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Research Article

Markers of Estimation of Efficiency of Treatment of Patients with Chronic Generalized Periodontitis Associated by Metabolic Syndrome

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Abstract: The purpose of this study was to increase the effectiveness of treatment of chronic generalized periodontitis in patients with metabolic syndrome on the basis of studying clinical and laboratory parallels of the biochemical status of the oral cavity. 52 patients with CGP combined with MS were examined. At the age of 20-60 years, and also 14 people - practically healthy people of the same age. For the study were formed 2 groups of patients, each of which consisted of 26 people. Depending on various treatment methods, patients were randomly randomized to the following groups: group 1 - patients with chronic hepatitis C combined with MS, receiving standard treatment for periodontal disease using Timogil gel and Trinomy, 2 groups, and (comparison group) - patients receiving standard treatment of CGP. The diagnosis of MS was established by cardiologists on the basis of a comprehensive clinical and laboratory examination. The high efficacy of the proposed therapeutic and prophylactic complex in relation to impaired levels of triglycerides, cholesterol and glucose in the oral fluid of CGP patients with concomitant MS has been shown. The biochemical studies of the roto fluid of the observed patients with chronic generalized periodontitis indicated a lack of basic therapy in the treatment and prevention of complications of periodontal tissue diseases against the background of MS, and also confirmed the established high efficacy of the developed therapeutic and preventive complex.
Keywords: chronic generalized periodontitis; metabolic syndrome; Timogil gel; dental treatment.

INTRODUCTION

An analysis of the literature has shown that at present all the etiological and pathogenetic mechanisms of tissue changes in the periodontal disease in patients with chronic generalized periodontitis (CGP) and associated metabolic syndrome (MS) are not fully understood, which indicates a lack of effectiveness of both conservative treatment and preventive events [1,8,9]. At present, there are unknown works that would describe the effects of various drugs used in combined pathology on the biochemical parameters of the oral cavity in patients with chronic hepatitis C combined MS.

Meanwhile, due to the high spread of periodontal disease, difficulty in treatment, the ability to progress and the multilateral impact on the dental system and the organism as a whole remain an urgent problem of medical science. There is an assumption about the influence of somatic diseases on the degree of pathological changes in periodontal disease. Scientists have repeatedly studied the relationship between somatic pathology and the pathology of the dental system. It was determined that this relationship is caused by metabolic and hemodynamic disorders, disruptions in immunity and neuroregulation, changes in the microbiocenosis, etc. In the pathogenesis of CP, diabetes mellitus (DM) and arterial hypertension are of considerable importance. The probability of development and severity of periodontitis is directly related to MS. It has been established that in patients with MS, inflammatory periodontal diseases are found 3 times more often than in patients without this disease [3, 5, 7, 9]. The mechanism of this relationship remains not fully understood.

Currently, the number of persons of working age with MS varies in the region of 20-25% among all nosological pathology. According to foreign statistics, it is believed that in Europe MS has 30–38% of the population, and 43–45% of MS suffer from older people (60 years or more) [2,4,6,9]. Most scientists in

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recent years have been working on the MS problem. G. Reaven was one of the first in 1998 to describe under the term "X-syndrome" a complex of symptoms, which includes hypertriglyceridemia, hyperinsulinemia, impaired glucose tolerance, arterial hypertension, central-type obesity, and early atherosclerosis.

An increased concentration of insulin in the bloodstream during hyperinsulinemia provokes the emergence and development of a number of certain metabolic disorders and organ changes leading to certain pathological processes, which also manifest themselves in the oral cavity.

The relevance in the study of the relationship of periodontal pathology and MS is mainly the growth of the growth rate and the frequency of the spread of the number of patients with MS in the past two decades.

Herbal medicines, one of which is "Timogil gel", are actively used for the topical treatment of inflammatory periodontal diseases. The drug has a pronounced anti-inflammatory, wound-healing, anti-burn effects due to the presence of antibacterial, antiseptic and immunomodulatory agents. In the treatment of MS, pharmacotherapy is widely used with preparations of a number of statins, which include Trinomy, which has a lipid-lowering effect.

Thus, the study of issues related to the pathogenesis, therapy of CGP on the background of MS, is a very urgent task.

The purpose of this study was to increase the effectiveness of treatment of chronic generalized periodontitis in patients with metabolic syndrome on the basis of studying clinical and laboratory parallels of the biochemical status of the oral cavity.

MATERIAL AND RESEARCH METHODS

The study was conducted on the basis of the Department of Advanced Training in the Orthopedic Direction of Dentistry at the TSEI. Laboratory studies were carried out on the basis of the clinical and diagnostic laboratory TSHSI and TMA. During the study, 52 CGP patients combined with MS were examined. At the age of 20-60 years, and also 14 people - practically healthy people of the same age. For the study were formed 2 groups of patients, each of which consisted of 26 people. Depending on various treatment methods, patients were randomly randomized to the following groups: group 1 - patients with chronic hepatitis C combined with MS, receiving standard treatment for periodontal disease using Timogil gel and Trinomy, 2 groups, and (comparison group) - patients receiving standard treatment of CGP. The diagnosis of MS was established by cardiologists on the basis of a comprehensive clinical and laboratory examination.

At the examination stage, all patients underwent an objective examination and anthropometry - determination of waist volume, hip volume, waist-to-hip volume ratio, height, body weight, body mass index (BMI).

The inclusion criteria for the study were

Patient model fit: "diagnosed dental disease; CGP, the absence of full dental treatment until the moment of inclusion in the study "- for patients of the main groups and the comparison group. Patient model compliance: "diagnosed hypertensive disease, diabetes, obesity (MS), the absence of full-fledged comprehensive treatment until the moment of inclusion in the study. Age 20 - 60 years. Informed written consent of the patient.

Exclusion criteria were severe general somatic diseases - type 1 diabetes, chronic renal failure, severe anemia, respiratory failure, cancer, emergency conditions, and inconsistency with the inclusion criteria and the patient's refusal to participate in the study at any stage. In patients with diabetes mellitus, the degree of compensation for diabetes mellitus was retrospectively evaluated.

Dental examination of patients included a visual analysis of the appearance of the face, dentition and periodontal tissues, indices were determined (Green-Vermillion, PMA, H. P. Muhlemann bleeding index, periodontal index (PI)). X-ray examination included orthopantomography (150 images) and targeted X-rays.

Oral fluid was obtained in the morning, on an empty stomach, by spitting into a test tube in the amount of 4–9 ml, then placed in a centrifuge and centrifuged twice for 10 minutes in order to obtain a clear liquid (sedimented mucin, mucus, desquamated epithelium, etc.), after which the test tube placed in the analyzer for biochemical studies.

At the examination stage, all patients underwent an objective examination and anthropometry - determination of waist volume, hip volume, waist-to-hip volume ratio, height, body weight, body mass index (BMI).

Cholesterol in the oral fluid was examined using the enzymatic cholesterol oxidase/peroxidase spectrophotometry method. TG was determined using an enzymatic method - glycerol phosphate oxidase/peroxidase spectrophotometry. Glucose in the oral fluid was investigated using the enzymatic method "glucose oxidase / peroxidase" spectrophotometry. All studies were performed on a Mindray biochemical analyzer using the HUMAN kits.

Statistical processing of the results was carried out on a computer using Microsoft® Office® Excel®

application programs (Microsoft Corp, Redmond, WA, USA). The statistical significance of differences in sample means for independent samples, with a normal distribution of expected values, was determined using the Student t-test. As a threshold level of statistical significance, a value of P <0.05 was used.

RESULTS AND DISCUSSION

In patients with CGP, concomitant MS as a result of an objective examination of the oral cavity revealed that prior to treatment; most of them had redness of the papillary gums, and in some patients with cyanotic hue, bleeding and pain. A loose adhesion of the gingival margin to the necks of the teeth was observed, which indicates a pronounced inflammatory process in the gum, the presence of supra and subgingival dental deposits. In addition, there were pathological periodontal pockets with sero-purulent exudate, a number of patients, in particular diabetes, had teeth mobility of varying degrees.

Table-1: Dynamics of periodontal indices in patients with CGP and MS before and after treatment

Patient groups	Terms of research	Green-Vermillion	PMA	Bleeding according to N.R. P.Muhlemann	PI
Patients who have received complex treatment	Before treatment	3,41±0,02	42,00±2,77%	2,32±0,03	1,39±0,11
	In 1 month	1,95±0,08*	5,65±0,41%*	1,24±011*	1,31±0,05*
	In 3 months	2,08±0,07	9,78±0,68	1,75±0,13	1,35±0,12
Patients receiving traditional treatment	Before treatment	3,46±0,04	42,00±2,77%	2,32±0,03	1,39±0,14
	In 1 month	2,26±0,10*	15,02±0,73%*	1,41±0,17*	1,37±0,09
	In 3 months	3,01±0,10	31,92±2,83	2,01±0,18	1,40±0,07

Note: * - significance of differences p <0.05.

After the treatment, all patients showed a tendency to improvement: the swelling, bleeding, cyanotic gums, and pain were reduced. The depth of the periodontal pockets also decreased, the gingival margin became more compacted, the mobility of the teeth decreased, and both soft and hard dental deposits were absent. At the same time, in the first group, the best results were observed, both objective and subjective data, namely, the positive dynamics of the periodontal status was observed for all indexes, the data are presented in table 1. Thus, the use of the drug "Timogil gel" in combination therapy with "Trinomy" demonstrates the best result in the treatment of CP in patients with MS.

Our studies included an analysis of the content of the lipid profile in the oral fluid, namely, indicators of TG, OH and glucose were studied, both before and after the course of treatment of CGP in patients with MS. To determine the normal values of the studied biochemical parameters in the oral fluid, we took the comparison group of persons with chronic hepatitis C combined MS against the background of traditional therapy in which biochemical indicators in the oral fluid were also examined (Table 2).

Table-2: The content of triglycerides, cholesterol and glucose in the oral fluid of patients with CGP and MS before and after treatment

Patient groups	Terms of study	Triglyceride mmol/l	Cholesterol mmol/l	Glucose mmol/l
Patients who have received complex treatment	Before treatment	0,23±0,03	0,33±0,03	1,19±0,13
	In 1 month	0,18 ±0,02	0,30±0,04	0,89±009
	After 3 months	0,10±0,02*	0,17±0,02*	0,51±0,11*
Patients receiving traditional treatment	Before treatment	0,19±0,02	0,31±0,03	0,98±0,07
	In 1 month	0,18±0,02	0,29±0,02	0,87±0,08
	After 3 months	0,17±0,02	0,24±0,04	0,81±0,12

Note: * - significance of differences p <0.05.

As can be seen, with periodontitis, which occurs during MS, the triglyceride content in the oral fluid of patients was increased almost 3 times, cholesterol - 1.5 times and glucose - 2.7 times (Table 2). In this case, an important level of periodontitis is high glucose, the excess of which in the blood and oral fluid are the result of impaired metabolic syndrome. Glucose of the oral cavity is an ideal substrate for the reproduction of periodontitogenic microbiota, which aggravates the course of dental pathology. Conducting traditional therapy in patients of the comparison group had no significant effect on the studied parameters. Triglyceride levels, cholesterol and glucose levels remained significantly high compared with the norm throughout the entire study (Table 2).

The additional prescription to the patients of the proposed prophylactic complex significantly

affected after 1 month the studied indicators of the level of triglycerides, cholesterol and glucose in the oral fluid. Only 3 months later, under the influence of the treatment-and-prophylactic complex, a significant decrease in triglycerides, cholesterol and glucose was registered in the oral fluid of the patients of the main group. At the same time, the level of triglycerides and glucose still exceeded normal values, and the cholesterol content was normal (Table 2). Consequently, analysis of the oral fluid of the patients of the main group after 3 months showed further normalization of all studied parameters: triglycerides, cholesterol and glucose.

Thus, the results of studies have shown the high efficacy of the proposed therapeutic and preventive complex in relation to impaired levels of triglycerides, cholesterol and glucose in the oral fluid of patients with chronic hepatitis C combined with MS. The biochemical studies of the oral fluid of the observed patients with chronic generalized periodontitis indicated the insufficiency of basic therapy in the treatment and prevention of complications of periodontal tissue diseases against the background of MS, and also confirmed the established high efficacy of the developed therapeutic and prophylactic complex.

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