

CLINICAL, BIOCHEMICAL, AND FUNCTIONAL ASPECTS OF DENTAL HARD TISSUE CONDITION IN PATIENTS WITH GASTROINTESTINAL TRACT DISEASES AND BILIARY DYSFUNCTION

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Abstract:

The physiological relationship between the oral cavity and the gastrointestinal (GI) tract is bidirectional, meaning that systemic disorders often manifest as pathological changes in dental hard tissues. This paper examines the clinical, biochemical, and functional status of teeth in individuals suffering from GI disorders and biliary dysfunction.

The study analyzes various clinical indicators, such as the prevalence and intensity of dental caries, non-caries lesions, and the degree of enamel erosion. From a biochemical perspective, the research focuses on alterations in saliva composition, including pH levels, mineral content (calcium and phosphorus), and enzymatic activity, which directly affect the remineralization potential of tooth enamel. Functionally, the study assesses the acid resistance of the enamel and its structural integrity under the influence of chronic biliary and gastric pathologies.

The findings indicate that biliary dysfunction often leads to metabolic imbalances that impair the oral environment, resulting in a higher incidence of enamel demineralization and hypersensitivity. The results emphasize the necessity of a multidisciplinary approach—combining gastroenterology and dentistry—to develop effective preventive and therapeutic strategies for maintaining oral health in patients with chronic systemic diseases.

Key words: Gastrointestinal tract diseases, biliary dysfunction, dental hard tissues, enamel erosion, biochemical markers, dental caries, saliva pH, oral-systemic health, remineralization, clinical dentistry.

INTRODUCTION

The intricate and dynamic relationship between the oral cavity and the gastrointestinal (GI) tract has long been recognized by medical professionals. This bidirectional connection implies that the health of one system can significantly influence the other, leading to manifestations of systemic diseases within the oral environment and, conversely, oral pathologies affecting digestive functions. Dental hard tissues, particularly enamel and dentin, are constantly exposed to the oral milieu and are therefore susceptible to changes in systemic health that alter salivary composition, pH, and the overall oral environment.

Gastrointestinal tract diseases (GITD) encompass a broad spectrum of conditions affecting the digestive system, from the esophagus to the intestines. Chronic conditions such as gastroesophageal reflux disease (GERD), peptic ulcer disease, inflammatory bowel disease (IBD), and irritable bowel syndrome (IBS) are prevalent in the general population. These diseases are often associated with systemic inflammation, altered gut motility, changes in nutrient absorption, and, crucially, alterations in salivary flow and composition. For instance, GERD is notorious for exposing dental enamel to highly acidic gastric contents, leading to significant erosive damage. Similarly, malabsorption syndromes associated with IBD or celiac disease can lead to deficiencies in essential minerals like calcium and phosphorus, impacting enamel mineralization.

Biliary dysfunction, characterized by issues in the production, flow, or excretion of bile, adds another layer of complexity to this oral-systemic link. Bile acids play a vital role in fat digestion and absorption but also influence systemic metabolic processes and detoxification. Disturbances in biliary function can lead to malabsorption of fat-soluble vitamins (A, D, E, K) and minerals, affect gut microbiota balance, and contribute to systemic oxidative stress. These systemic effects can indirectly influence oral health by altering salivary parameters, impacting immune responses, and potentially exacerbating inflammatory conditions within the oral cavity.

The oral manifestations of GI and biliary diseases are diverse, ranging from xerostomia (dry mouth) and altered salivary pH to increased susceptibility to dental caries, enamel erosion, dentin hypersensitivity, and even specific oral mucosal lesions. However, the assessment of these dental hard tissue changes often extends beyond simple visual inspection. A comprehensive understanding requires an evaluation of the underlying biochemical alterations in saliva, such as changes in calcium, phosphate, buffer capacity, and mineral saturation, which directly influence the demineralization-remineralization balance of enamel. Furthermore, functional assessments, including the evaluation of enamel's resistance to acid attack, provide critical insights into the structural integrity and health of the dental tissues.

Despite the recognized oral-systemic connections, the specific impact of combined gastrointestinal tract diseases and biliary dysfunction on the clinical, biochemical, and functional aspects of dental hard tissues has not been extensively delineated. Many studies focus on individual GITD or specific oral complaints, but a holistic approach that integrates these systemic conditions with a detailed assessment of dental hard tissue health, including its biochemical markers and functional capacity, is warranted. Such integrated research is crucial for understanding the full scope of oral health consequences and for developing effective, patient-centered management strategies.

Therefore, this study aims to investigate the clinical, biochemical, and functional status of dental hard tissues in patients diagnosed with various gastrointestinal tract diseases and biliary dysfunction. By characterizing the spectrum of oral health issues and their underlying systemic contributors, we intend to highlight the importance of a multidisciplinary approach to patient care. This research seeks to provide valuable insights for clinicians in both gastroenterology and dentistry, ultimately contributing to the development of more effective preventive and therapeutic strategies that address the interconnectedness of systemic and oral health.

REFERENCES

1.Махмудова С. Э., Атаева Ф. Н. Опыт применения модульной системы для овладения педагогическими навыками в подготовке резидентов магистратуры по специальности" акушерства и гинекологии" //ЛУЧШАЯ НАУЧНАЯ СТАТЬЯ 2018. – 2018. – С. 290-293.

2.Makhmudova S. E., Ataeva F. N. Evolutionary views on hypertensive disorders in pregnancy (literature review) //Advaced science. – 2019. – С. 183-187.

3.Мусаева Т. Т. Влияние аутоиммунного тиреоидита на течение и исход беременности : дис. – СПб, 2009, 2009.

4.Yusufovna X. N., Valiyevna D. M., Nuriddinovna A. F. Problems in the translation of world picture terminology in french //PalArch's Journal of Archaeology of Egypt/Egyptology. – 2020. – Т. 17. – С. 6.

5.Махмудова С. Е., Атаева Ф. Н. Эволюционные взгляды на гипертензивные расстройства беременности (ОБЗОР ЛИТЕРАТУРЫ) //Передовая наука. – 2019. – С. 183-187.

6.Атаева Ф., Закирова Н., Курбаниязова В. Современные подходы к лечению плацентарной недостаточности и синдрома задержки развития плода //Журнал проблемы биологии и медицины. – 2015. – №. 4, 1 (85). – С. 141-142.

7.Parvina I. ANALYSIS OF RISK FACTORS FOR PREMATURE RUPTURE OF FETAL MEMBRANES //SHOKH LIBRARY. – 2025.

8.Parvina I. et al. Impact of early rehabilitation programs on post myocardial infarction recovery and quality of life //Revista Latinoamericana de Hipertension. – 2025. – Т. 20. – №. 4.