УДК 61:615.1(062)(476-25)
ББК 52я73
А 43
ISBN 978-985-21-1258-1

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PHARMACOLOGICAL AND REGONAL ASPECTS OF H. PYLORI ERADICATION

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Overall four decades experience Helicobacter pylori (H. Pylori) infection is unresolved problem around the world, and its diagnostics and treatment stay imperfect. More than 80% of the population in various developed and developing countries is H. Pylori positive, even at young ages. Furthermore H. Pylori is a very common infection in India and in Europe.

Worldwide using pharmacological regimens in H. Pylori infection management are: Triple therapy, Non-bismuth quadruple therapy, Bismuth-based therapy, Levofloxacin-containing therapy, Concomitant bismuth- and levofloxacin-containing therapy, Second-line therapy, and Rescue or third-line therapy. Mentioned regimes include wide spectrum antimicrobial medicines administration: macrolides, imidazole, beta-lactams, fluoroquinolones (levofloxacin), tetracycline and bismuth salts. Presented H. Pylori eradication schemes demonstrated different results. That may be connected with the distinction in antibiotic sensitivity of microbes. For example Europeans' country studies demonstrate, that the treatment resistance rates to clarithromycin was 26%, to metronidazole - 32% and to both - 20%. The authors stressed, that only 11.1% bacterial strains' antibiotic resistance data were presented. In general H. Pylori resistance diversity may be the reason of the treatment results differences. That's why the enlargement of microbes' sensitivity testing level to antimicrobial agents may be rationale. Bismuth tripotassium dicitrate hinders the penetration of protons into the bacterium, keeping the pH of the cytoplasm in the range favorable for the maximum metabolic activity of the microorganism, which makes it vulnerable to antibiotics. The addition of bismuth to triple therapy for H. pylori infection is an established practice in both Asia and Europe. Such optimization enhances the effect of antibiotics and prevents the development of antibiotic resistance, especially considering that H. pylori resistance to bismuth tripotassium dicitrate is not formed.

Proton pump inhibitor medicines (PPIs) are the obligate elements of the eradication H. Pylori schemes. Administration of these agents conditioned by its' possibility to suppress gastric acid secretion. There are three PPIs appointment categories: low, standard and high acid inhibition. Low dose PPIs regime used in the following doses: omeprazole 20 mg b.i.d., lansoprazole 30 mg b.i.d., pantoprazole 40 mg b.i.d., rabeprazole 20 mg b.i.d. or esomeprazole 20 mg b.i.d. Standard dose PPIs regime corresponds 40 mg omeprazole equivalents, b.i.d., and high dose PPIs regime measures up 60 mg omeprazole equivalents, b.i.d. The use of high-dose PPIs (doubled compared to the standard dose) contributes to an increase in the eradication effectiveness. Rabeprazole is the current standard of care for acid-related diseases, including eradication therapy for H. pylori infection. According to meta-analyses results, rabeprazole as part of eradication therapy provides better H. Pylori eradication rates compared to former PPIs (omeprazole, lansoprazole, pantoprazole). Rabeprazole differs from other PPIs in its minimal dependence on phenotypically determined variants of hepatic metabolism, giving more predictable antisecretory effect, as it is metabolized predominantly by a non-enzymatic process. In the countries of the European Region, the phenotype of rapid metabolizers is highly prevalent, that's why rabeprazole usage is preferred. The antisecretory effect of esomeprazole as part of the eradication therapy for H. Pylori infection provides a higher efficacy of treatment compared to that with the use of omeprazole, lansoprazole, and pantoprazole. Esomeprazole is the S-enantiomer (left isomer) of omeprazole and, due to the stereoselective features of interaction with cytochrome P450 in the liver, has a greater bioavailability than omeprazole. That feature resulting in a more predictable control of gastric acid secretion independently of individual drug metabolism patterns.

Presented analysis demonstrate existence of multiple approaches to H. Pylori infection management. Eradication therapy for H. pylori infection specificity is due to both regional differences in antibacterial resistance of bacteria and population characteristics of the hosts' metabolic processes.