

# Prevalence of Helicobacter Pylori Infection among Adults undergoing Gastrointestinal Endoscopy

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**Abstract:** ***Aim:** To determine the prevalence of H.pylori infection in adults undergoing oesphagogastroduodenoscopy by two different methods, serology (ELISA technique) comparing it with histopathology. **Material and Methods:** Forty patients attending surgery OPD of a tertiary care hospital for GI endoscopy were involved in this study. Their biopsies and sera were sent to Histopathology and Microbiology department respectively for detection of Helicobacter pylori. **Results:** H. pylori Ab(IgG) was detected in the sera of 25(63%) patients by ELISA, 15 (37.50%) of them showed H.pylori in their biopsies also by Giemsa stain. Most patients with detectable antibodies to H.pylori were those with chronic gastritis; however patients complaining from reflux oesophagitis showed significant absence of this Ab. **Conclusion:** In view of the better results obtained for invasive vs non-invasive test, for a more accurate diagnosis, it is advisable not to solely rely on non-invasive methods of Helicobacter pylori diagnosis.*

**Keywords:** Endoscopy, ELISA, Helicobacter pylori

## 1. Introduction

Helicobacter pylori was brought to the world's attention 1983 by Warren and Marshall, it is now acknowledged that H.pylori gastritis is one of the most common human bacterial infectious disease and is causally linked with gastritis, peptic ulcer disease, gastric adenocarcinoma, and gastric B.cell lymphoma.(1)

H.pylori is a slow growing, microaerophilic, highly motile, Gram negative spiral organism whose most striking biochemical characteristic is the abundant production of urease enzyme which is an important indirect marker of the organism's presence because it is the bases of biopsy, rapid urease test, the urea broth test and an antigen for serologic detection.

The prevalence of H.pylori among healthy individuals varies depending on age, socioeconomic class and country of origin. In developing countries children are typically infected by age 10 years, whereas in developed countries there is an age related increase in prevalence (1, 2). The major risk factor for infection is the socioeconomic status of the family during childhood as reflected by number of persons in a house hold, sharing a bed, and absence of a fixed hot water supply all of which probably are markers for the level of sanitation and household hygiene (3, 4, 5).

It is not known how often an acute infection with H.pylori spontaneously clears. Studies in children suggest that spontaneous loss of infection may be common (6). Infection in adults appears to be typically long lived and is probably life long.(7). Most infected individuals have chronic active, non atrophic superficial gastritis. This histological form is usually asymptomatic but may be associated with duodenal ulcer; chronic atrophic gastritis, gastric adenocarcinoma or gastric lymphoma. (6, 7) Diagnostic tests for H.pylori can be divided into those that do and do not require samples of gastric mucosa. Mucosal biopsy for histological examination of the specimen for the presence of H.pylori has been the diagnostic method of choice until recently.

To increase the diagnostic yield, use of large cup biopsy and 3 samples biopsy (lesser curve angularis, greater curve prepyloric and greater curve body) examined by both Giemsa stain as a standard stain and hematoxylin & eosin stain which is excellent to determine histologic chronic or chronic active gastritis and demonstrates H.pylori if large number of organisms are present (1, 6). Biopsies may also be tested for the presence of urease enzyme production by agar gel slide test such as rapid urease test which is excellent for screening for the presence of H.Pylori in patients with peptic ulcer.

Tests that do not require a mucosal biopsy include serologic tests as urea broth test, detection of circulating IgG Ab response elicited in chronic H.pylori infection by ELISA as test for IgA and IgM are unreliable (7). Serologic test are sensitive and specific as biopsy based methods. However they are not useful for the initial diagnosis of H, pylori infection and also not to confirm infection cure as less than 20% of the antibody titer fall in the first 6 months.(6, 7).

## 2. Material and Methods

This study was carried on patients attending surgery OPD at tertiary care hospital, 40 patients were enrolled of age range 18-70 years who were referred for different reasons to do endoscopy. They were subjected to questionnaire for medical and surgical history; biopsies taken from all patients were immediately placed in 10% formalin and were sent for histopathology examination and also for detection of H.pylori by Giemsa stain.

2ml of blood was aspirated from each patient and 20 healthy control group were also sent to Microbiology department for detection of H.pylori antibodies (IgG type) in their sera by using ELISA technique which is a sandwich assay with two immunological steps, the first leads to capture of H.pylori antibody and the second binding anti H.pylori enzyme labeled antibody (conjugate) to Ag - Ab complex and the intensity of coloration measured which is proportional to Ab

concentration in the sample and standard (using cut off value of >1.1 for their titer to be sero-positive).

### 3. Results

A total 60 adults were included in this study 40 patients group and 20 healthy control groups. Patients age ranges (18-70) years; 18 females and 22 male .H.pylori IgG antibodies were detected by ELISA in 10 females (55.6%), 15 males (68.20%) with no significant differences as shown in table no.1.

**Table 1:** Seroprevalence of H. pylori antibodies by gender

Gender	Number (%)	H.pylori Abs +ve in%	H.pylori Abs -ve in %
Male	22 (55%)	15 (68.20%)	07 (31.82%)
Female	18 (45%)	10 (55.6%)	08 (44.4%)
Total (%)	40 (100%)	25 (62.50%)	15 (37.50%)

P value =0.412

All patients enrolled in this study complained of epigastric pain for various periods with other associated symptoms as nausea, vomiting, burning sensation that showed high percentage of H.pylori antibodies in their sera though not significant; while p.value was <0.05 in patients complaining of gases as shown in table no.2.

**Table 2:** H.pylori Abs. in comparison to symptoms

Symptoms	H.pylori detectable	H.pylori undetectable	P value
Nausea	18 (72.0%)	07(28.0%)	0.109
Vomitting	17 (73.9%)	06(26.1%)	0.083
Weight loss	04 (66.7%)	02(33.3%)	0.819
Dysphagia	04 (66.7%)	02(33.3%)	0.819
Gases	18 (90.0%)	02(10.0%)	*0.0003
Burning sensation	25 (65.8%)	13(34.2%)	0.061
Diarrhea	02 9(66.25)	01(33.3%)	0.877
Haematemesis	00 (0%)	01(100%)	0.191

P value < 0.05

Regarding endoscopy findings of patients with gastritis showed the highest % of H. pylori Ab in their sera while H.pylori Abs were significantly absence in the sera of patients with reflux oesophagitis as shown in table no.3.

**Table 3:** Comparison of H. pylori findings between ELISA & endoscopy

Endoscopy Findings	H. pylori Ab detectable	H. pylori Ab undetectable	P value
	No. (%)	No. (%)	
Gastritis	14 (63.3)	7 (36.8)	0.367
Reflux Oesophagitis	4 (33.3)	8 (66.7)	0.013 *
Deuodenitis	3 (75.0)	1 (25.0)	0.103
Deuodenal ulcer	7 (87.5)	1 (12.5)	0.003*
Gastric ulcer	1 (50.0)	1 (50.0)	0.708
Hiatus hernia	1 (100.0)	0	

\* P value< 0.05

Considering histopathological detection of H. pylori by Giema stain as standard test. 15 (37.50%) patients showed H. pylori on biopasy by Giemsa stain while 25 (62.50% ) patients showed presence of H. pylori IgG Ab. in their sera by ELISA as shown in table no. 4.

**Table 4:** H.pylori Ab. in relation to H. pylori in biopsy

		H.pylori in biopsy seen	H.pylori in biopsy not seen	Total (%)
H. pylori Ab. detectable	No. (%)	14(56.00%)	11(44.00%)	25(100%)
H. pylori Ab. undetectable	No. (%)	01(6.70%)	14(93.3%)	15(100%)
Total	No. (%)	15(37.50%)	25(62.50%)	40(100%)

P=0.002

In comparison to healthy controls, H. pylori Abs were detected in 25 (63.22%) symptomatic patients and 8 (40.0%) asymptomatic healthy individuals as shown in table no.5.

**Table 5:** Detection of H.pylori Ab. in symptomatic and asymptomatic individuals

Group	H.pylori Ab. detectable	H.pylori Ab.undetectable	Total
Symptomatic (patients)	25(63%)	15(37%)	40(100%)
Asymptomatic (controls)	08(40%)	12(60%)	20(100%)

P=0.099

### 4. Discussion

In agreement with other study we found no significant differences in seropositivity between male and females regarding H.pylori infection. (8) Patient infected with H.pylori complains mainly of epigastric pain, nausea, vomiting, and gases and may describe heart burn, dysphagia and weight loss; however there is conflicting data on whether patient symptoms correlate to H.pylori infection? Some say yes (9) and some say no (10).

Most patients with gastritis had detectable H, pylori Abs in their sera that confirms that primary cause of peptic ulcer in 70-90% of cases is gastritis caused by Helicobacter pylori infection especially atrophic gastritis in the antrum of the stomach .WHO presented a consensus statement that H.pylori infection is the main risk factor in developing of gastric cancer.(11) The study revealed a significant decrease in H.pylori Ab detection in patients with reflux esophagitis (R.O) which might confirm the increased risk of oesophagitis after H.pylori eradication therapy. (12)

Most studies in adults show high sensitivity and specificity of serological detection of H.pylori Ab IgG type also it has important advantage over endoscopy-based methods for large population epidemiologic studies because it is non invasive and easily employed (13). In our study 25 adults were sero positive but 11 of them were negative by histopathology.

Some of these patients might have recovered from H.pylori infection and the positive antibody test result might have been due to the presence of convalescent antibodies. Other suggest that biopsy should be taken not only from antral area but also from the body of the stomach as H.pylori colonization at times is less dense and has different distribution (antrum versus body predominant) that may increase the number of serological positivity and may affect the accuracy of ELISA test. In addition, our observation is constant with the hypothesis that says H.pylori may be no longer detected in tissues in the presence of gastric atrophy. (14).

Patients with positive serological test for H.pylori are more likely to have history of peptic ulcer disease .The national institute of health consensus development panel affirmed the link between eliminating H.pylori decreases the rate of ulcer recurrence (15).

## 5. Conclusion

Most patients with gastritis had detectable Ab in their sera. However the study revealed significant decrease in H.pylori Ab detection in patient's sera with reflux oesophagitis (R.O). Based on the results provided by this study for invasive vs non-invasive test, for a more accurate diagnosis, it is advisable not to solely rely on non-invasive method of H.pylori diagnosis. But the general point is that in almost all studies, biopsy-based methods are preferred over other methods; and none of these methods can be considered as the gold standard alone. Thus, simultaneous utilization of biopsy-based and non-invasive methods is recommended for H. pylori infection confirmation.

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