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Periodontal Disease: Etiology, Clinical Manifestations, And Principles Of Management

Abdullayeva Malikabonu Umedjonovna

Clinic Resident of the Department of Orthopedic Dentistry, Samarkand State Medical University Samarkand, Uzbekistan

Islamova Nilufar Bustanovna

PhD, Assistant Department of Orthopedic Dentistry, Samarkand State Medical University Samarkand, Uzbekistan

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Abstract: Periodontal disease represents a group of chronic inflammatory conditions affecting the gingiva and the supporting structures of the teeth, leading to progressive periodontal tissue destruction and tooth loss if left untreated. The primary etiological factor is dental plaque biofilm; however, the severity and progression of the disease are significantly influenced by systemic conditions, genetic predisposition, and environmental factors. Clinically, periodontal disease is manifested by gingival inflammation, bleeding on probing, periodontal pocket formation, clinical attachment loss, gingival recession, and increased tooth mobility. Contemporary therapeutic approaches emphasize early diagnosis, effective control of microbial biofilms, and modulation of the host inflammatory response. Treatment modalities include non-surgical periodontal therapy, surgical interventions, regenerative procedures, and long-term supportive periodontal care. An integrated and individualized treatment strategy is essential for achieving stable clinical outcomes and preventing disease recurrence.

Keywords: Periodontal disease, clinical features, etiology, periodontal therapy, inflammation, oral health, supportive care.

Introduction: Periodontal disease is a systemic lesion of the parotid tissue (periodontal) of a primary dystrophic nature.

Periodontal is a set of tissues of the tooth's supporting apparatus: the gum, the bone of the dental alveoli, the cement and the ligament of the tooth.

Causes of periodontal disease

The causes of periodontal disease have not been precisely established, but it is believed that an important role in this process is played by a violation of the nutrition of the bone tissue of the jaw with a decrease in mineral metabolism and tissue renewal.

A certain place in the formation of periodontal disease is occupied by pathogenic microorganisms present in plaque. As a result of their vital activity, the gum tissue becomes loose, the gingival joint collapses, plaque penetrates deeper and, after hardening, damages the gum and tooth enamel.

The fundamental factors leading to the development of periodontal disease are:

• hereditary predisposition;

• Systemic diseases;

• endocrine diseases, including diabetes mellitus, etc.;

• chronic diseases of internal organs, digestive tract;

• atherosclerotic diseases of the cardiovascular system (atherosclerosis, arterial hypertension, vegetative vascular dystonia);

• bone lesions (osteopenia);

• hypovitaminosis;

• malformations of the maxillary system (malocclusion, abnormal tooth placement);

• Exposure to chronic stress;

• functional periodontal insufficiency.

Classification of the disease

According to gum recession (decrease in the amount of gum tissue, its loss),:

• Local recession,

• Generalized recession,

• Unspecified recession.

According to the severity of the current:

• light form,

• medium form,

• severe form.

Symptoms of periodontal disease

At the beginning of the disease, periodontal disease patients do not experience any unpleasant sensations, so they do not consult a doctor. Then there are complaints of temporary itching, burning of the gums, increased sensitivity of the necks of the teeth.

As a result of the progression of the disease, there are multiple exposures of the necks and roots of the teeth, disproportionately large gaps between the teeth, and fan-shaped teeth.

In the later stages, tooth mobility may occur. Periodontal disease is often combined with non-carious lesions (wedge-shaped defects, enamel erosion).

Let's consider the symptoms of periodontal disease at different stages of its course.

During the mild stage of the disease, the root of the tooth is exposed and the height of the interdental septum decreases to 1/3 of its size.

Patients complain of transient itching, burning, "aches" in different parts of the jaw (more often in the area of 42, 41, 31, 32, 33 teeth), a feeling of instability of the teeth without visible mobility.

During the examination, the doctor observes pale or normal gum color, smoothing of the gingival papillae, a roller-like thickening of the gums in the area of individual teeth, a tight fit of the gums to the tooth surface, tooth stability, generalized gum recession up to 3 mm.

X-ray examination shows atrophy of the alveolar bone up to 1/3 of the length of the tooth root.

The middle stage of periodontal disease is characterized by exposure of the tooth root and a decrease in the height of the interdental septum to 1/2 of its size.

Patients complain of an increase in the visible crown of teeth and interdental spaces, hyperesthesia (hypersensitivity) of teeth when exposed to temperature, chemical and other factors.

During the examination, the doctor observes compacted gums of normal color or pale (anemic), absence of gingival and periodontal pockets, dense supragingival dental deposits, generalized gum recession from 3 to 5 mm, fan-shaped dislocation 23, 22, 21, 12, 13, 33, 32, 31, 41, 42, 43 teeth at lack of their mobility; traumatic occlusion, non-carious lesions of teeth, wedge-shaped defects are determined.

X-ray examination allows you to notice a decrease in the height of the interdental septa to 1/2 the length of the tooth root.

In the severe stage of periodontal disease, the roots of the teeth are exposed and the height of the interdental septum decreases by more than 1/2 of its size.

Patients complain of tooth mobility and dislocation.

During the examination, the doctor observes anemic dense gums, dense pigmented dental deposits, generalized gum recession of more than 5 mm, tooth mobility and tooth loss.

X-ray examination shows atrophy of the alveolar edge of the jaws over 1/2 the length of the tooth root.

The following clinical picture is characteristic of periodontal disease with the addition of an inflammatory process:

• pale mucous membrane tightly covers the roots;

• there are no gingival and periodontal pockets;

• teeth remain stable even with significant atrophy of the alveolar ridge;

• gums are edematous, hyperemic, and gingival pockets of varying depths (often with purulent discharge);

• there are supra- and subgingival dental deposits, tooth mobility and dislocation, periodontal abscesses.

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The difference between periodontal disease and periodontitis is that periodontal disease is a non–inflammatory lesion of the parotid structures, periodontitis is an inflammatory process localized in the gums.

Diagnosis of periodontal disease

A dentist makes a diagnosis of periodontal disease based on clinical signs and X-ray examination results.

The stability of the capillaries is determined by the rate of hematoma formation using a special device that creates air pressure in the gum area (Kulazhenko test).

The rate of resorption of the solution injected under the gum mucosa determines the degree of swelling of the soft tissues (bubble test).

X-ray examination allows you to determine:

• changes in bone tissue (bone loss, osteoporosis, sclerosis);

• the width of the gaps between the teeth;

• changes in the boundaries of the dental wells;

• reducing the height of the interdental septa.

In the late stages of the disease, a number of routine studies may be required to suspect concomitant pathologies of internal organs and determine treatment tactics.:

• clinical blood analysis: general analysis, leukoformula, ESR (with microscopy of a blood smear in the presence of pathological changes);

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