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DIAGNOSTICS OF HELICOBACTER PYLORI INFECTION AND DETERMINATION OF ITS SENSITIVITY TO ANTIBIOTICS IN PATIENTS WITH PERFORATED DUODENAL ULCER

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According to the literature, the frequency of detection of HP in duodenal ulcers reaches 70-95% [3]. A mandatory condition for the successful treatment of HP-associated diseases of the duodenum is a course of eradication therapy [1]. However, in recent years, the spread of HP resistance to antibacterial drugs has become a significant problem affecting the outcome of treatment [4]. Thus, in the presence of resistance of the microorganism to one of the drugs included in the scheme of anti-helicobacter therapy, the frequency of HP eradication decreases by 30-50% [2]. Thus, one of the most important methods of examining patients with duodenal pathology is the diagnosis of the presence of HP bacteria and the determination of its sensitivity to antibiotics.

The purpose of the study was improving the results of surgical treatment of patients with Helicobacter-associated perforated duodenal ulcer based on the improvement of diagnostic methods of HP.

Materials and methods of research.

The work is based on the analysis of the results of the examination and treatment of 158 patients with Helicobacter-associated ulcer disease from among 384 operated patients for duodenal ulcer complicated by perforation for the period from 2014 to 2023 in the clinic of the Department of Surgery No. 2 of the Bogomolets National Medical University. In the early postoperative period, 158 patients with Helicobacter-associated ulcers were divided into the main (82 people (51.89%)) and control (76 people (48.10%)) groups, depending on the selected treatment tactics. There were 63 men in the main group (76.83%), 19 women (23.17%), in the control group - 59 (77.63%) and 17 (22.37%), respectively. The age of the patients ranged from 17 to 91 years. The average age of the patients was 34.2±2.4 years. In the postoperative period, the patients of the main group received antibacterial therapy aimed at combating peritonitis, which included intravenous or intramuscular administration of broad-spectrum antibacterial drugs and parenteral antisecretory therapy with proton pump inhibitors in standard doses. Patients of the control group additionally received oral anti-helicobacter therapy from the 4th to the 7th day of the postoperative period according to the recommendations of the Maastricht Consensus 1-6. The criterion for starting oral anti-helicobacter therapy was the restoration of intestinal peristalsis and removal of the gastric tube.

During the operation, a biopsy material was taken from the mucous membrane of the antral part of the stomach for a direct urease test for the express diagnosis of the presence of HP. In the case of a positive test result, the biopsy material was sent for further bacteriological examination on the subject of infection of the stomach with HP and accompanying opportunistic flora. We have developed a method for diagnosing HP and determining its sensitivity to antibiotics (Ukrainian patent No. 67341 U), the essence of which is as follows. The biopsy material was emulsified in a test tube containing sterile serum broth, the indicator bromothymol blue, and additionally the antibiotic vancomycin. Using a pipette with sterile tips, 0.01 ml of the obtained bacterial suspension was inoculated into the experimental wells of the stripped tape, into which the studied antibiotics were previously introduced in the form of a solution (according to the principle of microdilution at a concentration of 1000.0 μl/ml and above in a volume of 0.1 ml working antibiotic solution). In the case of using an antibiotic in the form of "saturated paper discs" (according to the principle of the disk-diffuse method), the volume of the bacterial suspension to be inoculated was 200 μl. 200 μl of bacterial suspension was inoculated into the control well for the presence of HP. In the control well of serum broth with indicator (does not contain antibiotic), 200 μl of serum broth with indicator and vancomycin were inoculated. The holes of the strip were sealed with an adhesive strip. After that, the strip was incubated in a thermostat at a temperature of 37°C for 24-72 hours. The presence of HP was determined by changing the color of the contents of the control well for the presence of HP to blue during the incubation process. In the absence of a change in color to blue or in case of a change in color to any other result, the result of the HP study was considered negative.

Evaluation of the results of the study on sensitivity to antibiotics was carried out in the presence of a color reaction in the wells containing the antibiotic: the absence of a color reaction indicated the sensitivity of the microorganism to the antibiotic. A change in the color of the medium to blue indicated HP resistance to antibiotics. The presence of a color reaction in the serum broth control well indicated a violation of the test technique, in which case the result was considered invalid. The method was used in 128 patients with perforated duodenal ulcer. The sensitivity of the proposed method was 96.36%, specificity - 91.78%.

Results of the research. When examining all 384 operated patients for perforated duodenal ulcer for the presence of HP using a direct urease test, a positive result was obtained in 304 cases (79.17%). However, during the study of biopsies using the bacteriological method of determining HP, a positive result was obtained only in 162 patients (42.19%). The specificity and sensitivity of the bacteriological method of HP diagnosis reaches 100% and can be considered the "gold standard", while the sensitivity of the direct urease test was 100%, but its specificity was only 36.03%.

When comparing the frequency of HP eradication in the main and control groups, it was established that eradication was achieved in 70 patients (85.37%) of the main group and 67 patients (88.15%) of the control group ($p>0.05$). According to the consensus criteria of Maastricht-2 (2000), the drug used to eliminate HP is considered effective for eradication in more than 80% of cases. The use of antibiotics used for the treatment of bacterial peritonitis in combination with proton pump inhibitors in the postoperative period for the

purpose of eradicating HP without additional prescription of traditional antibiotics for the eradication of HP fully meets this criterion.

At the same time, a significantly lower frequency of adverse reactions associated with antibacterial therapy was found in patients of the main group (34.15%) versus the control group (78.94%) (P=0.0001).

Conclusions.

1. The implementation of the method of express diagnosis of HP and determination of its sensitivity to antibiotics made it possible to carry out eradication already on the 2nd or 3rd day of the postoperative period (the sensitivity of the method was 96.36%, and the specificity was 91.78%).
2. The sensitivity of HP to antibiotics used in the basic antibacterial therapy of peritonitis with perforated duodenal ulcer was established, which allowed the latter to be used as eradication therapy without the additional appointment of standard anti-helicobacter regimens recommended by the Maastricht consensus 1-6.
3. The additional appointment of standard eradication regimens in the postoperative period does not provide significant advantages in comparison with the basic antibacterial therapy of peritonitis, increasing the frequency of side effects by 44.79%.

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