

**ASSESSMENT OF INVASIVE AND NON-INVASIVE METHODS FOR DIAGNOSIS
OF HELICOBACTER INFECTION**

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Abstract. Using 283 gastrobiopsy specimens obtained from 113 patients with chronic gastroduodenitis, *Helicobacter pylori* infection was diagnosed using invasive (histology, histobacterioscopy, urease helpil test) and non-invasive (breathing helix test, enzyme-linked immunosorbent test system "GastroPanel") methods. Damage to the antrum of the stomach was detected by histological method in 59.7% of patients, and by the GastroPanel method - in 36.6%. Changes in the fundus were diagnosed by histological method in 20.5% of the observed patients, and by the GastroPanel method - in 17.6%.

Keywords: histology, helpil test, histobacterioscopy, helic test.

INTRODUCTION

It is known that *Helicobacter pylori* (HP) infection determines the morphological state of the gastric mucosa (MU). An active inflammatory process that develops under the influence of NR causes disruption of the regulation of acid production, and an increase in the level of gastrin and pepsinogens initiates an ulcerogenic effect [1–4]. However, to date, indications for the use of one or another diagnostic method for this infection have not been developed.

The most widely used methods for diagnosing HP are histological, histobacterioscopic and immunohistochemical studies of gastrobiopsy specimens and their imprints on a glass slide [2]. The method of staining a print from a gastrobiopsy specimen is quick to perform (15-20 minutes) and contains information about the contamination of gastric mucosa. At the same time, bacterioscopic examination of the gastrobiopsy imprint is subjective in nature, since CO contamination is focal.

MATERIALS AND METHODS

The object of study was 283 biopsy specimens from different parts of the stomach and duodenum, obtained for diagnostic purposes from 113 patients with chronic gastroduodenitis (51 men, 62 women). The age of the patients ranged from 15 to 75 years, the average age did not exceed 41 years. Biopsies were obtained with the consent of the patients during endoscopy.

Gastrobiopsy specimens were fixed and processed using conventional histological methods and embedded in paraffin. Sections for histological examination, 5 μ m thick, were sequentially stained with a combination of Alcian blue, Mayer's hematoxylin and eosin. For histobacterioscopic examination of the gastric mucosa, biopsies were stained with a 0.1% aqueous solution of acridine orange [2] in its own modification (rational proposal No. 214-493 dated August 13, 1990), thionin according to Nicolas, methylene blue according to Lefler and azure II-eosine according to Giemsa. Infection of HP biopsy specimens was determined using a semi-quantitative method [3] in three degrees.

RESULTS AND DISCUSSION

Histological examination of 283 biopsies from 113 patients revealed chronic antral gastritis B (59.7%) in 169 cases, chronic fundal gastritis B (20.5%) in 58 cases, and chronic duodenitis in 51 patients (18.0%). All patients with chronic gastritis and duodenitis showed varying degrees of activity of the pathological process. Infection of HP in the antrum of the stomach was 95.3%, in the fundus - 93.1%, and in metaplastic areas of the duodenum - 4.4%.

The diagnostic significance of the urease CP test was 83.6%, its results are close to the histobacterioscopic verification of bacteria in the mucus of the antrum of the stomach (95.3%). The diagnostic value of detecting HP using the urease breath X-test was 63.2%; it is significantly inferior to the histobacterioscopic method and the HP test.

When studying the blood serum of 391 patients with chronic gastritis and chronic duodenitis using the GastroPanel method, IgG antibodies to HP were detected in 340 people (87.0%), which indicated that they were infected. Damage to the antrum of the stomach was found in 36.6%, the fundus - in 17.6%, pangastritis was diagnosed in 30.7% of cases. When comparing the results of two research methods (histobacterioscopy of gastrobiopsy specimens, "GastroPanel"), similar data were noted: the diagnostic significance of histobacterioscopic examination is 95.3%, the "GastroPanel" method is 87.0%. Consequently, the GastroPanel indicators can be used in the non-invasive diagnosis of helicobacteriosis and chronic gastric diseases, especially in screening studies of a large group of people. This will make it possible to identify a risk group for further endoscopy with mandatory examination of biopsy samples.

In the literature, for early primary diagnosis of helicobacteriosis, it is proposed to use only urease non-invasive methods [4]. We conducted a comparative study of the effectiveness of different methods for verifying HP infection: histobacterioscopic, urease rapid tests (X-test and HP-test), as well as the GastroPanel method.

The histobacterioscopic method is the "gold standard", but it is invasive and time-consuming (5-7 days). We combined this method of verifying HP in biopsy samples of the stomach and duodenum with their histological examination, which made it possible to clarify the histological picture of the lesion in the antrum and fundus of the stomach, as well as the degree of activity of the pathological process in gastrobiopsy samples. Histological and histobacterioscopic examination of these biopsy specimens is close to 96% in significance.

A study of the effectiveness of two diagnostic urease express methods (X-test and CP-test) made it possible to determine their diagnostic significance: for the X-test it is 63.2%, for the CP-test - 83.6%. It should be noted that the result of the X-test was obtained within 20 minutes from the start of its performance; the duration of the X-test, taking into account the time spent on performing endoscopy with taking biopsies, did not exceed 10 minutes. The X-test is considered non-invasive, and the HP-test is considered invasive. However, the results of the X-test are less reliable than those of the HP-test. Taking this into account, to verify HP infection, it is preferable to use the HP test, which makes it possible to prescribe standard eradication therapy earlier. The X-test should be used in those patients (children and adults) for whom endoscopic examination is contraindicated, but to verify HP infection it is necessary to additionally use other diagnostic methods (for example, a serological method).

CONCLUSION

Diagnosis of *Helicobacter pylori* infection in a patient's body should be comprehensive using non-invasive and invasive research methods. An assessment of their effectiveness allows us to state that the most promising of non-invasive methods is the GastroPanel test system and, to a lesser extent, the urease respiratory helix test, and of the invasive methods, the helpel test and histobacterioscopy.

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