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To study the frequency of H. pylori in patients presenting with dyspepsia at a tertiary care Hospital in western U.P

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Abstract
Aim: To study the frequency of H. Pylori in patients presenting with dyspepsia at a tertiary care hospital in Western U.P.
Material and Method: The present prospective observational study was conducted in the post graduate department of Medicine, Chhatrapati Shivaji Subharti Hospital (Meerut, U.P.) from December 2018 to August 2020. The study comprised of 200 patients. Detailed history, physical examination and all baseline investigations were carried out. All the patients recruited in this study underwent Upper Gastro Intestinal Endoscopy under topical anaesthesia. Oral lignocaine spray was given to the patients 5-10 minutes before the procedure for local anaesthetic effect. The Endoscopy was conducted with Olympus CV 150 flexible video endoscope. Helico Rapt TM Rapid Urease Test Kit was used taking spot biopsy as the specimen. The Chi-square test was used to identify differences between categorical variables and Student's t-test was used for interval variables as appropriate.
Results: The symptoms of duodenal ulcer and pangastritis were statistically significant among the H Pylori positive and H Pylori negative group. Non-diabetic patients are found to have a high prevalence (76.6%) of H Pylori infection. In this study, the comorbidity type 2 diabetes mellitus was not statistically significant among the H Pylori positive and H Pylori negative group.
Conclusion: The prevalence of H Pylori infection remains high among the study population. Further research is needed to perceive the mechanism of which sex may influence the acquisition and prolongation of infection since gender bias is a perplexing issue.

Keywords: H. pylori, endoscopy, diabetes

Introduction

Dyspepsia is generally defined as chronic or frequently recurring epigastric pain/discomfort originating in gastro-duodenal region and may be accompanied with other gastrointestinal symptoms such as nausea, belching, vomiting, postprandial fullness and early satiety [1]. Chronic dyspepsia symptoms can be unceasing, sporadic or recurrent [2]. Causal factors may include lifestyle factors like stress, alterations in gastric acid secretion, peptic ulcer disease (PUD), drugs, especially non-steroidal anti-inflammatory drugs (NSAIDs), as well as Helicobacter pylori (H. pylori) infection [3]. Helicobacter pylori (H. pylori) is a gram-negative, microaerophilic, motile, and spiral or curved bacterium found in the luminal surfaces of gastric epithelium. It has been implicated as an important agent in the pathogenesis of peptic ulcer and gastritis since its isolation by Warren and Marshal in 1983 [3, 4]. As prevalence of H. pylori infection is strongly correlated with socioeconomic condition, it is found in 80% in low and middle-income countries as compared to 20–50% in industrialised countries. It affects mainly adolescents and middle-aged adults [5]. Most patients with *H. pylori* infection will show features of both acute and chronic gastritis (chronic active gastritis).

Usually patients with uninvestigated, uncomplicated dyspepsia undergo nonendoscopic (non-invasive) methods for H. pylori infection and eradication therapy is advised for those with positive results. But non-endoscopic methods are not appropriate for patients with accompanying alarming symptoms (weight loss, persistent vomiting or gastrointestinal bleeding) or for older patients (>45 years) with new onset dyspepsia [6, 7]. This is true for developed countries, but in low and middle-income countries where H. pylori infection is high, resulting in peptic ulcer in many, it is better to diagnose it by endoscopic biopsy examination and then treat those cases whose endoscopic biopsy specimen shows evidence of H. pylori infection. Thus unnecessary side effects of the drugs and cost to patients may be averted in H. pylori negative cases.

Endoscopy of chronic dyspeptic cases not only reveals ulcer and inflammation related to H. pylori, but also leads to diagnosis of many other pathologies such as gastric cancer, gastric lymphoma, diabetic gastropathy and so on. Keeping all these options in mind, endoscopic biopsy of all patients presenting with dyspepsia shall be done. Upper gastrointestinal endoscopy (esophagogastroduodenoscopy, EGD) includes visualization of the oropharynx, esophagus, stomach, and proximal duodenum, with real-time assessment and interpretation of the findings encountered. A variety of technical and cognitive aspects must be mastered in order to perform a high-quality examination. The basic technical components of upper endoscopy also serve as the platform upon which many therapeutic interventions are based. The present study was conducted to analyse the

frequency of H. Pylori in patients presenting with dyspepsia at a tertiary care hospital in Western U.P.

Material and method

The present prospective observational study was conducted in the post graduate department of Medicine, Chhatrapati Shivaji Subharti Hospital (Meerut, U.P.) from December 2018 to August 2020. The study comprised of 200 patients. The subjects were recruited according to the following inclusion and exclusion criteria:

Inclusion Criteria

1. Patients between 18-75 years of age
2. Patients presenting with clinical features of dyspepsia:

a. Nausea, belching, vomiting,
b. Postprandial fullness
c. Early satiety
d. Epigastric pain/discomfort

Exclusion Criteria

1. Patient who did not give consent
2. Patient who were below 18 or above 75 years of age
3. Patients who received anti H. pylori treatment in the past 6 months
4. Pregnant and lactating women were excluded from the study.

Data Collection

Both OPD and IPD patients of the Hospital were recruited in the study after:-

a. Fulfilling inclusion/exclusion criteria
b. Taking Informed Consent

- Detailed history, physical examination and all baseline investigations were carried out.
- The Data was collected on a proforma.

Endoscopy

a. All the patients recruited in this study underwent Upper Gastro Intestinal Endoscopy under topical anaesthesia.
b. The patients were asked to fast for 12 hours prior to the procedure.
c. Oral lignocaine spray was given to the patients 5-10 minutes before the procedure for local anaesthetic effect.
d. The Endoscopy was conducted with Olympus CV 150 flexible video endoscope.
e. Helico Rapt TM Rapid Urease Test Kit was used taking spot biopsy as the specimen.

Statistical Analysis

The data was analysed in SPSS statistical software version 24. Descriptive statistics in the form of the mean, standard deviations and the frequency with percentages were calculated for interval and categorical variables respectively. The Chi-square test was used to identify differences between categorical variables and Student's t-test was used for interval variables as appropriate. The results were considered statistically significant when the p-value was less than 0.05.

Results

Out of the total 200 patients, 104 patients (52%) were male and 96 (48%) female. All the patients underwent upper gastrointestinal endoscopy, out of which 128 (64%) were positive, and 72 (36%) were negative for H pylori infection (graph 1). The mean age of the study population who were positive for the H Pylori test found to be 40.09±13.79 and the same for those who were negative was 37.25±11.52 years.

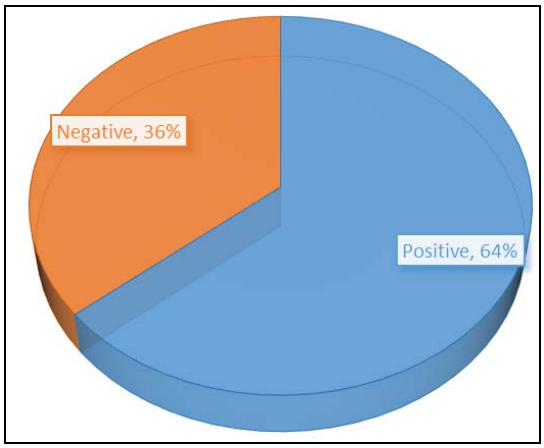

Fig 1: Pie Chart of H. Pylori distribution in the study population (N=200)

Maximum patients presented with abdominal pain (70%) followed by bloating (40%). The majority of the patients with H. pylori infection presented with abdominal pain (71.1%) followed by bloating (39.8%) whereas the least common presentation was loss of weight (11.7%). The P values obtained were not significant as shown in table 1.

Table 1: Comparison of presenting complaints with H. Pylori test (N=200)

Presenting Complaints	H. Pylori test		Total	P-value
	Positive (N=128)	Negative (N=72)		
Abdominal pain	91 (71.1%)	49 (68.1%)	140 (70%)	0.653
Bloating	51 (39.8%)	29 (40.3%)	80 (40%)	0.952
Nausea	47 (36.7%)	23 (31.9%)	70 (35%)	0.497
Belching	43 (33.6%)	17 (23.6%)	60 (30%)	0.139
Regurgitation	34 (26.6%)	20 (27.8%)	54 (27%)	0.853
Loss of weight	15 (11.7%)	5 (6.9%)	20 (10%)	0.280

The majority of the patients with H. pylori infection presented with antral gastritis (44.5%) followed by pangastritis (30.5%). The symptoms of duodenal ulcer and pangastritis were statistically significant among the H Pylori positive and H Pylori negative group with a p-value of 0.005 and 0.017, respectively (table 2).

Table 2: Comparison of endoscopic finding with H. Pylori test (N=200)

Endoscopic finding	H. Pylori test		Total	P-value
	Positive (N=128)	Negative (N=72)		
Esophagitis	1 (0.8%)	3 (4.2%)	4 (2%)	0.101
Barret's oesophagus	2 (1.6%)	3 (4.2%)	5 (2.5%)	0.258
Antral gastritis	57 (44.5%)	33 (45.8%)	90 (45%)	0.859
Pangastritis	39 (30.5%)	11 (15.3%)	50 (25%)	0.017
Erosive Gastritis	4 (3.1%)	2 (2.8%)	6 (3%)	0.890
Chronic gastritis	6 (4.7%)	0 (0%)	6 (6%)	0.062
Duodenitis	32 (25%)	15 (20.8%)	47 (23.5%)	0.505
Gastric ulcer	30 (23.4%)	11 (15.3%)	41 (20.5%)	0.170
Duodenal ulcer	34 (26.6%)	7 (9.7%)	41 (20.5%)	0.005*

*: statistically significant

The H Pylori infection was highly prevalent among non-smokers (64.8%). The P-value (P=0.138) obtained was not significant. A high prevalence (79.7%) of H Pylori infection observed among patients who are non-alcoholics, however P value obtained was not significant (0.699) as shown in table 3.

Table 3: Comparison of smokers and alcoholic with H. Pylori test (N=200)

Smoker	H. Pylori test		Total	Chi-Square	P-value
	Positive (N=128)	Negative (N=72)			
Yes	45 (35.2%)	18 (25%)	63 (31.5%)		
No	83 (64.8%)	54 (75%)	137 (68.5%)	0.138	0.138
Total	128 (100%)	72 (100%)	200 (100%)		
Alcoholic					
Yes	26 (20.3%)	13 (18.1%)	39 (19.5%)		
No	102 (79.7%)	59 (81.9%)	161 (80.5%)	0.699	0.699
Total	128 (100%)	72 (100%)	200 (100%)		

Non-diabetic patients are found to have a high prevalence (76.6%) of H Pylori infection. In this study, the comorbidity type 2 diabetes mellitus was not statistically significant among the H Pylori positive and H Pylori negative group (table 4).

Table 4: Comparison of Diabetes with H. Pylori test (N=200)

Diabetic	H. Pylori test		Total	Chi-Square	p-value
	Positive (N=128)	Negative (N=72)			
Yes	30 (23.4%)	13 (18.1%)	43 (21.5%)		
No	98 (76.6%)	59 (81.9%)	157 (78.5%)	0.791	0.374
Total	128 (100%)	72 (100%)	200 (100%)		

Discussion

In low and middle-income countries where H. pylori infection is high, resulting in peptic ulcer in many, it is better to diagnose it by endoscopic biopsy examination and then treat those cases whose endoscopic biopsy specimen shows evidence of H. pylori infection. Thus unnecessary side effects of the drugs and cost to patients may be averted in H. pylori negative cases.

The frequency of H Pylori was significantly high in our study; 128 (64%) patients were found to be positive among the participants. This is similar to study conducted by Agarwal PK[8] in Northern India, in which 100 patient were tested with 85% being positive. The findings in our study are in concordance with studies conducted by Talley NJ[9], Nouraie M *et al* [10] and Perri F *et al* [11].

In the present study, total 128 patient (64%) were positive, out of which 64 (50%) were male and 64 (50%) were female. We did not get a significant difference in H. Pylori prevalence according to gender. This is in concordance with the study results of Niknam R [2], S.Adlekha [12], Tarkhashvili *et al* [13] and Shokrzadeh *et al*[14]. In contrast a study by Kaore *et al* [15] showed higher prevalence in male gender. Our study is consistent with Mandal *et al* [16] findings without any statistical significance in age and gender of H Pylori infection.

Out of the 200 patient who were enrolled in the study, maximum presented with abdominal pain (70%) followed by bloating (40%). Least common presentation among the selected patients was loss of weight (10%). These results were similar to observations by Khoder G [17] in which 350 people were tested, among them abdominal pain was the most common. In a study by Agarwal PK[8] 100 people were tested, in them most common presenting complaint was abdominal pain followed by bloating. The difference in the proportion of nausea and regurgitation between gender was statistically significant (P value 0<0.05).

In this study, antral gastritis (45%) was the frequently observed endoscopic finding, followed by pangastritis (25%). The results were similar to a study conducted by Dhakal OP [18]; Gastritis was the most common endoscopic finding similar to that found in south India [12]. Their study showed a higher prevalence of antral gastritis as compared to fundal, corpus or pangastritis. Al-Humayed SM[1] conducted a study with 1607 participants. All of them underwent endoscopy. Majority of the participants had gastritis, 676 (42%) and 243 (15%) had duodenal ulcer; these results were in concordance with our study. 208 patients were tested in a study conducted by Ayana SM [19], the most common endoscopic finding among the study population was gastritis (61.1%); as observed in our study. It was appealing that among the H Pylori positive cases, the most common endoscopic finding was duodenal ulcer (26.6%), and it was statistically significant with a P<0.01. This is in accordance with the study conducted by Adlekha S *et al* [12], which demonstrates that changes in endoscopic reports to be a subtle sign for H Pylori infection.

In this study, H Pylori infection is more prevalent (64.8%) among non-smokers, and this is in concordance with results of the study conducted by Ogihara A *et al* [20], which asserts that smoking has a negative association with H Pylori infection. A linear reduction of risk for H Pylorisero positivity was observed with cigarette consumption per day.

Contrary to the hypothesized association of alcoholism as a risk factor for H Pylori infection [21], this study demonstrates a significantly higher number of H Pylori infections were found in non-alcoholic patients. However, this is in

accordance with a survey conducted by H. Brenner *et al*., which included 1785 participants aged 18-88 years. An inverse relation between alcohol consumption and H Pylori infection was observed in their study. Their results even reinforce that moderate alcohol consumption may ease the eradication of H Pylori infection [22].

Demir M [23] conducted a study which consisted of 141 diabetic (type 2 DM) and 142 non-diabetic subjects with upper gastrointestinal symptoms. All patients underwent upper gastrointestinal endoscopy**.** The prevalence of H. pylori infection was 61.7% and 58.5%, respectively, among type 2 diabetic patients and nondiabetic controls and was not statistically significant (P = 0.577). The prevalence of H. pylori infection did not differ significantly between the diabetic patients and nondiabetic controls. This was similar to what we observed in our study. The majority of the H Pylori positive cases were found among the non- diabetic patients of the study population. However, it is contradictory to the results of a meta-analysis carried out by Jun-Zhen Li *et al* [24] it was found that H Pylori infection was highly prevalent in diabetic patients.

Conclusion

The prevalence of H Pylori infection remains high among the study population. Further research is needed to perceive the mechanism of which sex may influence the acquisition and prolongation of infection since gender bias is a perplexing issue. National initiatives can avail of this study data for the prevention and eradication of H Pylori infection. Extended large scale and multicenter epidemiological studies are needed to ascertain the prevalence of H Pylori and for enhancing better management of its complications. Appropriate measures must be recognized to eradicate the infection, and health education must be provided to ameliorate living standards.

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