PREVALENCE OF HELICOBACTER PYLORI INFECTION IN PATIENTS PRESENTING WITH DYSPEPTIC SYMPTOMS IN AND AROUND KANCHIPURAM

Gastroenterology

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ABSTRACT

AIMS AND OBJECTIVES: 1. To study the prevalence of Helicobacter pylori infection in patients undergoing endoscopy with biopsy for dyspeptic symptoms in a tertiary care teaching hospital.
2. To study the correlation between endoscopic and rapid urease testing (RUT)/histopathologic findings in these patients.
MATERIALS AND METHOD: A prospective study with 130 patients presenting to the Medical Gastroenterology OPD at Meenakshi Medical College Hospital and Research Institute, Kanchipuram, with complaints of dyspepsia. The study extended over a 2-year period, from August 2012 to July 2014. Patients were selected based on the inclusion and exclusion criteria.
RESULTS AND CONCLUSIONS: A total of 130 patients were enrolled in this study, the majority of whom were males (n=78), and who presented with dyspeptic symptoms underwent OGD with gastric biopsies for RUT as well as histopathology for dectection of H.pylori. The endoscopic findings of each patient were correlated with RUT and/or histology. Out of the 130 patients, 101 (77.69%) tested positive for H.pylori (either RUT or histology for H.pylori or both were positive). Histology of gastric biopsy specimen was positive for H.pylori in 103 patients and 101 patients tested positive for RUT. In our study, RUT was as sensitive as histology for detection of H.pylori infection.

KEYWORDS

Helicobacter pylori, RUT, dyspepsia, histology

INTRODUCTION:

Dyspepsia is characterized by chronic or recurrent burning discomfort in the upper abdomen and includes gastroesophageal reflux, peptic ulcer disease, and non-ulcer dyspepsia. (1) The four symptoms i.e. epigastric pain, epigastric burning, early satiation, and bothersome postprandial fullness are considered to be more specific for a gastroduodenal origin. (2)

H. pylori, a curved rod shaped bacterium, is probably the most common human infection which has been consistently associated with patients suffering from acid peptic diseases, both in ulcer as well as non-ulcer dyspepsia. Many studies have revealed the association of Helicobacter pylori in up to 70% of patients with dyspepsia. (3, 4) We have attempted to study the prevalence of Helicobacter pylori in patients presenting with dyspeptic symptoms who underwent esophagogastroduodenoscopy at our hospital and to correlate its association with the endoscopic findings in these patients

MATERIAL AND METHODS:

The study was carried out at the Department of Medical Gastroenterology, Meenakshi Medical College Hospital and Research Institute, Kanchipuram.

One hundred and thirty consecutive adult patients with dyspeptic symptoms undergoing endoscopy from August 2012 to July 2014 were recruited after obtaining informed consent from them. Patients who were previously treated for H. pylori infection or who had received antibiotics, proton pump inhibitors or bismuth compounds in the preceding 4 weeks were excluded as were patients with abnormal coagulation profile, chronic liver disease, and pancreatitis. Baseline bio-data was obtained from each patient.

Esophagogastroduodenoscopy (EGD) was performed on all the participants using Olympus or Pentax forward-viewing oesophagogastroduodenoscope. Endoscopic features of each patient were recorded. As per recommendations, biopsies were obtained from cardia (greater curvature), antrum (greater curvature), incisura angularis, and first part of duodenum. (5) A diagnosis of H.pylori was made when either histology or RUT or both of these tests were positive.

RAPID UREASE TEST (RUT): Two of the four antral biopsies taken from each patient were used immediately for RUT (containing urea and phenol red indicator). If the urease enzyme of H. pylori is present in the tissue sample, the resulting decomposition of urea to CO_2 and NH_3 causes the pH to rise, and the color of the solution turns from yellow to a bright magenta. Color change from yellow to magenta was considered a positive result while no color change was regarded as negative.

HISTOLOGY: The other two antral biopsies were fixed in 10% formaldehyde and transferred to the histopathology laboratory for processing. Four micron thick paraffin sections were stained with routine hematoxylin and eosin for detection of H.pylori Giemsa stain was also used for better yield. Slides were examined microscopically for H. pylori by the pathologist. Presence of Helicobacter-like organisms was regarded as positive while absence was regarded as negative.

OBSERVATION AND RESULTS:

ANALYSIS OF RESULT: The IBM SPSS 20.0 was used to analyze the data and Microsoft word has been used to generate tables.

Our study included a total of 130 patients presenting to Medical Gastroenterology OPD of Meenakshi Medical College Hospital and Research Center with symptoms of dyspepsia and who underwent oesophagogastroduodenoscopy with biopsy. Out of the 130 patients, 101 tested positive for RUT and 103 patients showed H.pylori on histologic examination.

Of the total 130 patients, 78 (60%) were males and 52 (40%) females.

Table 1. Sex distribution in cases

Sex	Frequency	Percent	Cumulative percent
Male	78	60	60
Female	52	40	100
Total	130	100	

The age in our study population ranged from 18 to 77 years. The majority of the cases were in the age group of 21 to 60 years.

Table 2. Age distribution of patients

Age group(in years)	Number of patients	Percent	Cumulative percent
Less than 20	6	4.6	4.6
21-30	23	17.7	22.3
31-40	34	26.2	48.5
41-50	28	21.5	70.0
51-60	22	16.9	86.9
61-70	13	10.0	96.9
71-80	4	3.1	100
Total	130	100.0	

Table 3. Symptom profile of patients with dyspepsia

Chief Complaint	Frequency	Percent
Epigastric burning	46	35.4
Epigastric pain/discomfort	38	29.2
Belching	19	14.6
Postprandial fullness	14	10.8
Early satiety	7	5.4
Vomiting	4	3.1
Nausea	2	1.5
Total	130	100

Of the total 130 cases in our study group who were subjected to oesophagogastroduodenoscopy, duodenal ulcer was the most common endoscopic finding noted in 37 patients (28.4%). Erosive gastritis was observed in 21 patients (16.2%) while atrophic gastritis was diagnosed in 17 patients (13.1%), gastric ulcer in 11 patients (8.5%), gastric cancer in 8 patients (6.1%), GERD in 7 patients (5.4%). Twenty nine patients were diagnosed as having nonulcer dyspepsia (normal endoscopic study).

Table 4. Findings on endoscopy in the study population

Endoscopic findings	Frequency	Percent
Duodenal ulcer	37	28.4
Erosive gastritis	21	16.2
Atrophic gastritis	17	13.1
Gastric ulcer	11	8.5
Gastric cancer	8	6.1
GERD	7	5.4
Normal study	29	22.3
Total	130	100

All of the patients who carried an endoscopic diagnosis of either duodenal ulcer, gastric ulcer, or gastric cancer had RUT positivity. Only 9 out of the 29 patients with normal endoscopic study tested positive for RUT and were labeled as having nonulcer dyspepsia. RUT positivity was also high in patients with erosive gastritis and atrophic gastritis.

Table 5. Correlation between endoscopic findings and RUT

ENDOSCOPY FINDINGS	RAPID UREASE TEST		
	NEGATIVE	POSITIVE	TOTAL
Duodenal ulcer	0	37	37
Erosive gastritis	4	17	21
Atrophic gastritis	3	14	17
Gastric ulcer	0	11	11
Gastric cancer	0	8	8
GERD	4	3	7
Normal study	20	9	29
Total	31	99	130

Histology of the gastric biopsy specimen was positive for H. pylori in 103 patients. As with RUT, patients with an endoscopic diagnosis of duodenal ulcer, gastric cancer, and gastric showed 100% positivity for H.pylori on histology.

Figure 6. CORRELATION BETWEEN ENDOSCOPIC FINDINGS AND HISTOLOGY

ENDOSCOPY FINDINGS	HISTOLOGY		
	NEGATIVE	POSITIVE	TOTAL
Duodenal ulcer	0	37	37
Erosive gastritis	3	18	21
Atrophic gastritis	1	16	17
Gastric ulcer	0	11	11
Gastric cancer	0	8	8
GERD	4	3	7
Normal study	19	10	29
Total	27	103	130

In our study, RUT was noted to be as sensitive as histology for detection of H.pylori infection and missed out only four patients who very positive for H.pylori on histology.

DISCUSSION:

H*elicobacter pylori* infection is common in the Indian subcontinent. Exposure occurs in childhood and approximately 80% of adults have been infected at some time. Sero-surveys indicate a seroprevalence of 22%-57% in children under the age of five, increasing to 80%-90% by the age of 20, and remaining constant thereafter. (6)

Our study was mainly aimed at identifying H.pylori positivity in patients presenting with dyspeptic symptoms at our tertiary referral hospital, and H.pylori prevalence was 77.69% in our study. Marshall and Warren in 1984 made an observation that 18 of the 22 (81%) patients with gastric ulcer and all the 13 (100%) patients who had duodenal ulcer tested positive for Helicobacter pylori. Even in patients with a normal upper endoscopy, 50% (8 out of 16) tested positive for Helicobacter pylori (7) The same finding was reproduced in our study with all patients who had duodenal ulcer and gastric ulcer testing positive for RUT and up to 65% of the patients with normal endoscopic finding tested positive for H.pylori.

Various epidemiological studies have shown considerable differences in the prevalence of *H pylori* infection in the population studied. The infection rate is generally higher and begins at an earlier age in developing as compared to developed countries, indicating an important role of socio-economic milieu in its transmission. Thirumurthi and Graham have estimated that the prevalence of *H. pylori* in the Indian subcontinent can be as high as 80% or more in rura areas. The most commonly recognized manifestation of H. pylori infection in India is peptic ulcer disease, particularly duodenal ulcer disease which outnumbers gastric ulcers between 8:1 and 30:1. (8) In our own study, the prevalence of H.pylori was noted to be 77.69% in patients with dyspeptic symptoms. The most common manifestation of H.pylori infection in our study was duodenal ulcer . In another study, the prevalence of *H. pylori* infection in duodenal ulcer patients has consistently been found to be between 95% and 100%. (9) The same findings were noted in our study with H.pylori being positive in 100% of the patients with duodenal ulcers.

The reported prevalence of *H. pylori* infection from various Indian centres in patients with duodenal ulcer, gastric ulcer, gastric cancer and NUD ranges from 64 to 90 per cent, 50-65 per cent, 38-62 per cent and 42-74 per cent, respectively. (10) In our study, it was 100%, 100%, 100%, and 65.5%

Our study also shows that the sensitivity and specificity of RUT is almost equal to the gold standard histology of gastric biopsies for H.pylori. The same observation was made in studies done by Tokunaga et al and Roy AD et al. (11, 12)

CONCLUSION:

H*elicobacter pylori* infection is common in the Indian subcontinent and has been consistently associated with both ulcer and nonulcer dyspepsia. Exposure to this organism occurs in childhood and approximately 80% of adults have been infected at some time. Although histology remains the gold standard, in a resource-limited setting, RUT offers a simple, rapid, and cheaper alternative that is used frequently in clinical practice for detection of H.pylori in resource limited countries like India.

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