

## Endoscopic faces of Helicobacter Pylori infection

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**Abstract:** *Introduction: The infection caused by H. pylori appears secondary after a bacterial colonization of the stomach and the initial portion of the small bowel. H. pylori –infected patients can develop gastritis, peptic ulcer, stomach cancer or MALT lymphoma. H. pylori infection is defined by WHO like a type I carcinogen, its role in gastric carcinogenesis being supported by the greatest researchers.*

*Objectives: In this study our purpose was to determine the endoscopic appearances in H. pylori infection quoted in medical literature until now and the frequency of their appearance in our group of interest.*

*Materials and methods: In this study it was made an analytic study in which it was realized a retrospective cohort investigation at the Emergency Central Military and University Hospital “Dr. Carol Davila” Bucharest, gastroenterology branch –endoscopic department between 18.12.2012-21.08.2013 on 1694 patients between 18 and 92 years old, with the medium age of 55 years old.*

*As a diagnostic method for H. pylori infection we used superior digestive endoscopy during which were taken biopsies and it was made a fast urease test.*

*Results: Regarding the variation of the endoscopic aspects at the population of study, we have found gastritis with all its aspects (which was Sidney classified) in the biggest percentage meaning 59.3% of the cases, followed with a percentage of 18.8% by those without any endoscopic abnormality, and then in 10,33% of the cases we have found peptic ulcer. With a smaller percentage, under 10%, we have found duodenitis at 8.67% of this patients, and finally the most severe lesions represented by gastric cancer and lymphoma were found at 2,7% of the H.pylori infected patients.*

### INTRODUCTION

H. pylori is the most common infection found in humans, is a transmissible chronic infectious disease in which clinical manifestations are preceded by a long asymptomatic period. Helicobacter pylori is a gram-negative bacterium, the infection occurs due to bacterial colonization of the stomach and the initial portion of the small intestine and it is found on the luminal surface of the gastric epithelium. Was first isolated by Warren and Marshall in 1983.(1) In the

entire world more than 50 % of the population have the infection into their upper gastrointestinal tract, the infection is found more often in the developing countries and with a significantly low percent in industrialized countries (2).

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The transmission routes in developing countries are largely represented by water, while in industrialized countries the transmission routes are directly, and the persons are infected from saliva, vomitus and others fluids.(3)(4)

Helicobacter pylori infection leads to development of gastrointestinal pathologies such as duodenal or gastric ulcers, many forms of gastritis, gastric cancers, and gastric mucosa-associated lymphoid-tissue (MALT) lymphoma. At the patients infected with Helicobacter pylori the risk of developing one of this pathologies varies widely in population, but a lot of the patients will not have any of this complications. (5)

By altering the normal gastric secretion, the bacterium produces local injury of the gastric mucosa especially at the antrum and distal part of the stomach. The most common pathology is gastritis and ulcers. At patients with adenocarcinoma, a known complication of Helicobacter pylori, the patients suffer a pangastritis with highly secretion of the body and antrum of stomach.(6)

The standard treatment for Helicobacter pylori includes PPI and three antibiotics which involves taking for 7 to 14 days and no single drug cures the infection. The proton pump inhibitors are decreasing the production of acid from the stomach and which allows the tissues to heal. Beside PPI also are recommended two antibiotics such as clarithromycin (500 mg, bid), amoxicillin (1 g, bid) and metronidazole. (7)

Unfortunately several clinical studies have shown that the triple therapy scheme from Europe the success rates are only 20-30% (10)(11). And therefore the detection of this bacteria can be realized in early stages and we can prevent various complications determined by it (especially gastric cancer) and use the treatment guides which were very well established within years has declined to the limit of 80% or less (8)(9) and in some countries

In this study our purpose was to determine the types of endoscopic aspects found in H. pylori infection quoted by now in medical literature and the frequency of their appearance in the group of study.

## Materials and method

This study was realized between 18.12.2012-21.08.2013 on 1694 patients between 18 and 92 years old, with the medium age of 55 years old.

Inclusion criteria of endoscopic examined patients were represented by: patients with age over 18 years, unspecific digestive symptomatology to whom can associate alarm signals, the endoscopy indication made by the doctor, presence of a suggestive symptomatology for gastric or duodenal pathology, pain in the upper abdominal region or retrosternal, postprandial discomfort, distended bowel, early satiety, abdominal discomfort, pirosis, nausea, vomiting, anorexia, weight loss.

Exclusion criteria for this patients were similar with those for superior digestive endoscopy and are represented by: patients under 18 years , shock, acute myocardial infarction, peritonitis, acute perforation, fulminate colitis, recent colonic surgery, patient's refuse, low cooperation of the patient, coma (except intubated patient), arrhythmias, acute myocardial ischemia.

In this study were included 1964 adults with age between 18-92 years old, as it is shown in table 1.

**Table 1.** Gender distribution of patients

Male	Female
866	828

As a diagnostic method of H. pylori infected patients, we used superior digestive endoscopy. Within the intervention were taken biopsies and were realized fast urease tests.

Fast urease test is based on the principle that excessive urease produced by H. pylori hydrolyses urea in ammonia. Therefore we have an increase of the pH of the environment in which we have introduced the bioptic fragment, determined with a colour indicator.

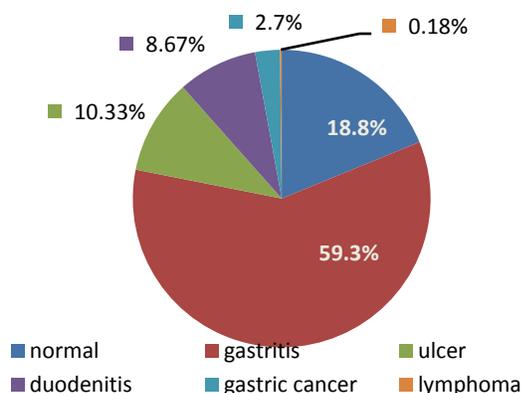
Although this test has a high specificity and sensibility, in general over 90%, the result seems to be influenced by certain drugs such as: PPI (proton pump inhibitors), antibiotics, H2 receptor antagonists and bismuth.

According to the large amount of data given by the medical literature, H. pylori infection produces various gastric and duodenal lesions with a low to high severity, and here we can mention gastritis, duodenitis, gastric and duodenal ulcer, gastric cancer and lymphoma.

In the group of patients with indication for superior digestive endoscopy, we have managed to visualize the endoscopic aspect mentioned up above, with a small mention that some of this patients had a normal endoscopic aspect.

Regarding those varied endoscopic aspects found in our group, we have determined that gastritis with all its aspects according to Sidney classification (described below) has the highest percentage of 59.3%, followed by normal endoscopic aspect with 18.8%, then we found ulcer in 10.33% of cases, duodenitis 8.67%, and finally the most severe- gastric cancer and lymphoma – only 2.7%, respectively 0.18% of the total examined group.

**Figure 1.** Distribution of endoscopic aspects found at endoscopic examined patients



According to Sidney classification we determined the following types of gastritis: exudative-erythematous gastritis, macular-erosive gastritis, papular-erosive gastritis, atrophic gastritis, haemorrhaging gastritis, entero-gastric reflux gastritis and hypertrophic folds gastritis.

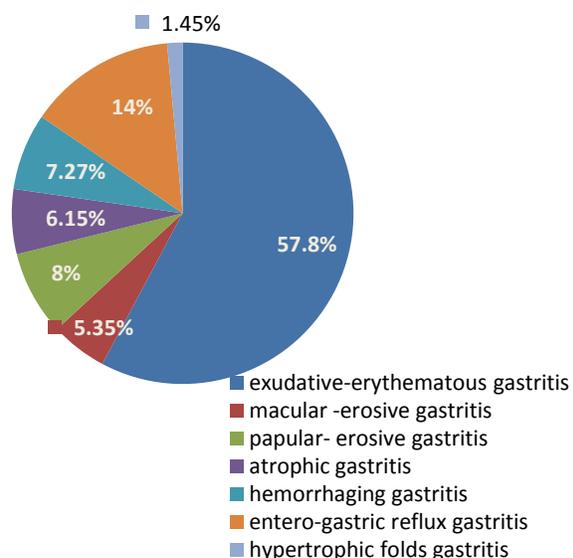
In all the endoscopic examined patients, from the total percentage of 59.3% that was represented by gastritis we have determined that the most frequent is exudative-erythematous gastritis, which represents

better than a half with 57.8%.

The following as a frequency is represented by entero-gastric reflux gastritis with a percentage of 14% which was followed by papular-erosive gastritis, haemorrhaging gastritis, atrophic gastritis, and macular-erosive gastritis, with small differences between them, these representing 8%, 7, 27%, 6, 15%, respectively 5.35%.

Finally the less frequent was hypertrophic folds gastritis with a percentage of 14.45%.

**Figure 2.** Gastritis distribution according to Sidney classification of endoscopic examined patients



In the following figure we have presented gastritis distribution according to Sidney classification at the H. pylori-infected patients, and we determined that from all the cases with gastritis the most frequent was exudative-erythematous gastritis with a share of 61%. Must be mentioned here that 21.43% from all the cases with gastritis were infected with H.pylori.

The following places as a frequency, but still at pretty big difference from the first mentioned, were occupied by papular-erosive gastritis with 11.8%, macular-erosive gastritis with 10.62%, and entero-gastric with 6.7%. We can mention here that the percentage of these three determinations of gastritis are at the opposite pole from their situation in general examined population, where entero-gastric reflux gastritis has a bigger percentage than the

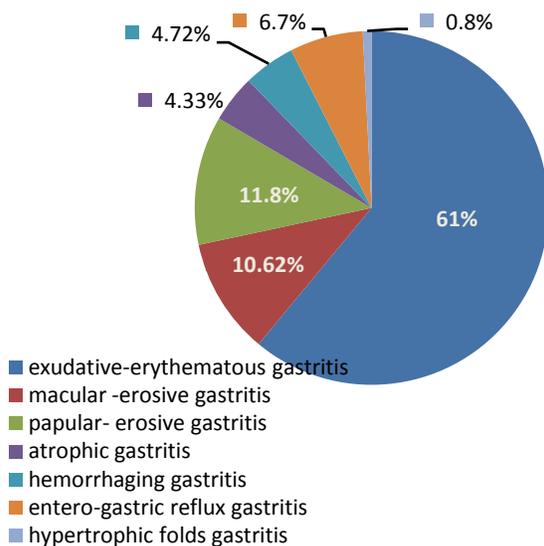
others two. Now if we make a parallel between the occurrence of those gastritis types and the rate of occurrence in general population we can tell that 40.3% from the total macular-erosive gastritis cases and 30% from all the total popular-erosive gastritis found in general population appear in H. pylori infection, in contrast to entero-gastric reflux gastritis where only 9.7% from the cases occur in H. pylori infection.

Regarding haemorrhaging gastritis and atrophic gastritis, these have a smaller frequency of occurrence within the pale of infected patients, with a percentage of 4.72%, respectively 4.33%.

If we relate again at their distribution in general population we can observe that 14.3% from the total number of cases with atrophic gastritis is found in H. pylori infection. Haemorrhaging gastritis occurs in 13.2% of all the total haemorrhaging gastritis found in general population.

The smallest value as a frequency of occurrence in the H. pylori infected patients belongs to gastritis with hypertrophic folds with a percentage of 0.8% and we mention here that this value represents 11.11% from all the total cases of hypertrophic folds gastritis found at general population that was endoscopic examined.

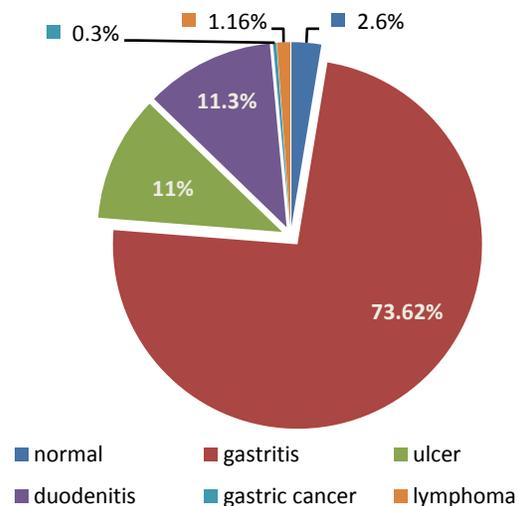
**Figure 3.** Gastritis distribution according to Sidney classification of positive fast urease test patients.



We observed at the persons in which was determined a positive fast urease test that the most frequent determination of H. pylori infection is represented by gastritis, which was found in 73.62% of the cases, a percentage up high as against general population where gastritis was determined in 59.3% of the cases. If we make a parallel of gastritis cases found at H. pylori infected patients and the cases found in general population we can observe that 20.3% of the gastritis cases occurred secondary to H. pylori infection.

The following two places as a frequency are occupied by ulcers and duodenitis with a small difference between them of only 0.3%, these two having the percentage of 11%, respectively 11.3%.

**Figure 4.** Distribution of endoscopic aspects found at patients with positive fast urease test.



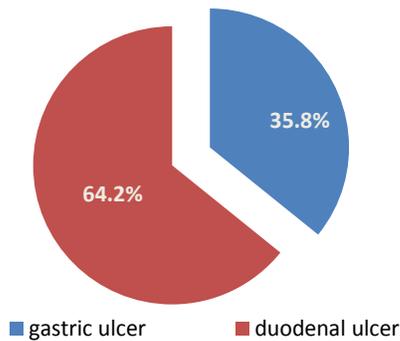
It is known that H. pylori infection can determine ulcerated lesions with gastric and duodenal localization.

From all the ulcerated lesions that were endoscopic discovered at the general examined population we determined that is a significant difference between these two types of localization, the one with the biggest percentage being the duodenal ulcer meaning 64.2%, in comparison with gastric ulcer which represents 35.8%.

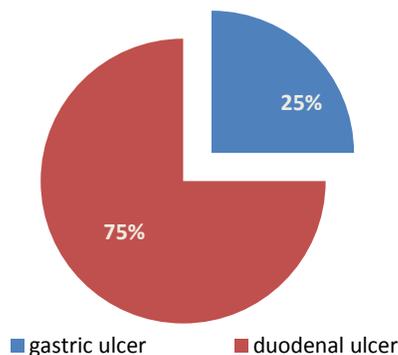
In figure 6 was determined the distribution of ulcerated lesions at male gender with H. pylori

infection where we can observe that three quarters from all the ulcer cases found at this group belongs to duodenal ulcer and the rest of 25% belongs to gastric ulcer.

**Figure 5.** Distribution of ulcer types according to its localization at endoscopic examined patients.



**Figure 6.** Distribution of ulcer types according to its localization at male gender patients with positive urease test



## CONCLUSIONS

1. *Helicobacter pylori* was found in 52.22% of the cases tested for this infection and in 15.23% of the general population with superior digestive symptomatology.
2. *Helicobacter pylori* infection doesn't have gender predominance, being equivalent at both sexes.
3. In 97, 4% from *Helicobacter pylori* infected cases was determined a pathologic endoscopic aspect, the most frequent being gastritis with all its forms.
4. The most frequent gastritis type met in *Helicobacter pylori* infection was exudative-erythematous gastritis.
5. From all the ulcerated lesions met in *Helicobacter pylori* infection, the most frequent we have determined was at duodenal level.
6. Almost 20% from all the gastritis cases, ulcer and duodenitis were found in *Helicobacter pylori* infection.
7. All the lymphoma cases were found at *Helicobacter pylori* infected patients.

## References:

1. Warren JR, Marshall BJ. Unidentified curved bacilli on gastric epithelium in active chronic gastritis. *Lancet* 1983;1:1273-1275
2. Ananthkrishnan N, Kate V. *Helicobacter pylori*: The rapidly changing scenario. In: Chattopadhyay TK. editor. *G.I.Surgery annual*. Vol. 5. New Delhi: Byword; 1998. p. 1-20.
3. Parsonnet J, Shmueli H, Haggerty T. Fecal and oral shedding of *Helicobacter pylori* from healthy infected adults. *JAMA* 1999;282:2240-2245
4. Goodman KJ, Correa P, Tengana Aux HJ, et al. *Helicobacter pylori* infection in the Colombian Andes: a population-based study of transmission pathways. *Am J Epidemiol* 1996;144:290-299
5. el-Omar EM, Penman ID, Ardiil JES, Chittajallu RS, Howie C, McColl KEL. *Helicobacter pylori* infection and abnormalities of acid secretion in patients with duodenal ulcer disease.
6. Rune S. *Helicobacter pylori*, peptic ulcer disease and inhibition of gastric acid secretion. *Digestion* 1992;51:11-6.
7. Gisbert JP, Gonzalez L, Calvet X. Systematic review and meta-analysis: proton pump inhibitor vs. ranitidine bismuth citrate plus two antibiotics in *Helicobacter pylori* eradication. *Helicobacter* 2005; 10:157.

8. Graham DY, Fischbach L. Helicobacter pylori treatment in the era of increasing antibiotic resistance. *Gut*. 2010;59(8):1143–1153.
9. Gisbert JP, Pajares R, Pajares JM. Evolution of Helicobacter pylori therapy from a meta-analytical perspective. *Helicobacter*. 2007;12(Suppl 2):50–58
10. Gumurdulu Y, Serin E, Ozer B, et al. Low eradication rate of Helicobacter pylori with triple 7–14 days and quadruple therapy in Turkey. *World J Gastroenterol*. 2004;10(5):668–671.
11. Gumurdulu Y, Serin E, Ozer B, et al. Low eradication rate of Helicobacter pylori with triple 7–14 days and quadruple therapy in Turkey. *World J Gastroenterol*. 2004;10(5):668–671.