

DYSPEPSIA AND *HELICOBACTER PYLORI* INFECTION: ANALYSIS OF 200 KUWAITI PATIENTS REFERRED FOR ENDOSCOPY

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Background: Dyspepsia is a very common symptom, and is the reason for most referrals for esophagogastroduodenoscopy (EGD). Peptic ulcer disease (PUD), gastroesophageal reflux and gastric cancer account for a minority of such patients. However, the majority have no significant endoscopic abnormalities (non-ulcer dyspepsia). Recently, infection with *Helicobacter pylori* (HP) has been implicated in the pathogenesis of PUD and gastric cancer. Since HP can be diagnosed by noninvasive techniques, it has been suggested that endoscopy should be restricted to HP-positive patients who do not respond to empirical therapy with antimicrobials. The aim of this study was to establish the prevalence of HP among Kuwaiti dyspeptic patients referred for endoscopy and to determine whether demographic and clinical screening, or the presence of HP, can help distinguish groups of patients with significant gastroduodenal pathology from those with non-ulcer dyspepsia.

Patients and Methods: Two hundred randomly selected Kuwaiti patients referred for endoscopy were evaluated prospectively. A detailed personal interview was conducted to establish the demographic and clinical profile of each patient and a diagnostic EGD was performed after the interview. Finally, antral mucosal biopsies were taken to determine the presence of HP. The pre-coded data were analyzed.

Results: The main endoscopic findings were normal (32%), non-erosive antral gastritis (26%), duodenitis (17.5%), duodenal ulcer (11.5%), deformed bulb (4%), esophagitis (7%), and erosive gastritis (2%). The demographic and clinical characteristics of patients did not correlate with endoscopic findings. The overall prevalence of HP infection was 88.5%. There were no statistically significant differences in the prevalence of HP among patients with various endoscopic findings.

Conclusion: HP infection is common in Kuwaiti dyspeptic patients referred for endoscopy, irrespective of their demographic and clinical features or the underlying cause of dyspepsia. Noninvasive methods to detect HP are not valid alternatives to endoscopy in the work-up of dyspeptic patients.

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Dyspepsia is defined as pain or discomfort centered in the upper abdomen. It may be associated with distention, belching, nausea or anorexia. It is estimated that 20%-40% of the population complain of dyspepsia.¹⁻³ Most dyspeptic patients either have no identifiable cause of dyspepsia (non-ulcer dyspepsia, NUD),⁴ or have peptic ulcer disease (PUD),⁵ namely, gastric or more commonly, duodenal ulcers. Less common causes of dyspepsia include gastric cancer and pancreatic disease. Upper gastrointestinal endoscopy is currently the main diagnostic modality in the work-up of dyspeptic patients. Given the high prevalence

of dyspepsia in the population and the expenses incurred by endoscopy, dyspepsia is a major burden on health system resources. Lately, *Helicobacter pylori* (HP) has been linked to duodenal and gastric ulcers, and to a lesser extent, gastric malignancy. Screening for HP can now be done by noninvasive techniques, such as serologic tests or urea-breath tests. Eradication of HP has been shown to cure PUD. However, in most studies, it had little impact on NUD. It has been suggested that instead of subjecting dyspeptic patients to endoscopy as an initial diagnostic test, one may screen these patients for HP by noninvasive tests and treat those who test positive. Endoscopy would then be restricted to patients who test negative for HP, those who do not improve after a therapeutic trial for HP, and to patients whose clinical picture is suggestive of malignancy, e.g., weight loss. The potential cost effectiveness of this approach was based on the epidemiologic profile of HP in Western countries, where the prevalence of this infection is relatively low compared with that seen in third world

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TABLE 1. Prevalence of HP according to the sociodemographic characteristics of the study population (n=200).

Variables	%	% HP-positive
Age (yr)		
<15	2.5	40
16-25	19	78.9
26-35	32.5	92.3
36-45	25.5	92.2
>46	20.5	92.7
Sex		
Male	47.5	89.5
Female	52.5	87.6
Education level		
Illiterate	14.5	89.7
Intermediate school	17.5	88.6
Secondary school	27	83.3
College and postgraduate qualification	41	91.5
Occupation		
Dependent	17.6	71.9
Housewife	25.8	89.4
Unskilled laborer	2.2	100
Server	7.7	92.9
Skilled workers	7.7	92.9
Office workers	16.5	93.3
Professionals	22.5	87.8
Monthly income		
<500 KD*	13.5	81.5
500-1000 KD	41.5	91.6
>1000 KD	45	87.8
Residence**		
Hawali	25.3	80
Farwania	33.8	89.6
Jahra	4.5	88.9
Capital	28.8	91.2
Ahmadi	7.6	100
Family members		
<5	34.5	87
6-10	47.5	87.4
11-15	14	92.9
>16	4	100

* 1 KD=3.3 US dollars; ** all are urban areas.

TABLE 2. Endoscopic findings and the prevalence of HP by the endoscopic diagnosis.

Endoscopic diagnosis	Number of patients	Positive histology
Duodenal ulcer	23 (11.5%)	22 (95.7%)
Duodenitis	35 (17.5%)	29 (83%)
Duodenal deformity	8 (4%)	6 (75%)
Esophagitis	14 (7%)	14 (100%)
Gastric erosion	4 (2%)	4 (100%)
Gastritis	52 (26%)	44 (84.6%)
Normal	64 (32%)	58 (90.6%)
Total	200 (100%)	177 (88.5%)

countries. Data on the prevalence and clinical significance of HP in developing countries are limited, particularly from the Arabian Gulf region.⁶⁻¹⁴ We conducted this study to determine the prevalence of HP among dyspeptic patients referred for endoscopy at our center, which provides open access endoscopy services to the nationals of Kuwait (population 1.8 million). We also set out to determine whether sociodemographic and clinical characteristics can distinguish patients with significant

gastrointestinal pathology from those with non-ulcer dyspepsia. Finally, we aimed to find out whether infection with HP can distinguish patients with PUD from those with NUD.

Patients and Methods

Between October 1995 and May 1996, 200 randomly selected Kuwaiti patients with dyspepsia were studied prospectively. These patients had been referred to Thunayan Al Ghanim Gastroenterology Center to undergo esophagogastroduodenoscopy (EGD). Pregnant women, individuals over 70 years of age with other complications, and patients with complex medical or surgical conditions were excluded. Patients were subjected to a structured questionnaire before they underwent endoscopy. This questionnaire was tested in a pilot study on 50 dyspeptic individuals prior to its use in the study in order to confirm its validity.

Personal interviews were conducted individually with the 200 patients. The questionnaire consisted of 29 questions, mainly in the closed question format. The questions pertained to the sociodemographic profile of each patient (age, sex, level of education, residence, occupation, family income, size of family and smoking behavior), as well as severity of symptoms and the intake of antibiotics within the previous three months. The pre-coded data were analyzed by computer using the Statistical Package for Social Sciences.

Endoscopy was performed by standard procedures after an overnight fast, using Olympus and Pentax Video endoscopes, which were sterilized with glutaraldehyde for 10 minutes. At least one mucosal biopsy was taken from the antrum within 20 mm of the pylorus. The specimen was placed in 10% formalin and sent for standard histopathologic examination by a single pathologist who was not aware that the patients were enrolled in the study. The biopsy forceps were sterilized in glutaraldehyde between patients.

The prevalence of HP was determined as percentages of positives out of the exposed. The chi-squared test was used to test the difference in the prevalence of HP between NUD and PUD, and also the variation in the prevalence of HP by different factors (sociodemographic and symptoms). The *P*-values calculated were two-tailed, and $P \leq 0.05$ was considered significant.

Results

The sociodemographic characteristics of the study population are summarized in Table 1. Of the 200 patients, 95 (47.5%) were male and 105 (52.5%) were female, with a mean age of 36.5 and 34.4 years, respectively (range 6-70 years). The overall prevalence of HP was 88.5%. Age significantly related to the frequency of HP ($P < 0.001$). There was no statistically significant association between

TABLE 3. Severity of symptoms and its relation to the presence of HP (total number of patients is 200).

Symptoms	Severe*		Moderate**		No symptoms		P-value
	#†	% HP‡	#	% HP	#	% HP	
Upper abdominal pain	161	89.4	29	79.3	10	100	NS ⁺⁺
Distention [†]	134	93.3	42	71.4	23	95.7	<0.001
Nausea	64	87.5	57	87.7	79	89.9	NS
Vomiting	33	87.9	29	89.7	138	88.4	NS
Irregular bowel [†] movement	10	100	92	88	97	88.7	NS
Heartburn [†]	90	94.4	60	80	49	89.8	<0.05
Belching	60	93.3	71	87.3	69	85.5	NS

*Severe symptoms which influence concentration on daily activities and/or requires rest;²⁵ **moderate symptoms are defined as symptoms which cannot be ignored, but do not influence daily activities; †number of patients having the symptoms; ‡prevalence of HP among patients with the specific symptoms; †for these symptoms, one patient was unable to answer the question on severity; ++NS=not significant at the 0.05 level.

TABLE 4. Correlation of endoscopic findings with the "hard-core" symptoms as reported by the patients.

Endoscopic diagnosis	# of patients	% awoken by symptoms	% reporting weight loss
Duodenal ulcer	23	74	56.5
Duodenitis	35	54.3	43
Duodenal deformity	8	87.5	37.5
Esophagitis	14	64.3	43
Gastric erosion	4	100	25
Gastritis	52	62.7	29.4
Normal	64	64.1	47

HP and various other demographic or socioeconomic factors, such as gender, education level, residence, occupation, family size or income, or smoking behavior.

Endoscopic diagnoses are shown in Table 2. There were no statistically significant differences in the prevalence of HP between patients with different endoscopic diagnosis. Also, the prevalence of HP in patients with NUD did not differ significantly from patients with PUD. The severity of various symptoms did not show a significant association with either the presence or absence of HP, except the severity of distention, and heartburn ($P < 0.001$ and < 0.05 , respectively) (Table 3). In addition, being awoken by dyspeptic symptoms (abdominal discomfort) and weight loss did not correlate with the endoscopic findings (Table 4).

Discussion

HP is the most common bacterial infection in man. Most epidemiological studies carried out in Western countries have revealed that the prevalence of HP in children is low and increases with age at approximately 1%-2% per year.^{15,16} The frequency of HP is also thought to be inversely related to socioeconomic status. HP has

been linked to two important causes of dyspepsia, namely, PUD and gastric cancer. Most authorities agree that eradicating HP would cure PUD. Anti-HP drugs are now routinely used in the treatment of most patients with PUD. The benefit of eradicating HP in NUD is uncertain.

HP can now be diagnosed using simple, cheap and noninvasive techniques, such as C13 or C14 urea breath test, or serologic assay for anti-HP antibodies. Thus, it has been suggested that it would be more cost effective to screen dyspeptic patients for HP by these noninvasive tests prior to referral for endoscopy. Patients who test positive for HP would then be treated with antimicrobial agents to eradicate HP. Patients would be referred for endoscopy if they tested negative for HP on initial evaluation, or continued to have symptoms despite receiving anti-HP therapy.

In the present study, most patients (88.5%) were infected with HP. The frequency of this infection had no statistically significant correlation with the underlying cause of dyspepsia as determined by endoscopy. In other words, there was no difference in the prevalence of HP in patients with PUD and NUD. These observations are consistent with those reported previously for other ethnic populations.¹⁷⁻¹⁹ Moreover, the severity of symptoms had little correlation with the HP status of patients. Other investigators have reported similar findings.²⁰⁻²³

Only a minority of our patients (11.5%) were found to have bona fide duodenal ulcers. Interestingly, no gastric ulcers or gastric cancers were encountered in this group of patients, despite the high prevalence of HP in our population. Instead, most patients had NUD. Alarm symptoms, such as weight loss and nocturnal pain, did not predict the presence of PUD. The prevalence of HP also appeared to be high across the socioeconomic boundaries. This apparent lack of association between the prevalence of HP on one hand and the symptoms and cause of dyspepsia on the other hand most probably reflects the high frequency of HP in the general population.

Since the benefit of eradicating HP in patients with NUD is uncertain and is currently not recommended by most authorities,²⁴ it would be unwise and possibly not cost effective to treat HP in dyspeptic patients without establishing a positive diagnosis of PUD. Moreover, EGD is an important tool in excluding other upper gastrointestinal disorders, such as gastroesophageal reflux and celiac disease. Finally, an EGD reassures patients with NUD that their stomach is normal.

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