

Association of Peptic Ulcer Diseases with *Helicobacter Pylori* Infection in Iraqi Patients

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ABSTRACT

Objective: To determine the prevalence of *Helicobacter pylori* (*H. pylori*) infection among patients presenting with peptic ulcer disease (PUD). We aimed to examine the effect of age, gender, and types of peptic ulcer on the prevalence of the disease.

Methods: The study included 75 patients with PUD who underwent upper gastrointestinal endoscopy at Baghdad Teaching Hospital/Medical City from 1st of February to 30st of June 2015. All patients underwent upper gastrointestinal endoscopy for visual examination to distinguish between the gastric ulcer (GU) and duodenal ulcer (DU), and the stool antigen test (SAT) for the detection of *H. pylori*.

Results: The overall prevalence rate of *H. pylori* infection among 75 patients with PUD was 71.3%, while it was high among males (54.55%) as compared with females (45.45%). The *H. pylori* was high among males predominance with duodenal ulcer (56.1%) as compared with females (43.9), also high incidence of gastric ulcer was shown in this study in elderly patients with mean age (50.4 ± 3.07) years, compared to that of duodenal ulcers mean age (34.5 ± 2.69). Considering the location of ulcer, a lower prevalence of *H. pylori* infection was found in patients with gastric ulcer, at a rate of 66.7%, compared with 75.9% for those with duodenal ulcers.

Conclusion: The high prevalence of *H. pylori* with gastric ulcer was found in the elderly and the high prevalence of *H. pylori* with duodenal ulcer was found in the males, also a lower prevalence of *H. pylori* infection was found in patients with gastric ulcer compared with those with duodenal ulcers.

Keywords: Gastroduodenal diseases, *Helicobacter pylori*, Peptic ulcer, Iraq.

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INTRODUCTION

Helicobacter pylori are Gram negative bacillus, motile, flagellated and spiral shape bacteria that appears to inhabit the mucous layer overlying the gastric epithelial cells in humans¹. Around 90% of DU patients and 70% of GU patients are infected with *H. pylori*; the remaining 30% of GU are due to NSAIDs². It may cause variety of clinical symptoms such as chronic gastritis of varying severity in infected subjects, which in around 10-15% progresses to peptic ulcer, while in 1-2% of subjects ultimately results in mucosa associated lymphoid tissue (MALT) lymphoma or gastric adenocarcinoma^{3,4}.

The initial response to infection is an interaction of the host epithelial cells with the bacteria⁵. The majority of *H. pylori* infected persons are asymptomatic, and only a fraction (10-20%) of carriers' manifests clinical disease.^{6,7}

In 1983, Warren and Marshall described the presence of curved bacilli on gastric epithelia taken from patient with active chronic gastritis and later on it have been proved that *H.pylori* are responsible for many gastrointestinal tract diseases including peptic ulcer.⁸

A peptic ulcer can be defined as a form of ulceration which develops for a reason in the epithelial lining surface expose to acid secretion of gastric glands.⁹

MATERIALS AND METHODS

This study performs on newly diagnosed patients with peptic ulcer disease, who attended the Endoscopy Unit of Baghdad Teaching Hospital/Medical City from 1st of February to 30st of June 2015. Patients were selected by a senior physician. Exclusion criteria if they were treated with antibiotics, proton pump inhibitors (ppls) for the last 2 weeks, H2 receptor blockers, bismuth salts, and diarrhea at the time of sampling. Based on endoscopic examination patients were classified into the following groups: gastric ulcer ($n = 14$), duodenal ulcer ($n = 41$) and Stool specimens from each patient were collected and kept on -20°C until used for detection of *H. pylori* by SAT.

Diagnosis of PUD

The endoscopic examination was performed to verify the diagnosis of peptic ulcer disease distinguish between the gastric ulcer and duodenal ulcer.

Identification of *H. pylori*

Stool antigen test (SAT) identifies *H.pylori* antigen present in Stool. It's based immuno-chromatographic assay by a test kit (Helicobacter Antigen Quick Caste, Bucharest, Romania). Allow the test caste and samples to reach room temperature prior to testing. Place 1 ml (approximately 20 drops) of the sample

diluents in a test tube. Add approximately a sample portion of 5 mm diameter with a swab and shake gently in order to unstick and facilitate the sample dispersion. Shake the test tube well in order to assure good sample dispersion. Let the tube rest for at least 5 min for sedimentation. Dispense 4 drops of clear supernatant into the sample well of the cassette. Read the result after 10-15 minutes. In case of positive result colored line might existed, while its lack indicated a negative result.

Statistical Analysis

Data were analyzed using SAS 2012 (Statistical Analysis System). Chi-square test was utilized to compare between the results of the studied parameters among different patients groups [10]. Values with P<0.05 were considered to be significant.

RESULTS

A total 75 patients with endoscopically proved peptic ulcer were include in this study. fifty-five patients were *H.pylori* positive, 30

(54.55%) were male and 25 (45.45%) were female, patient with gender have significant difference *(P<0.05). Twenty were *H. pylori* negative, 10 (50%) were male and 10 (50%) were female as shown in table 1.

The age of 14 patients with gastric ulcer range from 42-70 years (mean=50.4±3.07), 7male (50%) and 7 females (50%) while the ages of 41 patients with duodenal ulcer range from 30-70 years (mean=34.5±2.69), 23 male (56.1%) and 18 female (43.9%) as shown in table 2.

The prevalence of *H.pylori* infection that determined by SAT shows that 55(73.3%) were *H.pylori* positive while 20(26.7%) of the patients were *H. Pylori* negative. patients with gastric ulcer high significant difference (P<0.01) in prevalence between *H.pylori* positive (66.7%) and *H.pylori* negative (33.3%).patients with duodenal ulcer have high significant difference (P<0. 01) in prevalence between *H.pylori* positive (75.9%) and *H.pylori* negative (24.1%) respectively as shown in table 3.

Table 1: Distribution of *H.pylori* positive and negative in patients with peptic ulcer disease according to gender

Gender	SAT				Total
	<i>(H.pylori +ve)</i>		<i>(H.pylori -ve)</i>		
	N	%	N	%	
Male	30	54.55%	10	50.00%	40
Female	25	45.45%	10	50.00%	35
Total	55		20		75
Chi-square	4.68*		00.0 NS		3.25NS

* (P<0.05)

Table 2: Age and gender distribution in peptic ulcer patients infected with *H.pylori* according to the type of ulcer

Ulcer type	Patients number	Age		Gender	
		Range	Mean	Male	Female
Gastric ulcer	14	42-70	50.4± 3.07	7 (50.00%)	7 (50.00%)
Duodenal ulcer	41	30-70	34.5± 2.69	23(56.1%)	18 (43.9%)
Total	55	30-70	36.6± 2.75	30 (53.1%)	25 (46.9%)

Data presented as mean ±SE (age)

Data presented as number and percentage (%)

Table 3: Prevalence of *H.pylori* infection in patients with peptic ulcer disease

Ulcer type	Patients number	Positive result		Negative result		Chi- square
		N	%	N	%	
Gastric ulcer	21	14	(66.7%)	7	(33.3%)	10.673**
Duodenal ulcer	54	41	(75.9%)	13	(24.1%)	12.094**
Total	75	55	(71.3%)	20	(28.7%)	10.827**

* (P<0.05), ** (P<0.01).

DISCUSSION

Helicobacter pylori (*H. pylori*) infection is a worldwide problem with a significant morbidity and mortality.^{11,12} Since the discovery of *H. pylori*, several studies have been undertaken to evaluate the prevalence of *H.pylori* among gastroduodenal manifestations. Regarding the gender, male and female for *H. pylori* positive patients were (30 males and 25 females), this finding was close to that of Hajiani *et al.*, (2008)¹³ regarding *H. pylori* positivity, where male gender showed only a marginal predominance.¹³ A study by Yasir *et al.*, (2014)¹⁴ was found the predominance of male gender over female in *H. Pylori* positive patients.¹⁴ This may be due to a significant higher infection rates in men than women and the literatures regarding the relationship between sex and *H. pylori* infection is conflicting. It is possible that women are more likely to have infection eradicated with antimicrobials used for other

illnesses.¹⁵ The result in this study showed a male predominance with DU in *H. pylori* positive patients and this finding was in agreement with Marques *et al.*, (2011)¹⁶ who reported a high prevalence of duodenal ulcer in a male gender of Brazilian population with positive *H. pylori* infection. This was considered important determinants to gastrointestinal diseases outcome.¹⁶ Chao Wu *et al.*, (2008)¹⁷ also reported a markedly lower prevalence of duodenal ulcer in females than in males. Studies had also reported a lower incidence of duodenal ulcer in young women until the onset of menopause and led to the idea that somehow female hormones protect against the development of duodenal ulcer.^{18,19} Tuo *et al.*, (2011)²⁰, conclude that estrogen regulates human duodenal bicarbonate secretion, which could reduce the risk for duodenal ulcer in women and contribute to sex differences in prevalence of duodenal ulcer.²⁰

A relatively high incidence of gastric ulcer was shown in this study in elderly people with mean age (50.4 ± 3.07) years, compared to that of duodenal ulcers mean age (34.5 ± 2.69) years, which was consistent with Dong *et al.*, (2004)²¹ who reported an older patients with gastric ulcer than with duodenal ulcer.²¹ This may be attributable to lower defensive factors such as poor gastrin action capable of healing by its atrophic effect, decreased mucus, bicarbonate secretion and prostaglandins.¹⁶

In this study 73.3% of peptic ulcer patients were positive for *H. pylori* and 26.7% were negative. This was consistent with other studies reported higher percentage of *H. pylori* positive (69.3%-80.4%) compared to (19.6%-30.7%) *H. pylori* negative patients.^{14,22}

In one study conducted in Iraq showed that 78% of adults were infected with *H. pylori*.²³ Considering the prevalence duodenal and gastric ulcers in *H. pylori* infected patients of in this study we found a higher prevalence of duodenal and gastric ulcers in *H. pylori* infected patients than in patients without *H. pylori* infection. Similar results were also reported by Chao Wu *et al.*, (2008).¹⁷ This may indicate the role of *H. Pylori* infection was the main environmental risk factor in patients with gastric ulcer and duodenal ulcer.²⁴

CONCLUSION

According to the data obtained during this study we can conclude that considering the location of ulcer, a lower prevalence of *H. pylori* infection was found in patients with gastric ulcer, at a rate of 66.7%, compared with 75.9% for those with duodenal ulcers. This finding was in agreement with other studies.^{25,26} Also comparable results of other studies reported *H. pylori* infection in about (42.9%-70%) in cases with gastric ulcers and (62.4%-90%) in those with duodenal ulcers.^{27,28}

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