

NON-INVASIVE TESTS IN DIAGNOSTICS OF HELICOBACTER PYLORI INFECTION. RESULTS OF FOUR INDEPENDENT STUDIES

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INTRODUCTION: Helicobacter Pylori is a human pathogen that is transmitted from human to human, and causes chronic active gastritis in all colonised subjects. This can lead to peptic ulcer disease, atrophic gastritis, gastric adenocarcinoma, and MALT (mucosa-associated lymphoid tissue) lymphoma. Helicobacter Pylori eradication cures gastritis and can alter the progression to long-term complications, or recurrence of disease [1]. For these reasons, Helicobacter Pylori is considered an infectious disease irrespective of an individual's symptoms and stage of disease [2]. C¹³ Urea Breath test is recommended as one of the main methods for the diagnostics of Helicobacter Pylori infection in Maastricht Consensus III-V. This test is considered by many experts as the most reliable non-invasive test [1]. It measures the hydrolysis of orally administered ¹³C-labeled urea by the enzyme urease. CO₂ diffuses into the blood, is excreted by the lungs, and can be measured in breath using either isotope ratio mass- or infrared-spectrometry. However, this method is not widely available for gastroenterological practice in general and in Belarus, Russia, Azerbaijan and Tajikistan in particular. Therefore, it is actual and important to elaborate alternative cost-effective, non-invasive methods for the diagnostics of Helicobacter Pylori infection. It is especially actual for patients who cannot be tested by invasive methods due to different contraindications. According Maastricht V/Florence Consensus Report - Management of Helicobacter pylori infection, the use of aspirin increases the risk of ulcer disease in Helicobacter pylori infected subjects. Anticoagulants (coumarines and new oral anticoagulants) increase the risk of bleeding in patients with peptic ulcer. Testing for Helicobacter

pylori should be performed in aspirin and NSAIDs users with a history of peptic ulcer. Therefore, it is actual and important to elaborate alternative cost-effective non-invasive methods for diagnosis of Helicobacter pylori infection. It is especially actual for patients, who due to some contraindications cannot be tested by invasive methods for this reason.

OBJECTIVE. To investigate sensitivity and specificity of non-invasive breath ammonium "HELIC-test" ("Association of medicine and analytics, Saint-Petersburg, Russia) in diagnosis of Helicobacter Pylori infection.

MATERIAL AND METHODS. Four independent studies in Belarus, Russia, Tajikistan and Azerbaijan were performed. In Belarus 243 patients with chronic gastritis and duodenal ulcer, in Russia 171, in Tajikistan 129 and in Azerbaijan 109 patients with chronic gastritis were surveyed. Helicobacter pylori infection was confirmed by a histological examination of samples obtained from the antrum and corpus of stomach during endoscopy. For all patients non-invasive breath ammonium HELIC-test also was performed. Patients during at least four weeks before diagnostics did not take any medications (PPIs, antibiotics, antacids and bismuth), which could change the results of both invasive and non-invasive tests.

FINDINGS. Concordance of results of histological method and ammonium HELIC-test were high: in 87,5%, 88,5% and 88,3% of cases in Russia, in Azerbaijan and in Belarus respectively. In Russia, sensitivity of ammonium test was 92%, specificity - 93%. In Belarus, sensitivity and specificity of test were 92,5%, and 93,6% respectively. In Azerbaijan and Tajikistan, sensitivity and specificity of test were 91%, and 92% respectively.

CONCLUSIONS. Breath ammonium HELIC-test is cost-effective, non-invasive method for diagnostics of H.pylori infection. The sensitivity and specificity of this test are high enough. Thus, this method can be widely recommended as noninvasive test for diagnostics of H.pylori infection, especially in patients in whom invasive tests may be contraindicated. Ammonium Breath test is also recommended for the controlling of eradication of Helicobacter pylori infection. The test is easy to preform, quick method (results are obtained immediately by the end of the test), accuracy approved and there is no need for many equipments and finally lower price in compared with ¹³C Urea Breath Test.

Reference

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2. Sugano K, Tack J, Kuipers EJ, et al. Kyoto global consensus report on Helicobacter pylori gastritis. Gut 2015;64:1353–67).