the gums and bone tissue. To do this, thorough professional oral hygiene is performed with the cleaning of the gingival pockets from bacteria, which prevents further destruction and progression of the disease.

With a timely diagnosis, periodontitis responds well to treatment with non-

invasive methods. If the depth of the gingival pockets is not more than 5 mm, then the procedure for cleansing the root of the tooth from inflamed pulp using antibiotics is sufficient. In the future, it is necessary to observe oral hygiene and periodically visit the dentist to remove tartar.

Curettage or ultrasonic dental cleaning performed with the help of instruments removes supra- and subgingival tartar. Removing tartar using ultrasound, among other things, polishes the surface of the teeth, preventing the appearance of tartar, and oxygen disinfects the gingival pockets and promotes accelerated healing. After ultrasonic cleaning, it is recommended to use topical gels with antibiotics. Local antibacterial drugs can inhibit the growth of bacteria in the gingival pockets, which is the main point in the treatment of periodontitis. Avoiding systemic antibiotics for the treatment of periodontitis in favor of topical medications reduces the likelihood of side effects.

If the depth of the gingival pocket in periodontitis exceeds 5 mm, surgical intervention is required. To reduce the gingival pocket, a flap operation is performed. A small incision is made in the gum area, which allows you to lift it and expose the root of the tooth, which needs to be cleaned of tartar. If periodontitis has already spread to the bone tissue, then the bone tissue is leveled before the incision is sutured. The flap operation is performed under local anesthesia and lasts from 1 to 3 hours.

Soft gum tissue transplantation is necessary when, due to atrophy of the gingival pockets, the periodontal teeth become exposed and visually look longer. A flap of tissue from the palate is used for replacement. This procedure helps to stop the deepening of the gingival pocket and helps to close the exposed roots of the teeth, preventing the development of hyperesthesia. For women, especially young women, soft tissue transplantation for periodontitis gives a double result – healing and getting rid of the cosmetic defect.

The use of a bone graft for osteoplasty in periodontitis is carried out with significant destruction of bone tissue, when it cannot perform the functions of holding the tooth in place. The graft can be made from either synthetic material or its own bone tissue. A bone graft for the treatment of periodontitis has an undeniable advantage: It serves as a platform for the formation of new bone tissue, which is called directed regeneration.

Targeted regeneration of bone tissue in deep periodontitis lesions restores bone tissue. To do this, the area between the tooth and bone tissue is filled with a biocompatible material, as a result of which only bone tissue grows in this area, the growth of other cells is completely suppressed. The second method of targeted regeneration for the treatment of periodontitis is the administration of a protein-containing gel, which is similar in composition to tooth enamel. As a result, the body begins to stimulate bone growth in response to false information about the formation of a new tooth.

Prevention

In the prevention of periodontitis, it is important to provide health education to the population, proper dental cleaning training in childhood, and proper nutrition. For the timely detection of periodontitis and other diseases, it is necessary to undergo a routine dental examination and procedures to remove tartar, which provokes the development of periodontitis, at least once every six months.

If there is gingivitis, then it must be treated, since gingivitis is the first manifestation of periodontitis. At this stage, periodontitis can be prevented by using antibacterial toothpastes and anti-inflammatory mouthwashes. Dental defects must be treated in a timely manner, as this forms the correct load on the teeth and contributes to prevention.

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