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OPTIMIZATION OF ORTHOPEDIC TREATMENT OF DENTAL DEFECTS IN PATIENTS WITH CHRONIC GASTROINTESTINAL DISEASES

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Abstract

Prosthetics for defects in teeth and dentition is one of the most important links in specialized medical care for the population. Prosthetics - not only eliminates the aesthetic defect, restores the impaired function of the dentition, but also serves as an important way to prevent diseases of the gastrointestinal tract.

The problem of the relationship between oral tissues and various prosthetic structures is one of the key ones. The use of fixed prostheses in the clinic of orthopedic dentistry is an intervention that changes the biological balance in the tissues of the oral cavity and the body as a whole [Privalov A.V. et al., 2010]. The nature and severity of these changes largely depend on the materials from which the dentures are made [Lepilin A.V. et al., 2005]. The negative impact of fixed prostheses on the marginal periodontium was noted by many researchers [Zhulev E.N., Serov A.B., 2010; Abolmasov H.H., 2003; Lebedenko I.Yu. et al., 2011]. Against the background of metallic inclusions in the oral cavity, changes in the body as a whole are often observed: allergic reactions, disorders of the secretory and motor-evacuation functions of the gastrointestinal tract [Isakova T.G., 2007; Semenyuk V.M. et al., 2008].

Keywords: general pathology of the gastrointestinal tract, orthopedic constructions, apoptosis

Introduction

It is known that, regardless of age, most patients are characterized by polymorbidity [Mikhailova E.S. et al., 2012; Lazebnik L.B. et al., 2012]. The most common is the combination of the pathology of the oral cavity and the gastrointestinal tract [Oskolsky G.I. et al., 2010; Lepilin A.V. et al., 2018]. The high incidence of lesions of the oral cavity (up to 90%) in chronic diseases of the gastrointestinal tract is due to impaired microcirculation, neurohumoral regulation, bone resorption, and a decrease in local immune responses. This leads to a decrease in the endurance of the periodontium, and sometimes the usual chewing load becomes traumatic for the supporting teeth [Mikhailova E.S. et al., 2015].

An orthopedic dentist, when choosing a material and method of prosthetics, should focus on the state of periodontal tissues and digestive organs closely related to the oral cavity, since somatic pathology directly affects periodontal tissues and, therefore, largely determines the choice of method and materials for prosthetics. It is obvious that the creation and use of biomechanically compatible dentures, especially in patients with pathologically altered periodontium in diseases of the gastrointestinal tract, the choice of denture design, depending on the specific clinical situation, are urgent problems of modern clinical dentistry.

The mechanisms of structural changes in the periodontium in chronic diseases of the gastrointestinal tract are not well understood. A certain role in these changes belongs to violations of proliferation and apoptosis [Lepilin A.V. et al., 2015]. There are many factors that regulate apoptosis. The degree of changes in the cellular renewal of the gingival epithelium can be used both for the purposes of early diagnosis of periodontal disease and its prognosis [Osadchuk M.A., Bulkina N.V., 2017]. Also, the problems of bone tissue metabolism disorders against the background of various dentures in diseases of the gastrointestinal tract have not been sufficiently studied.

In the formation and course of periodontal diseases, numerous factors are important that contribute to a decrease in the reactivity of the body and lead to the development of secondary immune deficiency [Oskolsky G.I. et al., 2017; Orekhova L.Yu. et al., 2018]. The ratio between groups of cellular regulators largely determines the nature of the course and outcome of various diseases [Grigorieva M.V. et al., 2017; Seymour G.J., Gemmell E., 2015]. However, to date, there are only a few studies of the role of cytokines in the formation, course and outcomes of periodontal diseases against the background of dentures made of various materials.

An analysis of the literature data allows us to conclude that there is no systematic and reasonable approach to the choice of material and design of a denture, to preprosthetic preparation in patients with chronic gastrointestinal diseases. Considering the insufficient knowledge of the problem as a whole, the inconsistency of the available information, a comprehensive study devoted to the analysis of the clinical, morphological and immunological characteristics of periodontal tissues to optimize dental prosthetics in chronic diseases of the gastrointestinal tract becomes relevant.

Purpose of the study: Selection of the optimal type of orthopedic treatment of dentition defects in patients with chronic diseases of the gastrointestinal tract based on the analysis of clinical, functional, immunological, morphofunctional data.

Results of Own Research

Clinical and epidemiological analysis showed that 79.4% of patients with chronic diseases of the gastrointestinal tract have defects in the dentition. To replace defects in the dentition of this category of patients, in 72.8% of cases, non-removable stamped-soldered bridges with titanium nitride coating are used; partial removable lamellar - in 58% of cases; in 10.4% of patients, metal-ceramic structures are made, in 11.9% - solid cast clasp prostheses on clamp fixation, in 4.9% - dentures supported by dental implants.

It has been established that the most common pathology of the organs and tissues of the oral cavity in chronic diseases of the gastrointestinal tract are inflammatory periodontal diseases, which we diagnosed in all patients with PU, chronic hepatitis, IBS and UC. It is important to note that with PU and IBS, generalized catarrhal gingivitis (26.7%) and mild periodontitis (36.7-43.3%) were more often detected, with chronic hepatitis and UC 66.7-76% of cases were moderate and severe generalized periodontitis. The clinical features of periodontitis in patients with hepatitis and UC are bleeding, significant gingival recession and bone resorption. Dental pathology was also represented by aphthous stomatitis (13.3-24% of patients), desquamative glossitis (13.3-26.7% of patients) and oral candidiasis (6.7-12% of patients). The nature of

inflammatory and destructive changes in the gums is closely related to the activity of the background disease of the digestive system.

Note:

- The indicators have significant differences with the values in patients with inflammatory periodontal diseases against the background of PU ($p<0.05$); * - indicators have significant differences compared with the values in patients with inflammatory periodontal diseases against the background of chronic hepatitis ($p<0.05$); V-indicators have significant differences compared with the values in the group of patients with inflammatory periodontal diseases against the background of IBS ($p<0.05$).

The development of periodontitis of moderate and severe degrees is associated with a more severe clinical and endoscopic variant of the course of gastric ulcer and duodenal ulcer: often multiple lesions, combined with erosive gastroduodenitis, recurring annually or twice a year, formed against the background of high Helicobacter pylori expansion in the antrum of the stomach. The severity of chronic periodontitis correlated with the clinical and laboratory activity of hepatitis ($r=0.655$, $p<0.001$) and the increase in UC activity ($r=0.622$, $p<0.05$). Periodontitis was most severe in patients with chronic hepatitis with cholestasis syndrome and in patients with chronic hepatitis and UC receiving glucocorticosteroids. In all patients, periodontal pockets showed mixed anaerobic microflora (Table 1). Polymicrobial associations in periodontal pockets are more common in patients with hepatitis and UC. Note: * - indicators have significant differences with the values in the group of practically healthy individuals ($p<0.05$); ** - indicators have significant differences with the values in practically healthy individuals and patients with inflammatory periodontal diseases against the background of PU ($p<0.05$); indicators have significant differences compared with the values in patients with inflammatory periodontal diseases against the background of chronic hepatitis ($p<0.05$); V-indicators have significant differences compared with the values in the group of patients with inflammatory periodontal diseases against the background of IBS ($p<0.05$).

According to the results of densitometry, the majority of patients with PU and IBS (83.3-86.7%) had a normal state of bone tissue, osteopenia was detected in 13.3%, osteoporosis - in 3.3% of cases. The degree of decrease in bone mineral density was more significant in hepatitis and UC, when osteopenia was detected in 43.348% of cases, and generalized in 13.4-24% of cases.

Osteoporosis. Among the most significant factors in reducing bone mineral density in diseases of the gastrointestinal tract, correlation analysis made it possible to identify the presence of cholestatic syndrome and the duration of glucocorticosteroids. Thus, there was a direct correlation between a decrease in the bone strength index (an increase in the T-criterion in the femoral neck area) and the level of blood alkaline phosphatase ($r=0.622$, $p<0.01$) and the duration of glucocorticosteroids ($r=0.614$, $p<0.01$).). The results of densitometry indicate a negative impact on the state of the bone tissue of both hepatitis itself or UC due to malabsorption, and basic therapy, which is consistent with the literature data [Kochetkova E.A., 2004; Sin D.D. et al., 2003]. Bone resorption of the alveolar processes in periodontitis against the background of hepatitis and UC can be considered as the outcome of inflammatory

and destructive changes in periodontal tissues, and as a local manifestation of generalized osteoporosis.

Inflammatory periodontal diseases against the background of chronic gastrointestinal diseases are associated with an increase in the expression of gingival epithelial cells immunopositive for nitric oxide synthase, endothelin-1 and melatonin, respectively, the severity of periodontal disease (Table 3).

Changes in the indices of cellular immunity in patients with chronic generalized periodontitis against the background of CG and UC are characterized by lymphopenia, a decrease in the absolute and relative indices of CD3+-, CO4+-CD2- lymphocytes, an increase in the relative number of CD8+-lymphocytes compared with the group of patients with periodontitis against the background of PU and SRK. The imbalance of the cellular link of immunity is especially clearly determined by the decrease in the immunoregulatory index CO4 / SP8. Patients with severe chronic periodontitis had the lowest values of the CO4/CO8 index ($r=0.5880.627$, $p<0.001$), which indicates deeper changes in reactivity in these patients. The results of immunological studies obtained by us confirm the point of view published in the literature on the important role of immune imbalance in the genesis of inflammatory periodontal diseases [Orekhova L.Yu. et al., 2008; vetsheN E.

The study of the content of cytokines showed that in patients with inflammatory periodontal diseases in combination with PU, CG, IBS and UC, a cytokine imbalance was noted in the oral fluid, characterized by a predominant increase in the content of IL-10,-6 and TNF-a, respectively, the severity of periodontitis (Table 4). Similar changes in the immune status, characterized by activation of type 2 T-helpers with an increase in the content of anti-inflammatory cytokines in chronic periodontitis, have been described by other researchers [Belyaeva O.V., Kevorkov H.H., 2002]. Patients with periodontitis on the background of CG and UC have the most profound impairments of local mechanisms for the implementation of the pro-inflammatory response. The increased content of IL-6 and TNF-a maintains a chronic inflammatory process in the periodontium and promotes bone resorption [Graves D.T., Cochran D., 2003]. According to the results of our own research, an increase in the content of IL-6 and TNF-a in the oral fluid correlated with the depth of periodontal pockets ($r = 0.594-0.608$ and $0.559-0.617$, $p<0.001$), PI index ($r = 0.573-0.627$ and $0.602-0.722$, $p<0.001$) and Fuchs bone index ($r = -0.557-0.614$, $-0.583-0.637$, $p<0.001$).

Scientific Novelty of the Research:

Taking into account the results of immunological reactions at the systemic and local levels, as well as immunohistochemical data and analysis of markers of proliferation, regeneration and their regulators, indications for the use of various materials for the orthopedic treatment of dentition defects in patients with diseases of the gastrointestinal tract are clinically and pathogenetically substantiated. A combination of microbiological, biochemical, immunological, morphometric, immunohistochemical parameters was used to evaluate the effectiveness of prosthetics for dentition defects in patients with diseases of the stomach, liver, and intestines.

Conclusions:

When replacing metal dentures with metal-ceramic ones and with effective treatment of gastroenterological pathology, along with clinical improvement and an increase in aesthetic parameters, local endocrine regulation, proliferative activity of the gingival epithelium, cytokine balance of the oral fluid are restored, which contributes to stable remission of periodontal and gastrointestinal diseases. tract in 86.7% of patients with irritable bowel syndrome and peptic ulcer, in 66.7% with chronic hepatitis, in 64% with nonspecific ulcerative colitis. An algorithm for orthopedic dental care for patients with chronic diseases of the gastrointestinal tract has been developed, taking into account the morphological and functional assessment of periodontal tissues, immunological status, and the results of examination by a gastroenterologist.

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