Original Article

Comments on Evaluation of Endoscopic Findings and Detection of *H. pylori* Antibody by Serum IgG ELISA

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Abstract

Bangladesh is a developing country with high prevalence of peptic ulcer disease and *H. pylori* infection. During the period of January 2007 to December 2007, a cross sectional study was conducted. In this study, serum samples were collected from 86 dyspeptic patients undergoing upper GIT endoscopy to determine anti-H. pylori IgG antibody by serum ELISA and was evaluated with endoscopic findings. Out of 86 study patients, gastro-duodenal mucosa was found normal in 58.14%, gastritis in 11.63%, duodenitis 2.33%, reflux oesophagitis 4.65%, peptic ulcer 17.44% and carcinoma of stomach 5.81%. Among 86 study population, 68 were serum IgG ELISA positive and 20 were negative.

Key words: *H. pylori,* IgG, ELISA, Non-ulcer dyspepsia.

Introduction

Helicobacter pylori is a spiral shaped, slow growing, microaerophilic, gram-negative, highly motile organism. It causes type B or non-immune chronic gastritis[1], peptic ulcer disease[2], gastric adenocarcinoma[3] and gastric Mucosa Associated Lymphoid Tissue (MALT) lymphoma[4]. *H. pylori* has been found in 90% of patients with chronic gastritis, 95% with duodenal ulcer, 70% with gastric ulcer[5], 98% with gastric cancer and 90% with gastric MALT lymphoma[6].

Presence of *H. pylori* infection does not mean clinical disease. Majority of infected individuals remain asymptomatic with histological gastritis, but factors linked to the microorganism, to the environment and to the host cause gastrointestinal symptoms. Only 10-20% of the infected individuals develop *H. pylori* associated diseases[7].

H. pylori infection typically acquired in childhood by oral-oral, fecal-oral transmission and poor sanitation & persists
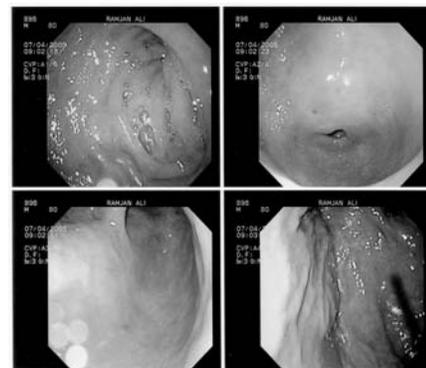

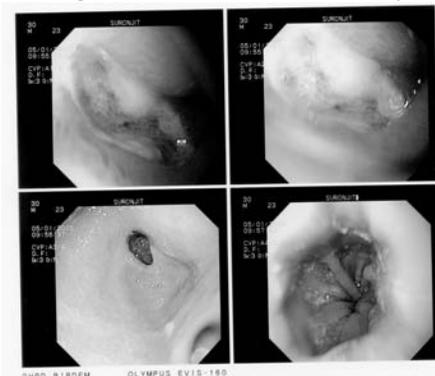Figure 1. Endoscopic photograph showing erosive gastritis in the antrum and body

Figure 2. Endoscopic photograph showing duodenal ulcer

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throughout life unless specifically treated. Iatrogenic transmission is also important via endoscope[8]. *H. pylori* infection occurs worldwide. Approximately 50% of the world population is infected with this organism. In Bangladesh, 60% of children aged <5 years are infected. The prevalence of *H. pylori* infection among infants, children and adults are 61%, 84% & 92% respectively[9]. In other study among 569 Bangladeshi children between 2 & 10 years of age, the prevalence of *H. pylori* is 42% by 2 years of age & quickly arose to 67% by 10 years of age[10]. Several methods can be used to diagnose *Helicobacter pylori* infection, which include invasive and non-invasive methods. In invasive methods require upper gastrointestinal endoscopy for retrieval of a gastric biopsy specimen. Infection with *H. pylori* induces a mucosal and serum immune response in most patients, and serologic tests have been used for diagnosis of the infection. In present study evaluation was done among endoscopic findings and detection of *H. pylori* antibody by serum IgG ELISA to determine the significance between endoscopic findings and serological findings.

Materials and Methods

This cross sectional study was carried out in the Department of Microbiology of Dhaka Medical College, in collaboration with Department of Gastroenterology of Dhaka Medical College Hospital from January to July 2007. A total of 86 adult patients with dyspeptic symptoms, referred for upper gastrointestial endoscopy were studied. Dyspeptic symptoms include (i) upper abdominal or lower chest pain with or without relationship to food. (ii) regurgitation, heartburn and waterbrash (iii) anorexia, nausea and vomiting (iv) bloating, belching and flatulence. Excluded patients were as follows: (i) Patients who had partial or complete gastrectomy or gastro-jejunostomy. (ii) Patients who had ever received *H. pylori* eradication therapy. (iii) Patients who had taken any antibiotic, colloidal bismuth compound, proton pump inhibitor in last one month[11].

Endoscopy was done by gastroenterologist with fiber-optic endoscope after overnight fast. After endoscopy, with all aseptic precaution, 3 ml of venous blood was collected from each patient. After collection, the blood was kept at room temperature for 1 hour, followed by centrifugation for 10 minutes. The serum was separated and was taken in a microcentrifuge tube and was kept at

-20^{0}C until serological tests were performed which was maximum 30 days[12]. ELISA for anti *H. pylori* IgG antibody in serum was done by commercial test kit (AccuBind anti *H. pylori* IgG ELISA, Monobind, USA).

Results

Among 86 patients, gastro-duodenal mucosa was found normal in 50 (58.14%) patients. Gastritis was found in 10 (11.63%) patients, duodenitis in 2 (2.33%) patients and reflux oesophagitis grade-1 in 4 (4.65%) patients, peptic ulcer in 15 (17.44%) patients and carcinoma of stomach in 5 (5.81%) patients.

Normal(58.14%) Gastritis(11.63%) Duodenitis(2.33)
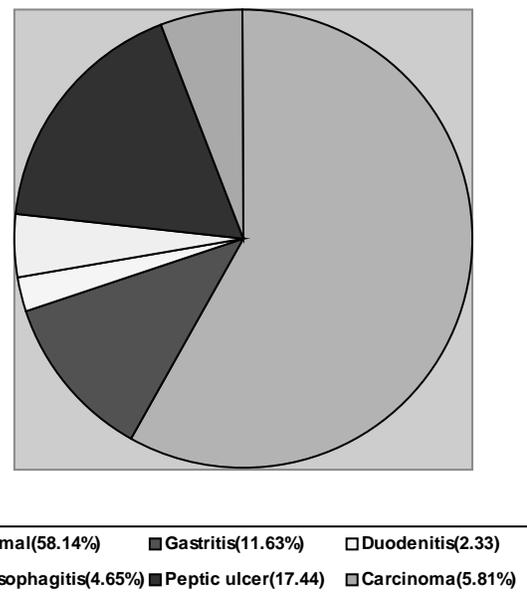R.Esophagitis(4.65%) Peptic ulcer(17.44) Carcinoma(5.81%)

Figure 3. Pie chart showing gastro-duodenal diseases diagnosed endoscopically

Table I shows endoscopically diagnosed different gastro-duodenal diseases and status of *H. pylori* infection. Among 50 normal patients, 39 (45.35%) were serum IgG ELISA positive. Of the 86 study patients, 8 (9.30%) of the 10 gastritis patients, all the 2 (2.33%) duodenitis patients, 12 (13.95%) of the 15 peptic ulcer patients, 4 (4.65%) of the 5 carcinoma of stomach patients and 3 (3.49%) of the 4 reflux oesophagitis patients were found serum IgG ELISA positive for anti *H. pylori* IgG.

Table I: Comparison of gastro-duodenal diseases at endoscopy with serum IgG ELISA (n=86)

Diseases at endoscopy	Serum IgG ELISA Positive (n=68)
Normal (n=50)	39 (45.35)
Gastritis (n=10)	8 (9.30)
Duodenitis (n=2)	2 (2.33)
Peptic ulcer disease (n=15)	12 (13.95)
Carcinoma (n=5)	4 (4.65)
Reflux-oesophagitis (n=4)	3 (3.49)
Total	68

Figures in parentheses indicate percentage

Discussion

Helicobacter pylori is one of the most common bacterial pathogens in human. They live on gastric mucosa, especially on gastric antrum. It is now accepted that *H. pylori* is the major cause of chronic gastritis and peptic ulcer disease. *H. pylori* have been found in 90% of patients with chronic gastritis, 95% with duodenal ulcer, 70% with gastric ulcer & 50% with gastric carcinoma[5]. *Helicobacter pylori* infection in children and adults is a chronic condition that may progress with or without complications.

Among the 86 dyspeptic patients, 39 (78.0%) of the 50 patients who had normal gastric mucosa during endoscopy, 7 (70.00%) of the 10 gastritis patients, 12 (80.00%) of the15 peptic ulcer patients, all (100%) the duodenitis patients, 4 (80.00%) of the 5 carcinoma stomach patients and 2 (50.00%) of the 4 reflux oesophagitis patients were *H. pylori* infected (Table.I). In a study in BIRDEM, Rahman (2005) reported that 29% of the endoscopically normal patients, 75% gastritis patients, 78.6% peptic ulcer patients, 25% carcinoma of stomach patients and 50% of reflux oesophagitis patients were *H. pylori* infected. In another study, Chen TS el al reported that out of 170 cases, 34 with normal endoscopic findings, 62 with gastritis, and 57 were duodenal ulcers, 5 with gastric ulcers, 2 with combined ulcers and 10 with other findings. Based on proposed gold standard 61.76% were *H. pylori* infected[13-14]. It has been reported by different authors that 50-90% of normal people are infected by *H. pylori* [15].

The normal findings of stomach mucosa among the symptomatic patients who were infected by *H. pylori* might be due to the fact that there might be some early changes in stomach mucosa which were yet to be detected by endoscopy. Alternatively dyspeptic symptoms (NUD) among this group might be due to the reasons other than *H. pylori* infection[13]. Non-ulcer dyspepsia (NUD), also called functional dyspepsia, is a disordered of the upper gastrointestinal tract present for more than three months. Common symptoms include upper abdominal pain, nausea, and bloating. NUD occurs more frequently in younger patients (<25 years of age) and is equally present in men and women.

In our present study, for dyspeptic patients with *H. pylori* infection there was no difference in antibody levels of the normal mucosa, gastritis, peptic ulcer. This is in accordance with the study by Sharma et al who reported that *H. pylori* serology cannot be used to predict the presence or absence of gastroduodenal ulcer disease[16]. Similarly, Sheu et al reported no difference in antibody levels between non-ulcer and ulcer subgroups[17].

In conclusion, levels of *H. pylori* IgG antibody in the serum do not predict the presence of macroscopic gastroduodenal diseases in *H. pylori* infected dyspeptic patients.

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