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## Oral Mucosa Diseases as a Consequence of Eradication of Helicobacter Pylori.

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### ABSTRACT

The view of the problem of occurrence of the oral mucosa diseases associated with Helicobacter pylori after eradication is presented. There was performed the complete dental examination of 85 persons at the age from 18 to 55 years (37 men and 33 women). On the basis of the results obtained the oral mucosa diseases have been diagnosed, the schedule of ethiopathogenic treatment has been developed including a number of the significant stages aimed at normalization of the microbial landscape of the oral and stomach mucosa; restoration of the acid-and-base balance of the oral cavity; prevention of re-infection of the oral and stomach mucosa by Helicobacter pylori.

**Keywords:** eradication of Helicobacter pylori, oral mucosa diseases, gastro-intestinal tract, probiotics, immunomodulator.

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## INTRODUCTION

The gastro-intestinal tract is the largest reservoir of microorganisms [1]. By now it has been proved that the microorganism *Helicobacter pylori* (*H. pylori*) is an opportunistic pathogenic one and is being a part of the normal mucous microflora of the stomach and oral mucosa [2].

The “Test and treat” strategy approved at the Maastricht conference in 2012 suggest the diagnostics of *H. pylori* with the use of non-invasive methods (not requiring the endoscopic examination with biopsy) and assignment of the eradication therapy in case of a positive result even in the patients with the asymptomatic dyspepsia [3]. Colonization of the gastro-intestinal tract with *Helicobacter* does not always result in the development of the pathologic process. However, the important role of this microorganism in the development of the MALT-lymphoma and gastric adenocarcinoma has been acknowledged [4, 5].

The host response to *H. pylori* depends on the human immunity condition, gastric mucin composition, number of receptors on the stomach surface that facilitate the microorganism adhesion, *H. pylori* virulence.

Eradication of *H. pylori* suggests the complete destruction of the vegetative and coccus forms of the microorganism confirmed 4-6 weeks after the therapy termination by at least two methods of diagnostics (urea tests, histologic examination of gastric biopsy specimen, bacteriologically) [6].

There have been developed over 120 schedules of eradication therapy, however, neither of them has 100 % efficiency [7, 8].

There are data available that after the successful eradication of *H. pylori* during the next years the re-infecting of the stomach mucosa is observed the rate of which after 3 years makes  $32 \pm 11$  %, after 5 years – 82-87 %, and after 7 years – 90,9 % [9].

An important aspect of assignment of the antihelicobacter therapy are the side effects and tolerance and safety of the massive antibiotic therapy causing the allergic, toxic and dysbiotic changes in the human body [10]. In 30-40% of the patients the side effects in the form of colonic dysbiosis and antibiotic-associated diarrhea are observed [11-13].

It is known that the GIT-diseases are often accompanied by the changes in the oral cavity. This can be explained by the morphofunctional similarity of the oral and stomach mucosa [14]. Besides, the oral mucosa is a wide receptor field for the reflex influence by any inner organ [15]. A patient visits a dentist with complaints of the dryness, burning of the oral mucosa, taste perversion, bitter flavor in the mouth, bad breath.

The objective of this study is to specify the peculiarities of the clinical course of the oral mucosa diseases associated with *H. pylori* after eradication.

## MATERIAL AND METHODS

There was performed the complete dental examination of 85 persons at the age from 18 to 55 years (37 men and 33 women). The patients were divided into 3 groups:

The 1<sup>st</sup> group consisted of 29 persons (13 men and 16 women) without oral mucosa diseases in the stomach of which *H. pylori* was detected with the use of the histological method, urea breath testing (Helic-scan). The eradication schedule was selected by the gastroenterologist and included the three-component schedule of treatment (Rabeprazolum 20 mg twice a day; Amoxicillin 1000 mg twice a day; Clarithromycin 500 mg twice a day). The duration of eradication made 10 days.

The 2<sup>d</sup> group consisted of 28 persons (11 men and 17 women) without oral mucosa diseases in the stomach of which *H. pylori* was detected with the use of the histological method, urea breath testing (Helic-scan). The eradication schedule was selected by the gastroenterologist. It included the three-component schedule of treatment (Rabeprazolum 20 mg twice a day; Amoxicillin 1000 mg twice a day; Clarithromycin 500 mg twice a day). The duration of eradication made 7 days. Along with that the treatment schedule included: Bifiform as the mandatory part of eradication per 2 capsules twice a day during 4 weeks then per 1 capsule

twice a day during 2 weeks; Immunomodulator Derinat, 0,25 % solution, to drop into each naris and oral cavity per 2-3 drops 2-3 times a day during 3-4 weeks; professional sanitation of the oral cavity and over denture prostheses; learning the rules of the antimicrobial individual hygiene of the oral cavity, tongue, over denture prostheses; control of the oral hygiene.

The control group (3d group examined) consisted of 28 persons (13 men and 15 women) without oral mucosa diseases without the related general somatic pathology being diagnosed. The absence of *H. pylori* in the stomach was confirmed by the urea breath testing (Helic-scan).

The comprehensive dental examination was performed twice: before assignment of eradication and right after it on the 7-10 day after the initiation of treatment.

The urea breath testing from among the non-invasive methods of diagnosis of *H. pylori* in the stomach was performed in the patients with the use of the hybrid unit HELIC-scan equipped with the electro sensor detector (CCD-sensor), with the use of the test system HELIC with the breath analyzer. The examination involved all the patients, was performed during the morning hours, fasting, three times: before the treatment, 1 month after the treatment, 6 months after the treatment.

The level of the oral cavity hygiene was analyzed with the use of the simplified oral hygiene index OHI-S (J.C. Green, J.R. Vermillion, 1964). For estimation of the state of periodontal tissues the papillary-marginal-alveolar (PMA) index was used that was modified by C. Parma in 1960, the intensity of the gum bleeding was estimated with the use of the bleeding index (H. Kotschke, 1975) as modified by L. M. Lukinykh, N. V. Tiunova (2008). For the purposes of recording of the quantitative changes of the tongue fur we used the index of K. Kojima et al. (1985) taking into account the thickness of the plaque and the area covered by plaque estimated visually in the oral cavity.

Estimation of acidity of the mixed saliva was performed twice: before the treatment and right upon completion of the schedule assigned, pH was measured with the use of potentiometric method (the portable pH-meter Marc-901).

Saliva was collected for estimation of the oral local immunity, the quantity of the serum immunoglobulins A, G, M (IgA, IgG, IgM), secretory immunoglobulin A (sIgA), the lysozyme activity in the mixed saliva (Liz) was measured along with the calculation of the coefficient of balance of the local immunity factors in patients before and after the treatment according to the selected schedules.

## RESULTS

After eradication the patients of the 1 group had complaints of: 5 persons – of the dryness, 8 persons – of the burning of the oral mucosa, 7 persons – of the taste perversion, 4 persons – of the bitter flavor in the mouth. They demonstrated the consequences of *H. pylori* eradication in the form of such oral mucosa diseases as xerostomia in 6 patients, acute pseudomembranous candidiasis – in 1 patient, chronic atrophic candidiasis – in 3 patients, leptotrichosis – in 1 patient, benign migratory glossitis – in 7 patients, clavate papilla hyperplasia – in 5 patients, chronic recurrent ulcerative stomatitis – in 1 patient. 5 patients did not get any complications on the part of the oral mucosa and did not have any complaints.

The patients of the 2 groups did not have any complaints upon completion of the combined treatment. They demonstrated the consequences of *H. pylori* eradication in the form of oral mucosa diseases as benign migratory glossitis – in 2 patients, clavate papilla hyperplasia – in 4 patients. 24 patients did not get any complications on the part of the oral mucosa.

## SUMMARY

Eradication of *H. pylori* shall be combined, individualized, ethiopathogenic, substantiated, successive, dynamic, and symptomatic.

The conduct of eradication requires co-working of the gastroenterologist and dentist with coordination of the local and general treatment schedules.

Important stages in the treatment are: normalization of the microbial landscape of the oral and stomach mucosa; restoration of the acid-and-base balance of the oral cavity; prevention of re-infection of the oral and stomach mucosa by *Helicobacter pylori*.

The treatment schedule shall include probiotics and immunomodulators which helps to reduce the number and intensity of the eradication side effects, reduces the treatment period and recurrence rate, extends the term of remission of the *H. pylori*-associated oral diseases making the treatment to be pathogenically substantiated and efficient.

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