



ORIGINAL RESEARCH PAPER

General Surgery

PREVALENCE OF HELICOBACTER PYLORI INFECTION IN FUNCTIONAL DYSPEPSIA: AN OBSERVATIONAL STUDY

KEY WORDS: prevalence, H.Pylori, functional dyspepsia, UGIE, mucosal biopsy, rapid urease test

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ABSTRACT	Objective: The aim of this study was to determine the prevalence of Helicobacter Pylori (H. pylori) infection, according to age, gender and endoscopic findings among the patients who underwent functional dyspepsia.
	Material and Methods: This was a prospective observational study carried out on Ajmal Khan Tibbiya hospital, it is teaching hospital for Aligarh Muslim University (AMU) Aligarh, UP, India, between July 2015 to June 2016. All patients who were scheduled for upper gastrointestinal endoscopy (UGIE) were screened for H. pylori infection by using rapid urease test with kit method.
	Result: A total of 100 patients were scheduled for upper gastrointestinal endoscopy (UGIE). The prevalence of H. pylori was 35%. Out of these 19 males and 16 females were found to be positive for H. Pylori infection.
	Conclusion: The burden of H. Pylori infection was high and is a big concern in patients with functional dyspepsia, it needs to be further studied about its potential risk factors and how to manage them for the goal of prevention.

INTRODUCTION:

Helicobacter pylori, formerly known as *Campylobacter pylori* are a gram negative, curved, microphilic and motile organism. It colonizes and grows in human epithelial tissue and mucus. It is a common bacterium infecting about half the world's population (1). *Helicobacter pylori* cause inflammation of the stomach, first isolated by Barry Marshall and Robin Warren in 1982. It is a highly prevalent infection in developing countries with poor socio-economic status and an etiologic agent of the majority of upper gastrointestinal (UGI) diseases associated with significant morbidity (2). Dyspepsia is a poorly characterized syndrome thought to originate from anatomic or functional disorders of the upper GI tract. (3, 4, 5) Dyspepsia encompasses a variety of symptoms including epigastric discomfort, bloating, anorexia, early satiety, belching or regurgitation, nausea, and heartburn. Rome III criteria define dyspepsia as 1 or more of the following 3 symptoms for 3 months within the initial 6 months of symptom onset (6): (1) postprandial fullness, (2) early satiety, and (3) epigastric pain or burning. The pathogenesis of functional dyspepsia is unknown. Many pathogenic mechanisms have been proposed, like disturbance in gastric acid secretion, disordered gastric motility, abnormalities of electrical control activity, abnormalities of perception, psychological disturbances, environmental factors and *Helicobacter pylori* (H. pylori). (7) *Helicobacter pylori* (H. pylori) is a common transmissible bacterial human pathogen. H. pylori infection is well recognized as a major causative organism for functional dyspepsia in human beings. (8, 9) Although the role of H. pylori in causing symptoms of functional dyspepsia is not clear. The reported prevalence of H. pylori in patients with functional dyspepsia ranges from 39% (10) to 87% (11) There are invasive and noninvasive methods for diagnosis of infection. Invasive methods include endoscopy and biopsy for histology, culture and rapid urease test analysis. Noninvasive methods are serology, urea breath test and stool antigen analysis. The gold standard test for detection of *H. pylori* remains histology from gastric biopsy (12). But it remains unclear whether H. pylori infection actually causes symptoms or is just an associated finding. This prospective, observational study was undertaken to determine the prevalence of H. pylori in causing symptoms of functional dyspepsia who were scheduled for upper gastrointestinal endoscopy (UGIE) and screened for the H. pylori infection by using rapid urease test with kit method,

MATERIALS AND METHODS:

This was a prospective observational study carried out on

department of jarahat (general surgery) Ajmal Khan Tibbiya hospital, AMU Aligarh, UP, India, during the period from July 2015 to June 2016. A total of 100 patients that attended to jarahat (general surgery) OPD with symptoms of functional dyspepsia and scheduled for upper gastrointestinal endoscopy (UGIE) were screened for the H. pylori infection to determine the prevalence of H. pylori in causing symptoms of functional dyspepsia. The endoscopic finding and the result of Rapid Urease Test for H. pylori infection were collected from the operation theater d/o jarahat F/O Unani medicine Ajmal Khan Tibbiya hospital. All endoscopies were performed by experienced endoscopist using the Fujinon electric video endoscope (EVE 200 SYSTEM); *Campylobacter*-like organism (CLO) test was used as a Rapid Urease Test for H. pylori infection. Endoscopic mucosal biopsies from upper gastrointestinal tract were inoculated into the medium which contained urea and phenol red. The test was read up to 24 Hour. All of the patients were categorized to age group as <29, 30-39, 40-49, 50-59, 60-69 and >70 years old of age. Endoscopic findings were subdivided into erosions (oesophagitis/gastritis/duodenitis), ulcer disease (esophageal/ gastric/duodenal ulcer), growth lesion (polyp/tumor/malignancy), normal and other findings (portal hypertensive gastropathy/esophageal or fundal varices//hiatus hernia). After obtaining consent, a questionnaire containing questions about age, gender, family dimension, level of education, all the data collected above were further compared between those with CLO test positive and those with CLO test negative. This study was approved by the institution Ethics Committee F/O Unani medicine, AKTCH; AMU, Aligarh,

RESULTS:

A total of 100 patients that attended to jarahat (general surgery) OPD with symptoms of functional dyspepsia (table.1) and scheduled for upper gastrointestinal endoscopy (UGIE), Out of total 100 patients, 35 patients were found *Helicobacter pylori* positive, giving a hospital based prevalence of 35% (Table2). Out of total 58 males, 19 were positive for *Helicobacter pylori* (32.75%) whereas out of 42 females 16 were positive (38.09%) (Table, 3). The prevalence is high in female e.i.38.99% as compared with male e.i.32.75%. The prevalence was estimated in different age groups. The maximum number of positive patients was found in the age group of <29 years (45.71%) and the Minimum prevalence were in the age group of above 60 years (05.71%) (Table, 4). Most of the patients belonging to lower socioeconomic group and rural areas. Out of 26 tobacco-chewing

and smoking subjects, 17 were positive for *Helicobacter pylori*, which indicated a prevalence of 65.38%. In this study out of 100, 14 patients had normal upper gastrointestinal tract. Out of these 6 (42.85%) were negative for *H. Pylori* and 8(57.14 %) were positive for *H. Pylori* as shown in table 5. In our study most of positive cases belonging to the Muslim community e i ; Out of 35 positive cases, 30(30%) were Muslims while 5 (5%) were Hindu. out of 30 Muslims 14(14%) were female while 16(16%) were male, and out

of 5 Hindu 03(03% were male while 02(02%) were female as shown in table 6. most of the positive 35 (35%) cases were taking mixed diet. in our study out of 100 patients 19 were used of NSAID and out of 12 were positive for *H. pylori* infection.

Number of Helicobacter pylori positive/negative patients according to symptoms
H. Pylori positive H. Pylori negative

Table,1

Symptoms	Male %	Female %	Male %	Female %	Total %
Early satiety	06(10.34%)	10(23.80%)	07(12.06%)	11(26.19%)	34(34%)
Heart burn	09(15.51%)	11(26.19%)	11(18.96%)	17(40.47%)	48(48%)
Nausea	09(15.51%)	12(28.57%)	11(18.96%)	17(40.47%)	49(49%)
Vomiting	04(06.89%)	09(21.42%)	03(05.17%)	10(23.80%)	26(26%)
Abdominal pain	07(12.06%)	09(21.42%)	08(13.79%)	09(21.42%)	33(33%)
Loss of appetite	05(08.62%)	07(16.66%)	05(08.62%)	09(21.42%)	26(26%)
Flatulence	03(05.17%)	04(09.52%)	02(03.44)	03(07.14%)	12(12%)
Heaviness after meal	05(08.62%)	06(14.28%)	04(06.89%)	16(38.09%)	31(31%)
Regurgitation	06(10.34%)	08(19.04%)	04(06.89%)	13(30.95%)	31(31%)
Belching	05(08.62%)	04(09.52%)	04(06.89%)	03(07.14%)	16(16%)
Indigestion	03(05.17%)	06(14.28%)	02(03.44)	03(07.14%)	14(14%)

Prevalence of Helicobacter pylori

Table; 2 Prevalence of *H. pylori*= 35/100 X 100 =35%

Subjects positive for <i>Helicobacter pylori</i>	35 (35%)
Subjects negative for <i>Helicobacter pylori</i>	65(65%)
Total subjects	100(100%)

Table; 3 Number of Helicobacter pylori positive/negative patients according to sex

Sex	Positive	Negative	Total
Male	19	39	58
Female	16	26	42
Total	35	65	100

Chi-square test ($\chi^2 = 0.3$) not significant

Number of Helicobacter pylori positive patients according to age groups

Age group (years)	Total subjects	No. of positive patients	Percentage (%)
20-30	49	16	45.7
30-40	22	5	14.3
40-50	17	7	20.0
50-60	09	5	14.3
60-70	03	2	05.7
Total	100	35	100.0

Table; 4 34.5±11.3

Endoscopic findings of the stomach

H. Pylori positive *H. Pylori* negative

Finding	Male	Female	Total	Male	Female	Total
Antral gastritis	12	11	23	15	20	35
Gastric erosions	00	00	00	00	00	00
Benign ulcers	00	00	00	00	00	00
Malignant tumor	00	00	00	00	00	00
Polyps	01	00	01	00	00	00
Gastro jejunostomy	00	00	00	00	00	00
Healed gastric ulcer	01	02	03	00	00	00
Generalized gastritis	01	02	03	01	02	03
Total	15	15	30	16	22	38

Table; 4

Endoscopic findings of the esophagus

H. Pylori positive *H. Pylori* negative

Finding	Male	Female	total	Male	Female	total
Reflux oesophagitis	03	01	04	02	03	05
Hiatus hernia	05	00	05	03	00	03
Esophageal varices	00	00	00	00	00	00
Moniliasis	00	00	00	00	01	01
Candidiasis	01	00	01	00	01	01
External compression	00	00	00	00	00	00
lax esophageal sphincter	04	02	06	04	02	06
Normal endoscopic finding	03	05	08	04	02	06
Total	16	08	24	13	09	22

Table; 4

Table 5: Patients with normal gastrointestinal tract (Endoscopic finding)

	Positive	Negative	Total
Male	3	55	58
Female	5	37	42
Total	8	92	100

Chi-square test ($\chi^2 = 1.5$) not significant

Number of Helicobacter pylori positive/negative patients according to religion

H.Pylori positive H.Pylori negative

Religion	Male	Female	Male	Female	Total
Muslim	16(16%)	14(14%)	27(27%)	29(29%)	86(86%)
Hindu	03(03%)	02(02%)	05(5%)	04(04%)	14(14%)
others	00(00%)	00(00%)	00(00%)	00(00%)	00(00%)

DISCUSSION:

The prevalence of *Helicobacter pylori* infection varies worldwide, the etiology of functional dyspepsia remains elusive. The association of functional dyspepsia with *H. pylori* infection has been widely reported. However, it remains debatable. Several studies have assessed the epidemiological association between *H. pylori* infection and functional dyspepsia (13, 14) this study was conducted to find out the prevalence of *H.Pylori* among patients with dyspeptic symptoms. In our study, 35% of the patients were positive and 65% were negative for *H. pylori* infection in functional dyspeptic patients. The prevalence of infection in our study was surprisingly lower than in other similar studies. This can be explained by the fact that prevalence of *H.Pylori* varies widely by geographic area, age, race, and ethnicity and socioeconomic status. In other studies, *Helicobacter pylori* prevalence was seen in patients with dyspepsia and in control subjects as 65% and 46% respectively [15]. These studies have given an overall impression of very high prevalence of *H. pylori* in this part of developing world and inadequate sanitation practices, low social class, and crowded or high-density living conditions have been attributed to the higher prevalence of *H. pylori* infection.(16) However, the retrospective study done in Nepal in 2005 which is similar to our study showed that the prevalence of *H. pylori* was 33.9% (sample size 224) in dyspeptic patients attending the hospital.(17) The finding was almost similar with slightly decreasing prevalence by 4.4% in another study done in Nepal one year after in 2006 with *H. pylori* prevalence of 29.5% (sample size 203).(18) A current study done in Nepal with more sample size (2820) also demonstrated the similar result with *H. pylori* prevalence of 29.4%. This indicates that the prevalence of *H. pylori* in developing South Asian countries in the current era might not be very high as was projected from a decade old data. This could be due to adoption of westernized life style in these developing countries, (19) another potential reason for this decreasing trend of *H. pylori* prevalence could be due to the widespread use of proton pump inhibitors and antibiotics. In our study nausea and heart burn are the commonest symptoms in both groups, Pash le R, HY Jishop showed in their study that 80-90% of the dyspeptic patients have associated symptoms of epigastric pain, anorexia, nausea, vomiting, early satiety and regurgitation. (20) The prevalence of *H.Pylori* infection reported by other Indian studies; kulkarni et al (38.5%), alagnantham et al (49.4%) mittal et al (34%), kang et al (59%), sushma saksena et al (43.4%), mukta et al (43.1%).all other studies are more or less similar to our study as far as prevalence rate is concerned. In our study, Out of total 58 males, 19 were positive for *Helicobacter pylori* (32.75%) whereas out of 42 females 16 were positive (38.09%) (Table 2). The prevalence is high in female ei; 38.09% as compared with male ei; 32.75%. An excess of *H. pylori* prevalence in one gender versus the other has been reported [21-22]; for instance, Woodward and colleagues observed a higher prevalence of *H. pylori* in men than in women [23]. Others found no gender-related difference in the prevalence of *H. pylori* infection [24, 25]. A more recent, more comprehensive meta-analysis of large, population-based studies concluded a male predominance of *H. pylori* related diseases in adults but not in children [26]. The relationship between *H. pylori* and patients with dyspepsia is weak, the role of *H. pylori* in dyspepsia is poorly

understood (27, 28). In this study out of 100, 14 patients had normal upper gastrointestinal tract. Out of these 6 (42.85%) were negative for *H.Pylori* and 8(57.14 %) were positive for *H.Pylori* as shown in table 5.In our present study, the most common endoscopic abnormality in *H. pylori*-positive/negative patients was antral gastritis, Low socioeconomic status associated with high-density living and poor hygienic conditions is thought to play a major role in transmission of the organism (29,30).in our study Most of the patients belonging to lower socioeconomic group, rural areas, family overcrowding and unhygienic conditions, and in our study most of the patients had history of NSAIDs which are the second leading cause of gastric and duodenal ulcer and may be copathogenic with *H. pylori*.(31)

CONCLUSION:

The burden of *H.Pylori* infection in patients with dyspepsia was high, the present study revealed substantial prevalence of *Helicobacter pylori* in functional dyspeptic patients with females being more affected than males, the prevalence is higher in low socioeconomic classes with poor sanitation practices and unhygienic water supply, Identification of populations, who do not show symptoms of *Helicobacter pylori* infection, but still harbor it, is essential for controlling the infection and it still remains a challenge for the clinicians. It can be concluded that prevalence of *H. pylori* infection in symptomatic individuals and its ensuing complications necessitates health education, careful control of risk factors, and strict control of infection.

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