

Prevalence of Helicobacter Pylori Infection in Adult Patients with Dyspepsia in Gastrointestinal and Hepatology Teaching Hospital, Baghdad 2012

Hadeer Salah Al-Deen Abd Elwahhab (1)
Sanaa Jafar Hamodi Alkaisi (2)
Rayadh A. Zaydan (3)

(1) M. B. Ch. B postgraduate resident Doctor in the Arab Board of Family medicine, Baghdad .Iraq.

(2) M.B.Ch.B,F.I.B.M.S.\F.M Senior Specialist Family Physician, Supervisor in the Residency Program of Arab Board of Family Medicine, Member in the Executive Committee of Iraqi Family Physicians Society (IFPS), Co-manager of Bab Almudhum Specialized Family Medicine Health Center, Baghdad, Iraq.

(3) C.A.B.M., F.I.C.M.S. (CE).Consultant of Gastroenterology , Supervisor in the Residency Program of Arab Board for Health Specializations ,in Subspecialty of Gastroenterology, Gastroenterology(GIT) Center, Baghdad -Iraq.

Correspondence:

Dr.Sanaa Jafar Hamodi Alkaisi,
Co-manager of Bab Almudhum Specialized Family Medicine Health Center,
Baghdad, Iraq.

Email: drsanaaalkaisi@yahoo.com

Abstract

Background: Dyspepsia is a common symptom with an extensive differential diagnosis and a heterogeneous pathophysiology. Helicobacter pylori infection may be an etiological factor in some patients. The infection is chronic and common throughout the world, with a higher prevalence in developing than in developed countries.

Objectives: To demonstrate the prevalence of Helicobacter Pylori infection in adult patients with dyspepsia who underwent upper Oesophago-Gastro-Duodenoscopy so early treatment can be made to prevent it's complications, and to estimate the prevalence of positive endoscopic findings in patients with dyspepsia.

Patients and methods: This is a descriptive cross sectional study carried out in the gastro-intestinal and hepatology teaching hospital, Baghdad Medical City during 2013 on data collected from reviewing patient's files from the 1st of January to 31st of December 2012 including all adults 18 years and above of both sexes with dyspeptic symptoms who were referred for endoscopic evaluation of Helicobacter Pylori infection by taking multiple antral biopsies for histopathological stain and evaluation of their endoscopic findings.

Key words: helicobacter pylori, adult patients, dyspepsia, Baghdad

Introduction

Dyspepsia is a common symptom with an extensive differential diagnosis and a heterogeneous pathophysiology. It occurs in approximately 25 percent (range 13 to 40 percent) of the population each year, but most affected people do not seek medical care. [1]

Dyspepsia is often broadly defined as pain or discomfort centered in the upper abdomen and may include multiple and varying symptoms such as epigastric pain, postprandial fullness, early satiation (also called early satiety), anorexia, belching, nausea and vomiting, upper abdominal bloating, and even heartburn and regurgitation. Patients with dyspepsia commonly report several of these symptoms.[2]

The pathophysiology of functional dyspepsia is poorly understood. However, researches have focused on abnormal gastric motor function, increased visceral sensitivity, psychosocial factors and recently, *Helicobacter pylori* (*H. pylori*) infection of the stomach. [3] *H. pylori* infection is chronic and common throughout the world, with a higher prevalence in developing than in developed countries [4].

It has been reported that 20% to 60% of patients with functional dyspepsia have evidence of *H. pylori* gastritis and that eradication of the organism results in symptomatic benefit in a small number (10%) of these patients. Therefore, patients younger than 55 years who have new-onset dyspepsia without alarm features should undergo *H. pylori* testing and treatment if infection is confirmed. [5]

H. pylori infection can be diagnosed by non-invasive methods or by endoscopic biopsy of the gastric mucosa. The non-invasive methods include the urea breath test, serologic tests and stool antigen assays. Histology of endoscopically taken biopsy has a very high sensitivity and specificity of 96% and 98.8% respectively, even though it requires expertise for interpretation. [6]

Although there are several reports on the correlation between *H. pylori* infection and clinical outcomes, the results remain unclear and show discrepancies. [7] This study therefore determined to investigate *H. pylori* infection and its relation with dyspepsia.

Aim of Study

1. To estimate the prevalence of *H. Pylori* infection in adult patients with dyspepsia who underwent upper Oesophago-Gastro-Duodenoscopy (OGD) by histopathological stain so early treatment can be made to prevent its complications.
2. To estimate the prevalence of positive endoscopic findings in patients with dyspepsia.

Patients and Methods

Study Design: This is a descriptive cross sectional study carried out in the GIT and hepatology teaching hospital, Baghdad-Medical City during 2013 on data collected from reviewing patient's files from the 1st of January to 31st of December 2012.

Inclusion criteria: Any patient more than 18 years old of both sexes who presented to the GIT hospital during the year 2012 with any of the dyspeptic symptoms and was diagnosed as having dyspepsia according to Rome III and admitted for endoscopic evaluation of *H. Pylori* infection by taking multiple gastric biopsies for histopathological stain and evaluation of their endoscopic findings was included.

Exclusion criteria: None of the patients selected were on antibiotic treatment for the last 4 weeks before endoscopy, and none was on NSAID's or PPI or steroids therapy, and none of them had hematemesis or melena at presentation.

Data collection: Data was collected from patients file information in regard to patient's name, age, gender, residency and presenting symptoms (postprandial fullness, early satiation, epigastric pain, epigastric burning, bloating, nausea, vomiting and belching), endoscopic findings and histopathological stain results for *H. Pylori*. Data was collected during a three months period from the 1st of January to 31st of March 2013, on a basis of one day per week. Endoscopy: Upper gastroendoscopy by video-endoscope was performed on each patient for the evaluation of gastro-duodenal changes and biopsy collection. Patients were fasted overnight. The esophagus, stomach and duodenum were all visualized and mucosal findings on endoscopy were noticed. Three antral biopsies were obtained for histology.

Histology: Biopsies were placed in 10% formalin and then processed for histological examination. Sections were stained with Hematoxylin and Eosin stain (H & E stain) and examined by an experienced histopathologist.

Limitations of the study:

The main limitations found for this study were:

1. This is a cross sectional study so temporal relationship between cause-effect cannot be determined.
2. Shortage of information available on the patients in the hospital records.

Statistical Analysis

Data of all patients were checked for any errors or inconsistency then transferred into computerized statistical software; Statistical Package for Social Sciences (SPSS) version 17 was used in all statistical analysis and procedures. The student t test was used to find the significance of differences in mean age in patients with and without *H. Pylori* infection. Chi square (X^2) was used to find the significance of differences in mean age

in patients with and without *H. Pylori* infection. Chi square (X^2) was used to find the significance of differences in the distribution of *H. Pylori* infection among patients according to different variables in the study and to assess the significance of the relation between *H. Pylori* infection and these variables. Fisher's exact test was used alternatively when the chi square was inapplicable. The level of significance was set at P-value ≤ 0.05 to be considered as a statistically significant difference.

Results

H. Pylori infection was detected in 164 (82%) patients versus 36 (18%) patients who were free of *H. Pylori* infection.

The relation of *H. Pylori* infection with age from different aspects of view: There was a statistically significant relation between age and the prevalence of *H. Pylori* infection, (P-value =0.001); the infection was more prevalent among patients with age (28 - 37) years followed by those aged ≤ 27 years. None of those aged ≥ 78 years had positive *H. Pylori* infection, (Table 1).

Age (years)	<i>H. Pylori</i>				Total		Statistical test and P. value
	Positive		Negative		N	%	
	N	%	N	%			
≤ 27	43	87.8%	6	12.2%	49	100%	$X^2 = 23$ P-value= 0.001
28 – 37	32	88.9%	4	11.1%	36	100%	
38 – 47	38	82.6%	8	17.4%	46	100%	
48 – 57	24	85.7%	4	14.3%	28	100%	
58 – 67	20	71.4%	8	28.6%	28	100%	
68 – 77	7	77.8%	2	22.2%	9	100%	
≥ 78	0	0.0%	4	100%	4	100%	
Total	164	82%	36	18%	200	100%	
Mean \pm SD	40.16 \pm 15.5		51.1 \pm 18.7		42.13 \pm 16.5		t = -3.6 P-value=0.002

Table 1: Relation between *H. Pylori* infection and age of the patient

H. Pylori infection was present in 93 (78.2%) of 119 males and 71 (87.7%) of 81 females with no statistically significant difference between both genders in the prevalence of *H. Pylori* infection, P-value >0.05 , (Table 2 - opposite page).

H. Pylori infection was more prevalent among patients from Salah-Aldeen province (100%), while there was none among patients of Basra province (0.0%), P-value = 0.038, (Table 3 - opposite page).

Summarization of the distribution of symptoms according to the presence of *H. pylori* infection and multiple complaints were recorded in the same patient. There was no statistically significant relation between symptoms and *H. Pylori* infection, P-value >0.05 , (Table 4 - page 18).

The infection rates in patients with D.U. and hiatus hernia were significantly higher than the rates among patients with other endoscopic finding or with normal endoscopic findings; P. value was highly significant (<0.001) (Table 5 - page 19).

Table 2: Relation between H. Pylori infection and gender

Gender	<i>H. Pylori</i>		Total	Statistical test and P. value
	Positive	Negative		
Male	93	26	119	$X^2 = 2.9$ P-value= 0.086
	78.2%	21.8%	100%	
Female	71	10	81	
	87.7%	12.3%	100%	
Total	164	36	200	

Table 3: Relation between H. Pylori infection and provinces of residency

Province	<i>H. Pylori</i> infection				Total	
	Positive		Negative		N	%
	N	%	N	%		
Baghdad	136	82.9%	28	17.1%	164	100%
Anbar	10	90.9%	1	9.1%	11	100%
Babylon	6	85.7%	1	14.3%	7	100%
Diyala	6	75%	2	25%	8	100%
Salah-Aldeen	5	100%	0	0.0%	5	100%
Wasit	1	25%	3	75%	4	100%
Basra	0	0.0%	1	100%	1	100%
Total	164	82%	36	18%	200	100%
Fisher's exact test = 11.5		P.value =0.038				

Table 4: Relation between H. Pylori infection and symptoms

Symptoms	<i>H. Pylori</i> infection				Total	
	Positive		Negative			
	N	%	N	%	N	%
Postprandial Fullness	32	69.6%	14	30.4%	46	100%
Early Satiety	35	74.5%	12	25.5%	47	100%
Epigastric pain	123	86.6%	19	13.4%	142	100%
Epigastric burning	27	84.4%	5	15.6%	32	100%
Bloating	13	81.2%	3	18.8%	16	100%
Nausea	34	87.2%	5	12.8%	39	100%
Vomiting	28	80%	7	20%	35	100%
Belching	11	73.3%	4	26.7%	15	100%
chi square(X^2) = 5.03 P.value = 0.092						

Discussion

This study shows the relation between dyspeptic symptoms, endoscopic findings and various patient's parameters with *H. Pylori* infection among the study sample.

Overall *H. Pylori* infection presents in 82% of the study sample where 18% were free of the infection. This agrees with studies done in Iraq (Mosul[8], Anbar[9], Basra[10]), Saudia Arabia [11], North Jordan [12], Iran [13], Kuwait [14], and Libya [15].

Whereas a lower rate of infection was detected in Jammu/ India[16], Jammica / Italy[3], Thailand[7]. The higher rate of detection of *H. pylori* in this study and other developing countries of the Eastern Mediterranean Region than in developed countries may be attributed to the genetic predisposition of the ethnic groups (mainly Arabs) or to local environmental issues, including dietary factors, inadequate living conditions, poor sanitation, hygiene and overcrowding.

Prevalence rates of *H. pylori* infection had shown a strong relation with young age group, residency of middle provinces of Iraq, positive endoscopic findings, but not with gender or presenting symptoms. It had been significantly found that the prevalence of *H. Pylori* infection decreased with advancing age (P-value = 0.001) as it is acquired at younger age. This is in accordance to the results on Saudi

patients [11], Iran [13], Libya [15], Jammu/ India [16]. While in North Jordan [12] the prevalence of *H. Pylori* increases significantly with age (100% infection rate in patients over 80 years of age). This was more proven when comparing the mean age for patients with positive and negative *H. Pylori* infection. Where the mean age for patients with positive *H. Pylori* infection was younger than that of those free of it (40.16 ± 15.5 vs.51.1 ± 18.7) years respectively and this difference was statistically significant, P-value =0.002. This may indicates that the infection with *H. Pylori* occurs at earlier age. Factors such as severe atrophy or intestinal metaplasia mean that the local environment is no longer ideal for the growth of *H. pylori*. This may contribute to the lower prevalence in elderly patients.[13] Males were more infected than females, and the prevalence of *H. Pylori* infection among males was less than that among females involved in the study (78.2% vs 87.7%) with no statistical significant relation (P- value = 0.086). The same results were found in Anbar/ Iraq [9], Saudia Arabia [11], Jammu/ India [16].

While in North Jordan [12], Kuwait [14] females were more infected than males with lower infection rate among females than males but also with no statistical significant relation.

H. Pylori was strongly related to provinces of residency (P-value =0.038), and it was most prevalent among patients

Table 5: Relation between H. Pylori infection and endoscopic findings

Upper Endoscopy	<i>H. Pylori</i>				Total	
	Positive		Negative			
	N	%	N	%	N	%
Gastropathy	109	90.8%	11	9.2%	120	100%
GU	19	73.1%	7	26.9%	26	100%
DU	10	100%	0	0.0%	10	100%
Gastric mass	5	55.6%	4	44.4%	9	100%
Lax cardia	5	55.6%	4	44.4%	9	100%
Esophagitis	6	85.7%	1	14.3%	7	100%
Gastric polyp	3	42.9%	4	57.1%	7	100%
Gastric outlet obstruction	2	40%	3	60%	5	100%
Hiatus hernia	3	100%	0	0.0%	3	100%
Normal	2	50%	2	50%	4	100%
Total	164	82%	36	18%	200	100%
Fisher's exact test = 31.9				P.value < 0.001		

from provinces in the middle of Iraq, while the least infection rate was found in patients from provinces in the South. This difference may be because of the small sample size or may be related to different living standards including overcrowding and atmosphere temperature.

Epigastric pain was the most frequent symptom seen in 75% of patients with positive *H. pylori* infection while belching being the least frequent one. This result agrees with the results of Iran [13], Jammu/ India [16] and Jamaica/ Italy [3]. This may be explained in that epigastric pain especially if associated with dyspeptic symptoms is more associated with abnormal gastric pathology. [11] On the other hand *H. Pylori* infection was most prevalent in patients suffering from nausea and least prevalent in patients with postprandial fullness; but the prevalence of *H. Pylori* infection has no statistical significant relation with the

presenting symptom in this study. It is now accepted that *H. pylori* is not associated with a specific symptom profile. This was like North Jordan [12]. While in Saudi Arabia [11] and Iran [13] *H. Pylori* infection was more common among patients suffering from epigastric pain.

The most common +ve endoscopic finding in this study was gastropathy in 120 patient (60%) and the least was Hiatal Hernia (3 patients). There was a significant relation between *H. Pylori* infection and endoscopic findings (p-value < 0.001). It was seen in all patients with D.U. and hiatal hernia (100% for each). While in Mosul/ Iraq [8], North Jordan [12] and Libya [15] infection rate was 100% among patients with G.U. The possible explanation for the lower infection rate among patients of this study with G.U. than the other studies is that it may be due to errors in the sampling technique. One half of the patients of this study

with normal endoscopic findings have +ve *H. Pylori*. This goes with results from Libya [15], Thailand [7] and differs from Jamaica/ Italy [3], and this may indicate that *H. Pylori* may be a cause of functional dyspepsia.

Conclusion

The *H. pylori* infection is frequent in patients with dyspepsia which decreases with increasing age with higher infection rates in patients from provinces of the middle of Iraq. Positive endoscopic findings were significantly related to *H. pylori* infection and pathological dyspepsia has higher infection rate than NUD. Although half of the patients with NUD were reported to harbor *H. pylori* infection, yet this study cannot prove a causality relationship between *H. Pylori* infection and dyspepsia because the descriptive study cannot prove it.

Recommendations

1. There is a need to increase awareness of the role of *H. Pylori* in causation of dyspepsia.
2. There is a need for early detection of *H. pylori* infection and its eradication to prevent medication abuse of acid suppression and an improvement in overall quality and severity of dyspeptic symptoms.
3. There is a need for more rapid and non-invasive methods for screening of *H. Pylori* infection in patients with un-investigated dyspepsia to be available at the primary care centers (as a cost effective methods) to reduce the overcrowding on specialty hospitals and minimizes cost and consequences of delayed treatment because dyspepsia is common and strongly correlated to *H. Pylori* infection.
4. It is recommended that endoscopy be used for patients with dyspepsia that is undiagnosed by other methods and unresponsive to treatment to identify those who are infected by *H. pylori* and treated accordingly.
5. It is recommended to do analytic study to prove the cause and effect relationship which include therapeutic interventional studies to prove the improvement of symptoms after treatment.

References

- 1- Longstreth GF, Talley NJ, Grover S. Functional dyspepsia. UpToDate[CD-Room]. 2011; 19(3).
- 2- Tac J. Dyspepsia. In: Feldman M, Friedman LS, Brandt LJ, editors. Sleisenger and Fordtran's gastrointestinal and liver disease: pathophysiology, diagnosis, management. 9th ed. Saunders: Elsevier; 2010. P. 183-193.
- 3- Lee MG, Emery H, Whittle D, Jackson D, Donaldson EK: Helicobacter pylori infection in patients with functional dyspepsia in Jamaica. The Internet Journal of Tropical Medicine. 2009[cited 2012 Oct 19]; 5(2): [about 3 p.]. Available from: <http://www.ispub.com/journal/the-internet-journal-of-tropical-medicine/volume-5-number-2/>
- 4- Siddiqui ST, Naz E, Danish F, Mirza T, Aziz S, Ali A. Frequency of Helicobacter pylori in biopsy proven gastritis and its association with lymphoid follicle formation. J Pak Med Assoc. 2011; 61(2): 138-141.

- 5- Herrine SK, Fekete T, Bosworth BP, Kozuch P, Loren DE, Navarro VJ, et al. Gastroenterology and hepatology. In: Alguire PC, editors. MKSAP15 [CD Room]. USA: American College of physicians; 2009.
- 6- Mustapha SK, Bolori MT, Ajayi NA, Nggada HA, Pindiga UH, Gashau W, et al. Endoscopic findings and the frequency of Helicobacter Pylori among dyspeptic patients in north-eastern Nigeria. The Internet Journal of Gastroenterology. 2007 [cited 2012 Oct 19]; 6(1): [about 4 p.]. Available from: <http://www.ispub.com/journal/the-internet-journal-of-gastroenterology/volume-6-number-1/>
- 7- Chomvarin C, Kulsuntiwong P, Mairiang P, Sangchan A, Kulabkhow C, Chau-in S, et al. Detection of *H. Pylori* in dyspeptic patients and correlation with clinical outcomes. Southeast Asian J Trop Med Public Health. 2005; 36(4): 917-922.
- 8- Ayoub MA. Frequency of Helicobacter Pylori infection among dyspeptic patients in Mosul. A dissertation submitted to Iraqi Board for Medical Specializations in Medicine. 2009.
- 9- Baqir HI, Abdullah AM, Al-Bana AS, Al-Aubaidi HM. Sero-prevalence of Helicobacter Pylori infection in unselected adult population in Iraq. IJGE. 2002; 1(3): 22-29.
- 10- Al-Sulami A, Al-Kiat HS, Bakker LK, Hunoon H. Primary isolation and detection of Helicobacter Pylori from dyspeptic patients: a simple, rapid method. Eastern Mediterranean Health Journal. 2008; 14(2): 168-176.
- 11- Abo-Shai MA, El-Shazly TA, Al-Johani MS. Clinical, endoscopic, pathological and serological findings of Helicobacter Pylori infection in Saudi patients with upper gastrointestinal diseases. British Journal of Medicine and Medical Research. 2013; 3(4): 1109-1124.
- 12- Bani-Hani KE, Hammouri SM. Prevalence of Helicobacter Pylori in north Jordan. Endoscopy based study. Saudi Med J. 2001 Oct [cited 2014 April 14]; 22 (10): 843-7. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/>