

**Study Prevalence of Helicobacter Pylori Infection in Cases of Dyspepsia****Brajesh Kumar Suman<sup>1</sup>, Shivendu<sup>2</sup>, Manoj Kumar Chaudhary<sup>3</sup>**<sup>1</sup>Senior Resident, Department of General Medicine, IGIMS, Patna<sup>2</sup>Senior Resident, Department of General Medicine, IGIMS, Patna<sup>3</sup>Associate Professor, Department of General Medicine, IGIMS, Patna

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**Abstract:**

**Background and Objectives:** Dyspepsia is a chronic or recurrent pain or discomfort centered in the upper abdomen; patients with predominant or frequent (more than once a week) heartburn or acid regurgitation, should be considered to have gastro esophageal reflux disease (GERD) until proven otherwise. Helicobacter pylori, a curved rod shaped bacterium, has been consistently associated with patients having acid peptic diseases, which plays a major role in its etiopathogenesis. In a developing country like India where Helicobacter pylori infection is linked between genetic predisposition, hygiene and sanity; therefore, we have attempted to study the prevalence of H. pylori infection in dyspepsia among Indian patients in our hospital.

**Methods:** Hundred cases of dyspepsia, studied clinically, were subjected to upper gastro-intestinal endoscopy under topical anaesthesia, during which biopsies, from the pathological areas were taken. Biopsy specimens were immediately inoculated into freshly prepared urea broth containing phenol red as the indicator. Positive test for Helicobacter pylori was indicated by change in colour of the medium from yellow to pink or red. The other biopsy specimens were sent for routine histopathology and special staining with Giemsa stain.

**Conclusion:** H. Pylori is consistently associated with patients of acid peptic disease and has a high prevalence in cases of ulcer dyspepsia than non-ulcer dyspepsia.

**Keywords:** Dyspepsia; Acid peptic disease; Helicobacter pylori; Urease; Giemsa; peptic ulcer; Non-ulcer dyspepsia.

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**Introduction**

Dyspepsia is a chronic or recurrent pain or discomfort centered in the upper abdomen; patients with predominant or frequent (more than once a week) heartburn or acid regurgitation, should be considered to have gastro esophageal reflux disease (GERD) until proven otherwise. [1] Helicobacter pylori, a curved rod shaped bacterium, has been consistently associated with patients having acid peptic diseases, which plays a major role in its etiopathogenesis and high incidence of morbidity. [2] The increased risk of H. pylori infection in Chinese and Indians points to either an inherent genetic predisposition or to socio-cultural practices peculiar to the particular race which may be responsible for transmission of the infection. [3] Several studies have revealed the association of Helicobacter pylori in 70-75 percent of patients with dyspepsia. Endoscopic studies have shown that, Helicobacter pylori is found in 80-100 percent of patients with duodenal ulcers and 60-75 percent of patients with gastric ulcers. [2-4] Amidst these profound variations proposed by different studies, and different etiologies for dyspepsia like NSAIDs induced, stress induced, H. pylori infection is also another important risk factor for dyspepsia. Published studies show conflicting

results about the prevalence of H. pylori infection among Indian patients and of other countries due to link between genetic predisposition and hygiene and sanity in a developing country like us; therefore we have attempted to study the prevalence of H. pylori infection in dyspepsia among Indian patients in our hospital [5].

**Objectives**

To estimate the prevalence of Helicobacter pylori infection in patients with dyspepsia undergoing upper gastrointestinal endoscopy.

To determine the association of Helicobacter pylori infection with acid peptic diseases.

**Material and Methods**

All the patients presenting to Medicine Department and Medical Gastroenterology department at Indira Gandhi Institute Of medical Sciences, Patna. and who satisfy the inclusion criteria were studied Hundred Cases of dyspepsia who attend the Medicine OPD were asked for participating in the study. Informed written consent was taken from all

the subjects. A pre structured Proforma was used to collect the baseline data.

#### Inclusion Criteria

1. Patients between 18 to 60 years of age.
2. Patients who have chronic upper abdomen pain.
3. Patients having symptoms of dyspepsia such as early satiety, postprandial fullness, burning sensation in chest.
4. Patients diagnosed as chronic gastritis, gastric or duodenal ulcers on Gastroduodenoscopy.

#### Exclusion Criteria

1. Pregnant and lactating women.
2. Patients on proton pump inhibitors.
3. Patients who are a known case of chronic pancreatitis.

Patients who are on NSAIDs for greater than one month of duration After applying the inclusion and exclusion criteria, all the patients underwent upper gastro- intestinal endoscopy. According to the endoscopy findings, the patients were divided into following groups.

1. Non ulcer dyspepsia:
  - a. Normal study
  - b. Gastritis / Duodenitis
2. Ulcer dyspepsia:
  - a. Duodenal ulcer
  - b. Gastric ulcer

All the patients in this study group, both inpatient and outpatient underwent upper gastro- intestinal endoscopy under topical anesthesia. The patients asked to fast for 12 hours prior to the procedure. Only a few patients were given 5 to 10 mg diazepam

intravenously for sedation depending on the preference of the consultants. The upper gastro-intestinal endoscopy was conducted with pentax 29P (figure 1), flexible, fibro optic endoscope with patients in left lateral positions. The other section of the biopsy specimen were dewaxed and taken to water and then incubated in 2 % Giemsa solution in D-water for 30 minutes at room temperature. After rinsing in tap water, the sections are quickly dehydrated through ethanol solution before being cleared with xylene and examined for the presence of Helicobacter Pylori. Histopathology test was given as positive when Helicobacter pylori were detected by routine haematoxylin & eosin stain and / or Giemsa stain.

#### Results

Out of 100 patients, there were 75 male patients and 25 female patients, age ranging from 18 to 60 years (mean 39.25). Out of 100 patients, 68 patients were diagnosed to have infected with helicobacter pylori (68%). All these patients presented to our hospital with upper abdominal pain or discomfort. Patients presented with nausea and vomiting were 94, out of which 65 patients were positive for H. Pylori infection, 15 patients had Hematemesis, out of which 12 patients were infected for H. Pylori infection; 8 patients had history of weight loss and 7 patients were positive for H. Pylori. On examination 6 patients were anaemic, out of which 5 were positive for H. Pylori; 42 patients had Epigastric tenderness on palpation and 3 were having mass per abdomen, out of which 35 & 2 patients were positive for H. Pylori respectively.

Total 100 subjects.

Mean age was 39.25 years with standard deviation of 10.87 years. (Range: 18 to 60 years)

**Table 1: Age distribution of the study participants (N=100)**

Age categories	Number participants	Mean age (in years)	Standard Deviation
18-30 years	27	25.44	3.31
31-40 years	27	35.93	2.48
41-50 years	31	46.45	2.63
51-60 years	16	55.2	3.49

**Table 2: Distribution of H. pylori infection based on type of endoscopic findings (N=100)**

Endoscopic finding	H. pylori present		H. pylori absent		Total	
	N	%	N	%	N	%
Ulcer dyspepsia	51	(85.0)	9	(15.0)	60	(100.0)
Non ulcerdyspepsia	17	(42.5)	23	(57.5)	40	(100.0)
<b>Total</b>	68	(68.0)	32	(32.0)	100	

Total patients presenting with ulcer dyspepsia were 60 in which 51 patients (85%) were positive for H. pylori and out of 40 patients with non-ulcer dyspepsia 17 patients (42.5%) were positive for H. pylori.

**Table 3: Type of endoscopic findings among patients with dyspepsia based on gender(N=100)**

Endoscopic findings	Male		Female		Total	
	N	%	N	%	N	%
Ulcer dyspepsia	41	(68.3)	19	(31.7)	60	(100.0)
Non ulcer dyspepsia	34	(85.0)	6	(15.0)	40	(100.0)
<b>Total</b>	<b>75</b>	<b>(75.0)</b>	<b>25</b>	<b>(25.0)</b>	<b>100</b>	

Twenty eight patients (90.3%) were positive for H. pylori out of 31 patients having duodenal ulcer. On Chi square test,  $\chi^2=11.87$ ,  $p<0.01$ , hence there is a significant association of Helicobacter pylori with duodenal ulcers. Seventeen patients (77.3%) were positive for H. pylori out of 22 patients having gastric ulcer. On Chi square test,  $\chi^2 = 1.11$ ,  $p>0.01$ , hence there is no significance. Six (85.7%) out of 7 patients of carcinoma stomach were found positive for H. pylori,  $p>0.01$ , hence there is no significant

association of H. pylori with carcinoma stomach. Nine (52.9%) out of 17 patients of gastritis were found positive for H. pylori, Chi square test,  $\chi^2=2.13$ ,  $p>0.01$ , hence there is no significant association of H. pylori with gastritis. Eight (66.7%) out of 12 patients of duodenitis were found positive for H. pylori, Chi square test,  $\chi^2=2.13$ ,  $p>0.01$ , hence there is no significant association of H. pylori with duodenitis.

**Table 4: Comparison of Rapid Urease Test with Histo-Pathological Examination for the diagnosis of H. pylori infection**

	Histo-Pathological Examination				Total	
	H. pylori present		H. pylori absent		N	%
	N	%	N	%		
H. pylori present RUT	35	(51.5)	0	(0.0)	35	(35.0)
H. pylori absent by RUT	33	(48.5)	32	(100.0)	65	(65.0)
<b>Total</b>	<b>68</b>	<b>(100.0)</b>	<b>32</b>	<b>(100.0)</b>	<b>100</b>	

Sensitivity of RUT: 51.7%, Specificity of RUT: 100%

### Discussion

After the discovery of Helicobacter Pylori by Marshall and Warren in 1983, many studies were conducted to confirm the association of Helicobacter Pylori with various acid-peptic diseases and carcinoma stomach [6]. The following observations were made:

The treatment of H. Pylori led to the reversal of gastritis in patients with chronic nonspecific gastritis.

The eradication of H. Pylori decreases the relapse of ulcer dyspepsia to 1-3% when compared to 80% relapses in patients with persistent H. Pylori infections after medical management [7]. In spite of the above findings, the cause and the effect relationship between H. Pylori and peptic ulcer disease is not proved and furthermore many people infected with H. Pylori did not develop peptic ulceration. The association of H. Pylori with non-ulcer dyspepsia is controversial. Therapeutic trials in non-ulcer dyspepsia patients with H. Pylori infections produced conflicting results [8]. Thus at this stage in the history of acid-peptic disease and its association with H. Pylori, the causation or

association between the two is still unclear. Thus we at the, Department of Medicine, IGIMS, Patna, have made a sincere attempt to explore the possibility of association between H. Pylori and ulcer dyspepsia

and its contribution to non-ulcer dyspepsia. We have also compared our studies with other studies done previously. In the present study, the overall positivity of H. Pylori was 68 out of 100 patients. The incidence of H. Pylori is higher in patients with ulcer dyspepsia when compared to patients with non-ulcer dyspepsia. This result is comparable to those of other studies. Patients of duodenal ulcer were found to be positive for H. pylori were 90.3% and on chi square testing p value was significant which showed that H. pylori infection is highly associated with duodenal ulcers when compared to gastric ulcer [9]. Helicobacter pylori mainly colonizes in the gastric antrum but its association more with duodenal ulcers is not clearly explained. This might be because of the hyperacidic conditions of the duodenum which offers a favorable environment for the organism to thrive. In 68 patients positive for H. pylori; 51 (85%) patients had ulcer dyspepsia and the other patients with non-ulcer dyspepsia were 17 (42.5%) [10]. The development of ulcers in these patients may be because of infection with virulent strains of H.pylori. In non-ulcer dyspepsia patients with duodenitis had high prevalence of dyspepsia compared to patients with gastritis and normal study [11]. It was also observed that male patients were more affected with H. pylori positive ulcer dyspepsia compared to female patients; this might be because of increased smoking habits, decreased hygiene and sanitation habits. In our study rapid urease test had sensitivity of 51.7% and specificity of 100% when compared with histopathology. [12]

## Conclusion

This was a cross sectional study conducted to determine the role of H.Pylori in acid- peptic diseases. This study design was based on clinical study and endoscopic biopsy of gastric mucosa (and duodenal mucosa whenever necessary) in 100 patients with a history of dyspepsia. Endoscopy confirmed the diagnosis. Rapid urease test and Giemsa staining were conducted on endoscopy biopsy specimens and H.Pylori positivity was based on either Rapid urease test and/or histopathological examination was positive.

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