ORIGINAL ARTICLE

FREQUENCY OF HELICOBACTER PYLORI INFECTION BY TESTING STOOL ANTIGEN IN PATIENTS WITH FUNCTIONAL DYSPEPSIA

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ABSTRACT

Background: Functional dyspepsia is the most common cause of dyspepsia. Depending upon the geography a variable number of functional dyspepsia patients are infected with H. pylori and it is a common practice to treat it. The benefits of this test and treat strategy are the cure of peptic ulcer disease, its future prevention and symptom resolution in a significant subset of patients. The objective of this study was to determine the frequency of H. pylori infection in patients with functional dyspepsia by detecting H. pylori antigen in the stool.

Material & Methods: Two hundred and twenty-one patients with functional dyspepsia fulfilling the Rome III criteria were included in the study in consecutive manner. They were classified into different groups based on their predominant symptoms. H. pylori stool antigen was tested to see its frequency in the functional dyspepsia patients.

Results: Out of 221 patients included in the study 126(57%) were males and 95(43%) females. Mean age was 35.33 $\pm$11.34 years. The mean duration of symptoms was 2.28 $\pm$ 2.21 years. Out of all patients 31% of the patients belonged to postprandial distress syndrome, 29% to epigastric pain syndrome and 40% to both groups. H. pylori stool antigen was positive in 51(25%) patients.

Conclusion: Stool antigen test is a good non-interventional test for the detection of active infection in patients with functional dyspepsia which is comparable between various dyspepsia groups.

KEY WORDS: Dyspepsia, Helicobacter pylori.

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INTRODUCTION

In current medical terminology, dyspepsia refers to multiple symptoms located in the upper abdomen, often broadly defined as pain or discomfort centered in the upper abdomen.[1] The word 'centered' is further defined as being mainly in or around the midline and may include multiple and varying symptoms such as epigastric pain, postprandial fullness, early satiation, anorexia, belching, nausea and vomiting, upper abdominal bloating, etc. Patients with dyspepsia commonly report several of these symptoms.[2,3]

It occurs in approximately 25% of the population each year, but most of the affected people do not seek proper medical care causing considerable time lost from work.[4-6] Functional dyspepsia (previously called non-ulcer dyspepsia) is dyspepsia without evidence of an organic disease that is likely to explain the symptoms. According to the Rome III criteria, functional dyspepsia is defined as the presence of early satiation, postprandial fullness, epigastric pain, and epigastric burning in the absence of organic, systemic, or metabolic disease that is likely to explain the symptoms.[5] These criteria should be fulfilled for the last three months with symptom onset at least six months before diagnosis. Two subcategories (postprandial distress syndrome and epigastric pain syndrome) were also recognized but their main value lies currently in research, however, such classification systems do not reliably correlate with underlying pathophysiologic mechanisms.[7] Epidemiological studies suggest that approximately 15% of the general population in western countries suffers with FD.[8]

The cause of symptoms in patients with

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functional dyspepsia has not been established, but evidence exists for genetic susceptibility, infectious factors, and psychological factors. However relationship between potential pathogenic factors and pathophysiologic mechanisms has not been addressed in detail.[7]

Depending on the region and population studied, a variable proportion of patients with functional dyspepsia are infected with H. pylori.[3]Large population studies have shown an increased incidence of H. pylori infection in patients with functional dyspepsia; however, given the high incidence of both conditions in the general population and the minimal response to treatment, the significance of the association is unclear.1 In spite of this uncertainty, testing for and treating H. pylori infection have become integral to the diagnostic management of functional dyspepsia.

It is common practice to diagnose and treat *H. pylori* infection based on *H. pylori* serology but this practice has a drawback that it is not only a measure of active infection but detects the previous infection as well. Furthermore it is not helpful whether *H. pylori* eradication therapy is successful or not. Based on these facts we wanted to see the frequency of *H. pylori* in patients with functional dyspepsia using *H. pylori* stool antigen by ELISA which is a measure of active *H. pylori* infection.

The objective of this study was to determine the frequency of *H. pylori* infection in patients with functional dyspepsia by detecting *H. pylori* antigen in the stool.

MATERIAL AND METHODS

This cross-sectional study was conducted in the OPD of Gastroenterology Department, Lady Reading Hospital, Peshawar, Pakistan from January 2013 to June 2013.

All patients fulfilling the Rome III criteria for functional dyspepsia were included in the study after taking consent using purposive sampling technique. According to the Rome III criteria, functional dyspepsia is defined as the presence of early satiation, postprandial fullness, epigastric pain, and epigastric burning in the absence of organic, systemic, or metabolic disease that is likely to explain the symptoms. These criteria should be fulfilled for the previous 3 months with symptom onset at least 6 months prior to the diagnosis.

If any of the alarm features were present endoscopy was done and patients were included if the OGD was normal and any organic pathology was ruled out. The patients were then sub-grouped according to Rome III classification of functional dyspepsia in postprandial distress syndrome (PDS), epigastric pain syndrome (EPS) or both depending on their presentation. (Table 1)

H. pylori stool antigen was tested by using ELISA. All the information was recorded in predesigned proforma along with the patients' personal information like age and gender. The data was analyzed using SPSS version 17.0. Frequency and percentage was calculated for qualitative data while mean+SD was calculated for quantitative data.

RESULTS

Two hundred and twenty-one patients were included in the study. Out of these 126 (57%) were males and 95 (43%) females with a male to female ratio of 1.3:1. Mean age was 35.33±11.34 years and the mean duration of symptoms was 2.28±2.21 years. Based on history and examination, 31% of the patients belonged to PPS, 29% to EPS and 40% to both groups. (Fig. 1)

Most of the patients presented with more than

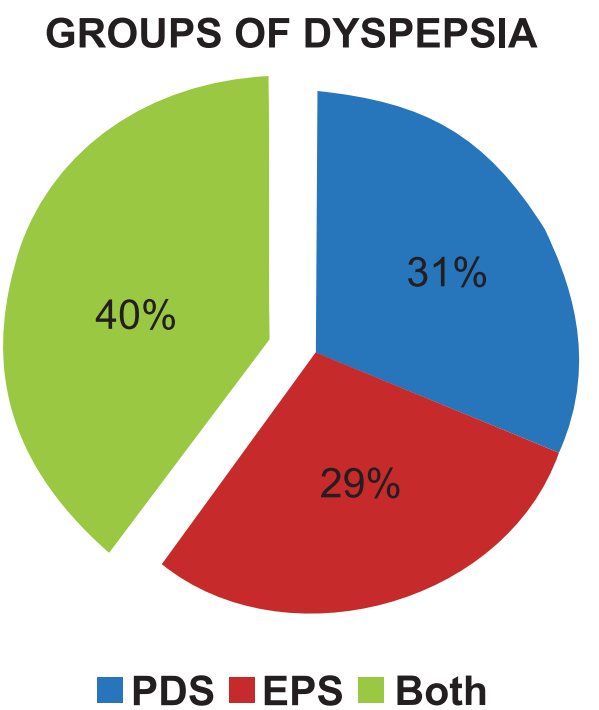

Figure 1: Grouping of patients according to the type of dyspepsia.

Table 2: Frequency of symptoms.

Symptoms	Frequency	Percentage
Postprandial fullness	136	61.5
Pain epigastrium	126	57
Epigastric burning	106	48
Early satiety	87	39.4

Table 3: H. pylori stool antigen status according to gender, age and type of dyspepsia (n=221).

		Stool antigen		Total	P-value
		Yes	No		
Gender	Male	32 (25%)	94 (75%)	126 (100%)	0.53
	Female	23 (24.2%)	72 (75.8%)	95 (100%)	
Dyspepsia Group	PDS	15 (21.7%)	54 (78.3%)	69 (100%)	0.31
	EPS	14 (21.9%)	50 (78.1%)	64 (100%)	
	Both	26 (28.4%)	62 (71.6%)	88 (100%)	
Age Group	$\leq$ 45 years	41 (23.7%)	132 (76.3%)	173 (100%)	0.37
	>45 years	13 (27.1%)	35 (72.9%)	48 (100%)	

one symptom. Postprandial fullness was the most frequently reported symptom along with pain epigastium while early satiety occurred with a relatively lesser frequency. (Table 2)

Out of all patients screened for H. pylori 55 (25%) were positive for H. pylori while others were negative. The frequency of H. pylori in different gender, age and dyspepsia groups is given in Table 3.

DISCUSSION

Although H. pylori is associated with a number of organic causes of dyspepsia, little evidence supports a causal relationship between *H. pylori* infection and functional dyspepsia.[9] It colonizes the human stomach during childhood[10] and may survive in the stomach for the lifetime.[11] Most of the infected individuals are asymptomatic however 20-30% of them may develop peptic ulcer disease and less than 2% may develop gastric malignancy.[12] Therefore, diagnosis of acute H. pylori infection is very important. The diagnosis of H. pylori can be done by invasive and noninvasive methods. Invasive methods include urease test, which has sensitivity from 79.7% to 97.5% and specificity from 97.2% to 100%, performed during endoscopy on biopsy specimen. Histopathology using modified Giemsa stained gastric biopsies has sensitivity from 94% to 97.5% and specificity from 97.2% to 99%.[13,14] Noninvasive methods are often the first line diagnostic tests and include serology, C-urea breath test (UBT),[15] and detection of Helicobacter stool antigen.[16] Serologic tests are available and relatively cost-effective and are often used for screening or documentation of infection in patients whose other tests yielded borderline results. However, these tests are not suitable to diagnose active infection or follow-up of eradication because of its low accuracy. Serology leads to at least four times as many false positive results as the urea breath test or second generation stool antigen test, with associated unnecessary treatment and increasing risks of antibiotic resistance in other bacterial flora.[17] The European Helicobacter Study Group[18] and NICE dyspepsia guidance[19] now endorse the use of urea breath tests or stool antigen tests over serology. Keeping in mind the fact that stool antigen is the only non-invasive test available in our setup with almost similar results compared to UBT,[20] we preferred this test for detection of active *H. pylori* infection in our study.

According to our study the frequency of acute *H. pylori* infection in functional dyspepsia patients is 25% which is in accord with other studies.[21,22] There was no difference in the gender, age and dyspepsia subgroups in our study. Study done in three different races in Malaysia showed overall frequency of *H. pylori* in 34% of patients with functional dyspepsia with no sex preponderance.[22] Of note the frequency of *H. pylori* in Indian subjects was 29%. However this figure differs greatly from some other studies. In Arab countries the prevalence of *H. pylori* positivity is ranging from 74-84% in dyspeptic patients using gastric biopsy but these studies were done in all dyspeptic patients not just in functional dyspepsia patients.[23,24] In a Dutch working population, on the other hand, Schlemper *et al* reported that anti-H. pylori IgG antibodies were present in 25% of individuals with NUD and 29% of those without.[25] Prevalence of *H. pylori* positive functional dyspepsia in Western countries is 30-60%.[26] In a study done in Pakistan frequency of *H. pylori* in functional dyspepsia patients was 51%.[27]

Difference between these statistics is largely because of different prevalence of *H. pylori* in different populations, difference in the socioeconomic conditions of the study population and also due to the fact that *H. pylori* stool antigen was used to detect the active infection instead of serology in our study. Although equivalent to the urea breath test in performance, the stool test is considerably less expensive and less time consuming, and investigators have found it acceptable to patients.[28] When using the urea breath test or monoclonal stool antigen test in developed countries, where typically 25% of dyspeptic patients are *H pylori* positive, only 3% (62 for stool, 65 for urea breath test of 2000) of patients will receive unnecessary antibiotics.[29] In contrast, using a serology based test, 12.75% of the 2000 patients

tested are likely to receive an incorrect diagnosis of active *H pylori* infection and receive inappropriate treatment.[29]

CONCLUSION

H. pylori stool antigen is a good test for detection of active infection presenting with functional dyspepsia according to Rome III criteria and is comparable within dyspepsia groups.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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None declared.