

PROBIOTICS AS AN ANTI-HELICOBACTER REMEDY IN THE TREATMENT OF PATIENTS WITH DUODENAL ULCER

¹Rustamov M.N., ¹Sikorski A.V. ²Lazebnik L.B.

¹Belarusian State Medical University, Minsk, Belarus,

²Moscow State Medical University of Dentistry, Moscow, Russia

INTRODUCTION. Helicobacter pylori infection is the major etiologic factor of chronic gastritis and peptic ulcers and a risk factor for gastric cancer. Increasing resistance to clarithromycin and metronidazole is the main cause of failure in the Helicobacter pylori eradication. Recent reports from different countries report eradication rates lower than 80% with triple therapy [1]. The ideal regimen for treating the infection remains to be established. Increasing levels of bacterial antibiotic resistance raise the need to assess the eradication efficiency of Helicobacter pylori. Recent studies have found that probiotics have anti - Helicobacter pylori properties [2, 3]. Lactobacilli could exert an inhibitory effect on Helicobacter pylori both in vitro and in vivo models. At present, combination therapy consisting of two antibiotics and a proton pump inhibitor is regarded as a treatment of choice to eradicate Helicobacter pylori infection [1]. But this regimen has the disadvantages of being expensive and causing side effects and antibiotic resistance [1, 4]. So for this reason, triple therapy is not recommended in most infected subjects, i.e., in “healthy” asymptomatic carriers and in dyspeptic subjects without ulcers [1]. In such cases, probiotics could present a low-cost, large-scale alternative solution to prevent or decrease Helicobacter pylori colonization. Probiotic treatment reduces Helicobacter pylori therapy-associated side effects [1, 2, 3, 4]. So long-term intake of products containing probiotic strains of probiotics may have a favorable effect on Helicobacter pylori infection in humans, particularly by reducing the risk of developing disorders associated with high degrees of gastric inflammation. The human microbiota is considered to be an enormously diverse and complex ecosystem affected by host cells, ingested food and microbes. In the past, it was commonly believed that over 400 species compose this microbiota. However, it is nowadays estimated that more than 1,000 species are present in the gut.

A probiotic is defined as a living microbial species that, on administration, may have a positive effect on bowel microecology and improve health conditions [2, 4]. At present, the most studied probiotics are lactic acid-producing bacteria, particularly Lactobacillus species [2, 4]. The clinical outcome of Helicobacter pylori infection is determined by several factors, including the type of Helicobacter pylori strain, the extent of inflammation, and the density of Helicobacter pylori colonization. It has been reported that the risk of the development of peptic ulcer

disease and gastric cancer increases with an increasing level of infection [1]. Therefore, permanent or long-term suppression of *Helicobacter pylori* could decrease the risk of developing *Helicobacter pylori* -related diseases. There is thus a considerable interest in developing low-cost, large-scale alternative solutions to prevent or decrease *Helicobacter pylori* colonization. In this respect, probiotics may close the therapeutic gap. But the administration of probiotics alone does not lead to the eradication of *Helicobacter pylori*. It is also found out that mineral water can be widely used in the treatment of duodenal ulcer in monotherapy as well, as an adjuvant therapy to standard triple eradication regimen based on clarithromycin [4]. The combined use of probiotics and mineral water was not performed in patients with *Helicobacter pylori*-positive duodenal ulcer.

PURPOSE: To investigate the effects of probiotics in different combinations with standard triple therapy, proton pump inhibitors and different mineral water in the treatment of *Helicobacter pylori*-positive patients with duodenal ulcer

MATERIAL AND METHODS. In this study 200 *Helicobacter pylori*-positive patients with duodenal ulcer were randomized into four groups, 50 patients in each. *Helicobacter pylori* infection was confirmed by a histological examination of samples obtained from the antrum and corpus of stomach during endoscopy. Intra-gastric and intraduodenal pH-metry, blood analyses also were performed. The following eradication regimens were recommended: Group I: 10-days twice daily oral administration of proton pump inhibitors in standard dose, amoxicillin 1000 mg, clarithromycin 500 mg, then 20-days twice daily proton pump inhibitors plus once daily oral administration of probiotics, containing 3,025 billion alive lyophilized *Lactobacillus bulgaricus* DDS-14, *Lactobacillus rhamnosus*, *Lactobacillus acidophilus* DDS-1 and *Bifidobacterium bifidum* (probiotics) during one month; Group II: proton pump inhibitors and probiotics once daily and alkaline hydrocarbonate-chloride sodium mineral water Essentuki-4 200 ml trice daily during one month; Group III: proton pump inhibitors and probiotics once daily and chloride sodium mineral water Minsk-4 200 ml trice daily during one month; Group IV: probiotics and proton pump inhibitors once daily during one month. Therapeutic success was confirmed by a negative histological examination, performed in 4-12 weeks after therapy.

FINDINGS. In Group I dyspeptic complaints disappeared in 74%, and decreased in 20%. Disappearance of dyspeptic complaints was 78%, 76% and 74% in II, III and IV groups respectively. Decrease of dyspeptic complaints was 20%, 22% and 24% in II, III and IV groups respectively. The eradication rates were 82%, 80%, 78% and 68% in I, II, III and IV groups, respectively. Healing of duodenal ulcer was noted in 84%, 86%, 84% and 78% of cases, in I, II, III and IV groups, respectively. Intra-gastric and intraduodenal pH was significantly increased in all groups, especially in II. After treatment in II, III and IV groups significantly decreased alanine transaminase, asparagines transaminase, blood bilirubin, alkaline phosphatase, cholesterol and triglycerides. Several aspects of

Helicobacter pylori eradication have been analyzed in this study. The combined use of proton pump inhibitors, probiotics and alkaline hydrocarbonate-chloride sodium mineral water is more preferable regimen among above mentioned ones. The probiotic combination therapy was able to reduce significantly the total symptom score, which takes into account both the frequency and the severity of the adverse effects, during the eradication treatment.

CONCLUSIONS. Adding probiotics to standard triple therapy improves compliance and efficacy of Helicobacter pylori eradication. Probiotics as a complement to antibiotics may have the potential to reduce the adverse events of triple anti-Helicobacter treatment and to improve the eradication rate. Probiotics may be beneficial in reducing adverse effects and increasing tolerability of Helicobacter pylori eradication regimens. The combined use of proton pump inhibitors, probiotics and alkaline hydrocarbonate-chloride sodium and chloride sodium mineral water is a highly effective and low-cost alternative therapy in patients with Helicobacter pylori-associated duodenal ulcer. This regimen may especially be helpful in patients with a history of gastrointestinal adverse effects with antibiotics, comorbid patients with diseases of the hepatobiliary system and the metabolic syndrome.

Reference

1. Malfertheiner P. Management of Helicobacter pylori infection – the Maastricht IV/Florence Consensus Report. /P.Malfertheiner, F.Megraud, C.A.O’Morain et al.// Gut.-2012.-May.-P.646-664.
2. Canducci F. Probiotics and Helicobacter pylori eradication. /F.Canducci, F.Cremonini, A.Armuzzi et al.// Dig.Liver Dis.-2002.-Vol.34, suppl.2.-P.81-83.
3. M.Rustamov. Anti-Helicobacter Pylori abilities of different probiotic strains: in vitro and in vivo studies. /M. Rustamov, N. Baryshnikova, L. Rustamova// Helicobacter, ISSN 1083-4389, 2016, Volume 21, Supplement 1, page 149.
4. Rustamov M.N. H. pylori eradication problems. Different ways leading to one goal. /M.N. Rustamov, L.B Lazebnik//Interfaces and Controversies in Gastroenterology. Mainz, Germany, 2012, p. 67.
5. Rolfe R.D. The role of probiotic cultures in the control of gastrointestinal health. /R.D.Rolfe// J Nutr. 2000;130: suppl:S396–402.