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Dental Status Of Patients With Gastrointestinal Diseases (Literature Review)

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Abstract: Gastrointestinal tract (GIT) diseases are often accompanied by pronounced changes in the oral cavity, which is due to the anatomical and physiological unity of the gastric and oral mucosa. This article provides an overview of current data on the relationship between functional and organic diseases of the gastrointestinal tract (gastritis, gastric ulcer, gastroesophageal reflux disease, etc.) and pathological manifestations in the oral mucosa, tongue, periodontium, and dental hard tissues. Characteristic clinical signs are described, including hyposalivation, pH changes, dystrophic and inflammatory processes, tongue papillae lesions, coating formation, as well as an increased risk of caries and periodontal diseases. Special attention is given to microbiological changes, including the influence of Helicobacter pylori and oral dysbiosis. The authors emphasize the need for an interdisciplinary approach to the diagnosis and treatment of patients with combined dental and gastroenterological pathology. Understanding the comorbidity of these diseases allows for increasing the effectiveness of dental care and improving patients' quality of life.

Keywords: Gastrointestinal tract, oral mucosa, gastritis, Helicobacter pylori, dental status, oral microbiocenosis.

Introduction: Oral health is an important reflection of the body's general condition and often serves as an early indicator of somatic diseases. In particular, changes in the oral mucosa (OMM) frequently accompany gastrointestinal tract (GIT) diseases, which is explained by their anatomical and physiological connection and common pathogenetic mechanisms. According to clinical studies, up to 75% of patients with OMM lesions have concurrent diseases of the digestive organs, and functional disorders of the GIT occur in 15-25% of the adult population.

Of particular importance is the prevalence of chronic gastritis, peptic ulcer disease, gastroesophageal reflux disease (GERD), as well as the high frequency of Helicobacter pylori infection among the population of Uzbekistan. These pathologies lead to inflammatory and dystrophic changes in the oral cavity, alterations in microbiocenosis, saliva secretion, and local immune reactivity.

This review summarizes current clinical, microbiological, and epidemiological data on the relationship between GIT diseases and dental status to improve the effectiveness of diagnosis and treatment of combined pathologies.

METHODS

The study presents a systematic analysis of scientific sources dedicated to the relationship between gastrointestinal diseases and dental disorders.

The review materials included: domestic and foreign publications on gastroenterology and dentistry; studies of oral microbiocenosis in patients with chronic gastrointestinal diseases; epidemiological data on the prevalence of gastritis, GERD, peptic ulcer disease, and Helicobacter pylori infection in Uzbekistan and other countries; clinical observations of changes in the oral mucosa, tongue, periodontium, and hard dental tissues.

Methods included: content analysis of literature data,

comparative assessment of clinical manifestations, systematization of pathogenetic relationships, and formulation of conclusions based on the interpretation of included studies. The sources encompass both recent publications and fundamental works on the topic.

RESULTS

Oral health is often perceived as a separate area, unrelated to other organs and systems of the body. However, most often, changes in the oral mucosa (OMC) are nothing but a reflection of the internal problems of the entire body. Early signs of many infectious and non-infectious, acute and chronic, specific and non-specific processes are manifested as changes in the OMC [2, 5, 9, 12, 14, 23]. Since the oral cavity is the beginning of the digestive tract and, consequently, is closely related to the condition of the gastrointestinal tract (GIT), sufficiently pronounced changes in the oral cavity are noted, particularly in cases of gastrointestinal pathology. In patients with OMC diseases, digestive system disorders are diagnosed in 75% of cases [1, 7, 16, 22]. In turn, gastrointestinal diseases are quite often accompanied by changes in the oral cavity, which is largely due to the morphofunctional unity of the oral mucosa and the entire digestive tract [7, 8, 15, 18, 19, 24].

In the structure of digestive system pathology, functional disorders of the gastrointestinal tract (FD GIT) occupy one of the leading positions. This is due to their high prevalence, reaching 15-25% among the adult population. Stomach diseases are among the most common pathologies in the population. Their social significance is determined not only by their prevalence but also by their chronic recurrent course, causing significant temporary, and sometimes permanent, loss of work capacity. Complications arising from the severe course and untimely treatment of these diseases pose a threat to the patient's life. [20]

According to global statistics, chronic gastritis (CG) occupies a central place among stomach diseases. In countries with developed statistics, it is recorded in 80-90% of patients [21]. About 7-14% of the adult population suffers from gastric ulcer disease. The prevalence of gastroesophageal reflux disease (GERD) reaches 50% among the adult population.

Uzbekistan is also among the countries with a high prevalence of functional gastrointestinal disorders. They affect 15-25% of the adult population. Statistical data have shown that the number of patients has been increasing over the past 10 years. During this period, the number of patients with gastrointestinal diseases increased by 22.4%, with an average annual increase of 2.65% (21).

Numerous clinical studies confirm that impairment of gastrointestinal tract function is associated with lesions of the oral and tongue mucosa [1, 4, 10, 17, 18, 19, 22].

Chronic diseases of the gastrointestinal tract (stomach, liver, pancreas, etc.) are accompanied by deficiencies in vitamins, minerals, proteins, and carbohydrates in the body, which lead not only to the development of inflammatory and dystrophic changes in oral tissues but also to functional and organic disorders in the soft and hard tissues of the oral cavity, as well as impairment of the masticatory apparatus [15, 16, 19]. The development of combined gastrointestinal tract lesions exacerbates the severity of oral pathology [8].

Studies by our scientists (M.M. Karimov, Sh.Z. Umarova et al., 2019) have revealed a high rate (80%) of Helicobacter pylori infection among the population of Uzbekistan. Under unfavorable conditions, a transition of opportunistic microflora (Helicobacter pylori) to pathogenic microflora is observed, which affects the gastric mucosa, causing its inflammation - gastritis [11, 15].

In both acute and chronic gastritis, the following characteristic changes are observed in the oral cavity: paleness of the gums, the presence of a white-yellow coating on the tongue, flattening of the filiform papillae, and often areas of desquamation on the dorsal surface of the tongue. On the vermilion border of the lips, due to dryness, small superficial cracks with whitish scales are noted [4, 7, 8, 18, 19].

In chronic gastritis, the oral mucosa is moderately moist. The tongue has a grayish-white coating, and hyperemia and swelling of the interdental papillae are also observed. The filiform papillae on the dorsum of the tongue can be flattened to the point of atrophy, with microscopic erosions appearing on them. In turn, the fungiform papillae, especially in the anterior third of the tongue, appear enlarged. These changes are difficult to detect during visual examination, therefore they are only identified using instrumental diagnostic methods. The patient's subjective complaints include a burning sensation, pain (especially when consuming irritating foods), and distorted taste sensations (for example, the presence of a metallic taste in the mouth in the mornings) [4, 7, 8, 18, 19].

The pathogenesis of peptic ulcer disease is based on the disruption of the stomach's mechanical function (gastroduodenal reflux) due to hypersecretion of hydrochloric acid and pepsin. In the oral cavity, during the initial stages of ulcer disease development, the mucous membrane shows minor signs of dystrophy, is hyperemic and edematous, and subsequently becomes pale pink with a cyanotic tinge. Dental impressions are visible on the buccal mucosa along the line where the

teeth meet. A dense grayish-yellow coating appears on the tongue, firmly attached to the underlying tissues, accompanied by a burning sensation and tingling. If dysbiosis occurs in the oral cavity, hyperplasia of the filiform papillae (so-called hairy tongue) is observed. During periods of disease exacerbation, hyposalivation is observed [3, 6, 25, 26, 27].

In Western European countries and the USA, extensive epidemiological studies indicate that 40 to 81% of individuals constantly experience heartburn, which is one of the main symptoms of GERD. According to Jamaldinov T. D., 2010, GERD is associated with dryness of the oral mucosa, dry and cracked lips, cheilitis, angular cheilitis, halitosis, gingivitis, presence of dental plaque, presence of supra- and subgingival deposits, etc. [25, 26, 27].

All these changes in the oral cavity are usually associated with a shift in the pH of the oral environment towards acidity, due to the reflux of stomach contents into the upper parts of the digestive tract. This factor can not only cause the aforementioned symptoms but also increases the risk of tooth decay due to increased acidity in the oral cavity. The research results of Bekzhanova O.E. and Alimova S.Kh. showed a significant increase in the intensity of carious lesions directly proportional to the severity of GERD [6].

Regurgitation of gastric contents in GERD can also lead to changes in the soft tissues of the oral cavity. Patients usually complain of a burning sensation and dryness, as well as a sour taste in their mouth. Examination reveals redness of the soft palate and uvula [25, 26, 27]. Acidification of the oral cavity is accompanied by a disruption of its microbiocenosis.

Many studies have proven that functional disorders of the gastrointestinal tract often serve as a trigger factor for recurrent chronic gingivitis and periodontitis [1, 3, 7, 15, 16, 22, 24].

Thus, in the scientific works of K.Yu. Obidny, O.A. Korshukova, and V.A. Sharkova, gingival fluid taken from the periodontal pockets of 37 patients aged 32-65 with chronic gingivitis and chronic generalized periodontitis (CGP), who had been suffering from long-term (more than 5 years) chronic diseases of the gastrointestinal tract, was studied. Patients were conditionally divided into three groups (Table 1): 1st - patients with gastric and duodenal ulcers, 2nd - patients with chronic gastritis, 3rd - patients with chronic cholecystopancreatitis (CP). The study results showed that an increase in the frequency of isolation of anaerobic and, in particular, periodontopathogenic microorganisms from the gingival sulcus in patients with peptic ulcer was accompanied by a more severe course of periodontitis. This may be associated with the predominance of gram-negative microflora in the oral cavity, which includes enterobacteria, eubacteria (including Helicobacter pylori). The intensity of dysbiosis in the gingival sulcus was determined by the nature of the gastrointestinal tract diseases.

Thus, considering that the oral cavity is the primary digestive organ, its diseases can naturally affect the gastroenterological status of the patient. Conversely, practically all gastrointestinal diseases have secondary manifestations in the oral cavity. Understanding this relationship and knowing the comorbidity of pathologies is crucial for the comprehensive diagnosis and effective treatment of combined diseases.

DISCUSSION

The obtained results confirm a close biological connection between the state of the gastrointestinal tract and the oral cavity. The oral mucosa reflects systemic inflammatory and dystrophic processes caused by pathologies of the stomach, intestines, liver, and pancreas.

A crucial role is played by the disruption of acid-base balance, saliva secretion, and microbiota, which leads to the development of dental pathologies.

Data on the increasing prevalence of Helicobacter pylori infection in Uzbekistan demonstrate the relevance of an interdisciplinary approach: dentists should consider patients' gastroenterological status, while gastroenterologists should refer patients for dental examinations.

Thus, the identified patterns underscore the necessity of including dental examinations in the standard diagnostic protocol for gastrointestinal diseases and emphasize the need for closer collaboration between specialists.

CONCLUSION

Diseases of the gastrointestinal tract have distinct dental manifestations that can serve as important diagnostic indicators and affect patients' quality of life. Changes in the oral mucosa, tongue, periodontium, and dental hard tissues are closely linked to the pathogenetic mechanisms of gastritis, peptic ulcer disease, GERD, and other gastrointestinal disorders.

Understanding these interrelationships allows for treatment optimization, complication prediction, and prevention of dental disease progression in patients with chronic gastrointestinal conditions. An interdisciplinary approach is crucial for enhancing the effectiveness of medical care.

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