Prevalence and Detection of *Helicobacter Pylori* among Patients in Rizgary Hospital Using Stool Antigen Test- Erbil City

Hangaw O.Haji, Sewgil. S.Anwer, Sahar M.Zaki, Basoz B. Mustafa, Asma A. Abdulla,

Gashbin J. Hassan

College of Health Sciences/ Hawler Medical University

Abstract:

Background and Objectives: *Helicobacter pylori* is a spiral shaped, Gram-negative rod with 5-7 flagella at one end and have been considered as a primary risk factor for peptic ulcer disease and gastric cancer. This study aimed to the prevalence and detection *of H.pyori* among Rizary Teaching Hospital/ Erbil City.

Objective: Study the prevalence and detection *of H. pyori* among Rizary Teaching Hospital.

Methods: Seven hundred and twenty- six (726) human stool samples were collected from Rizgary Teaching Hospital /Erbil City from October 2018 to February 2019. The samples were collected and the test performed in the microbiology laboratory Collage of Health Sciences by using antigen stool detection tests.

Results: The study showed that among 726 samples in Rizgary Teaching Hospital *H. pylori* positive results showed in 380(52%) and *H. pylori* infection in female was higher than male, the infection was higher among (16-45) years than patients aged between (15-16 and 55-65) years, when we studied *H. pylori* infection according to months it was showed that the prevalence of *H. pylori* infection appeared in all studied months the higher infection showed during October 94 and November 84 and there was a significant difference between the samples related to months.

Conclusion: Among 726 samples *H. pylori* was positive in 380(52%), *H. pylori* infection in female was higher than male. The infection was higher among (16-45) years than patients aged among (55-65) years.

Key Words: *H. pylori*, Rizgary Teaching Hospital, Antigen stool test, Months, Age.

Introduction:

Helicobacter pylori is a gram negative bacteria that inhabit in the mucus gel layer overlying the gastric mucosa in the inner layer of stomach or the upper part of small intestine. *Helicobacter* is a genus *Helicobacteraceae* family with helical shaped flagella. They were primarily considered to be section of the genus *Campylobacter*, but in 1989, Goodwin *et al.* published sufficient reasons to justify the new genus name *Helicobacter.* The genus *Helicobacter* contains about 35 species (Engleberg, 2007).

Helicobacter pylori is generally transmitted by saliva to human. Even fecal contamination of food and water can spread the bacteria. Integration of dense population, untreated water, and poor hygiene lead to higher infection with *H. pylori* in developing countries. Prevalence of *H. pylori*, and siblings tend to play a primary role in transmission. The first, and most popular, transmission mode is iatrogenic (Akamatsu*et al.,* 1996).

The second potential fecal-oral rout is water polluted by feces is a source of

infection; an interaction between *H. pylori* and the absence of hot running water were foundin some study (Neale and Logan, 1995; Scott*et al*. 1998; Tosun*etal*, 2003; Mladenova, 2008,).

Besides that, the higher risk of infection was observed in children who swam in rivers, streams, or swimming pool. Consumption of uncooked vegetables was correlated with *H. pylori* which was watered with untreated sewages. There are also seems to be an increased prevalence of *H. pylori* among children who drank water from local stream (Goodman *et al*., 1996). The third potential transmission path is oral-oral. Possible oral-oral transmission of premastered foods among certain ethnic groups has been investigated (Mergraud, 1995). The aim of current study is to determine the prevalence and detection of *H. pylori* infection among patient's in Rizgary Teaching Hospital and Study the relation between gender, age group, months and occurrence of symptoms among infected patients.

2. **Materials and Methods:**
2.1. Samples collection
Seven hundred and twenty- six (726) human stool samples were collected from Rizgary Teaching Hospital/ Erbil City, from October 2018 to February 2019. The collected samples include 298 males and 428 females. The patient ranged in age from (5) years to (65) year. Stool samples were subjected to detection of the *H. pylori* stool antigen (HpSAg) following the procedures recommended by the manufacturer (ATG Biotech Co., Ltd. Rapid diagnostic test). A standard questionnaire on the potential risk factors was also designed and completed.

2.2. **Data collection and Personal information.**
After obtaining consents, the patients were requested to complete the questionnaire on potential risk factors which included (a) basic socio-demographic characteristics (b) habitual factors and (c) any present medical history. In addition, instructions were given to the patients for collection of appropriate stool samples.

2.3. **Detection of H. pylori antigen in stool sample.**
Detection of *H. pylori* antigen in stool was done by antigen test card (ATG Biotech Co., Ltd. Rapid diagnostic test). The test was carried out according to the leaflet of test by collecting 50mg of stool sample and Pick up feces and added into the dilution buffer and mixed well then the sample left for 2 minutes. Then two drops of sample were transferred into the specimen collection tube containing the dilution buffer the result was recorded at (10-15) minutes.

Statistical method:
The data were analyzed using Statistical Package for the Social Sciences (SPSS), version 26. The proportion and their frequencies were checked by chi-square (x2) test. P value=< 0.5 was considered as significant.

Results:
3.1. *H. pylori* among the gender:
The study showed that among 726 samples *H. pylori* was positive in 380; 153 of them were male and 227 were female. *H. pylori* infection in female was higher than male as shown in table (1) and figure (1). p value showed non-significant relations between gender and *H. pylori* infection.

3.2. **Detection of *H. pylori*and in relation to age:**

When we studied *H. pylori* infection among patients, the infection showed in all ages (16-45) years and the p value was 0.295 there was non- significant relation between *H. pylori* infection and age as showed in table (2).

3.3. *H. pylori* infection according to months:

When we studied *H. pylori* infection according to months it was showed that the prevalence of *H. pylori* infection appeared in all studied months the higher infection showed during October 94(66.7%) and November 84(59.6%) and then there was non- significant difference between the samples related to months table (3).

3.4. H. pylori infection according to residency:

A total of 380positive patients 230 (60.5%) were living in urbans while 150(39.4%) patient's residence were Rural.

3.5. Prevalence of *H. pylori* infection according to blood group

Table 5 shows the relation of *H. pylori* with blood groups. A total of 380 infections with *H. pylori*. The highest percentage of *H. pylori* infection showed in patients with blood group O (41%) while the lowest percentages showed in patients with blood group AB.

3.6. *H. pylori* infection according to drinks

Regarding to relation of the gas and alcohol drinking with *H. pylori* infections 346 (91%) of patients were drinking gas beverage and only one (0.3%) patients were drinking alcohols.

Table (1): Detection of *H. pylori* among gender.

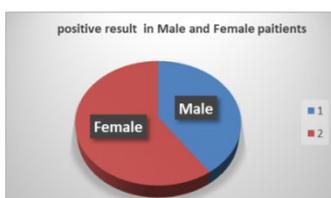| Gender	*H. pylori* test		Total	P*
	Positive	Negative		
Male	153 (40%)	145 (42%)	298	
Female	227 (60%)	201 (58%)	428	0.100
Total	380	346	726	

Figure (1): Showing *H. pylori* on the base of gender.

Table (2): *H. pylori* infection according to age.

Age	No. of sample	Positive (%)	Negative (%)
5-16	113	55 (48.68 %)	58 (51.335)
17-25	130	71 (54.62 %)	59 (45.38 %)
26-35	126	70 (55.56%)	56 (44.44 %)
36-45	122	69 (56.56 %)	53 (43.44 %)
46-55	115	60 (52.17%)	55 (47.83 %)
56-65	120	55 (45.83%)	65 (54.17%)
Total	726	380	346
Mean		76	69
P value	0.295		

Table (3): *H. pylori* infection according to months.

Months	No. of sample	Positive (%)	Negative (%)
October 2018	144	94 (% 66.7)	50 (% 35.5)
November 2018	146	84 (% 59.6)	63 (% 44.7)
December	141	62 (% 44.0)	79 (% 56.0)
January 2019	149	76 (% 53.9)	73 (% 51.8)
February 2019	145	67 (% 45.4)	81 (% 57.4)
Total	726	380	348
Mean	242	126.7	102.6
P value	0.218		

Table (4): *H. pylori* infection according to residency.

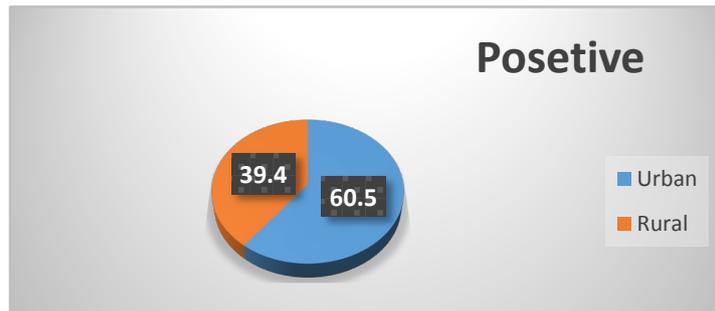| Residency	Result		Total
	Positive (%)	Negative (%)	
Urban	230 (60.5%)	224 (65%)	454
Rural	150 (39.4%)	122 (35%)	272
Total	380	346	726

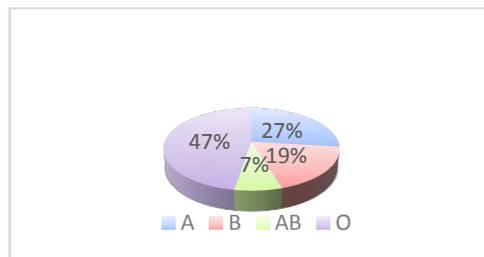**Figure (2):** *H. pylori* infection according to residency.

Figure (3): *H. pylori* infection and Blood group.

Table (5): *H. pylori* **infection according to Blood group.**

Blood group	Result		Total
	Positive (%)	Negative (%)	
A	102 (27%)	88(25%)	190
B	70 (18)	86(25%)	156
AB	28 (7)	102(30%)	130
O	180 (47%)	70 (20 %)	250
Total	380	346	726

Table (6): *H. pylori* infection related with gas and alcohol drinks.

Gas drinks		
NO. %		
Yes	346	91 %
No	34	9.1 %
Total	380	100
Aver.	29	67
Alcohol		
NO. %		
Yes	1	0.3 %
No	379	99.7 %
Total	380	100
Aver	29	67

Discussion:

Helicobacter pylori (H. pylori) is a major causative agent of several gastro-duodenal pathologies like chronic gastritis and peptic ulcer disease (Rauws and Tytgat, 1990). Furthermore, *H. pylori* plays a pivotal role in the pathogenesis gastric cancer, which is the fifth most common incident cancer and the third leading cause of death worldwide. And mucosa-associated lymphoid tissue (MALT) lymphoma (Asghar and Parsonnet, 2001). So the epidemiological studying about *H. pylori* is essential because it provides necessary information regarding its prevalence rate, also help in establishing public health action that could halt transmission and then acquirement of the infection, beside aid the therapeutic programs to eradicate the bacterium. The present study was used stool antigen rapid test, seven hundred twenty-six (298 male and 428 female) samples were collected in Rizgary Teaching Hospital, during October 2018 to February 2019. The overall prevalence of *H. pylori* antigen among 726 samples were 380, which was higher than result obtained by AL Mashhadany*et al*., 2018 who found the prevalence of seropositive *H. pylori*

among human in Erbil (39.4%). The result of present study was non agreement with a study that done by Sheikhianand his friends (2011) who found the prevalence of *H. pylori* infection in the dyspeptic patientswas (43%).

The prevalence of *H. pylori* among humans in Erbil governorate showed fewer rates compared with that reported from other studies in some developing countries, Bani-Hani and Hamouri (2001) in Jordan indicate that the prevalence of *H. pylori* infection was (82%). The changeability in the occurrence rate of *H. pylori* infection could be due to poor social and economic development, deference in socioeconomic condition, poor hygiene practices, standard of hygiene and source of drinks water, also low education level: crowded families: and improper food handling (Vale FF and Vitor JMB, 2010). Table1showed that the highest rate of frequency of *H. pylori*antigen was found in females (60%), while the lowest rate of occurrence was found in male (40%). Statistically, the differences in the *H. pylori* antigen test between male and female according to positive and

negative examined were not significant (p >0.05). our result was compatible with Yucel*et al*., (2008) in Turkey, who found that the female was more exposed to infection with *H. pylori*, by using monoclonal *H. pylori* stool antigen test.

The result from table (2). Showed that the prevalence of *H. pylori* antigen among human according to age between (5-16) years were (48.67%), then from (46-55) years (52.17%), finally the age more than 56 years (>56) (45.83%). The result in present study does not agree with result found by AL-Mashhadany*et al*. (2018) they determined (31.1%) positive result with age from (11-20) years, (27,3%) with age from (21-30)years, (44.4%) with age (31-40)years, (51.2%) with age from (41-50) years, and (46.5%) with age (>56) years. Previous studies indicated a higher rate of *H. pylori* infection either in males and females, and there was an increase in the rate of *H. pylori* infection with increasing age. This may be due to weakened immune responses in elderly as compared with children who are better able to spontaneously eliminate this pathogen with a stronger immune response, and may be due to more exposure to this infection. the high occurrence of *H. pylori* infection in adult life can may be expressed by exposure to risk factors, like poor sanitation, bad hygiene, contaminated water and food.

The result from table (3) explained that the prevalence increase in October (66.7%) and in November (59.6%), in Desember, January, February the prevalence rate was (44%), (53.9), (45.4%). The current results were non agreement with AL-Mashhadany*et al*.,2018 whoshowed their results (44,6%) in September ,(41.5%) in October, (39.3) in November.

The distribution of *H. pylori* infection among participants with different blood types pointed that those with blood type O, A, B, and AB had 41,27,19 and 7% rate of infection, respectively table (5). the same result recorded by Jaff, 2011 who concluded that O blood group individuals are more susceptible to *H. pylori* infection and have more cellular and immunological response to it.

Among 380 infected 346 (91%) were drinking gas drinks and 1 (0.3%) was drinking alcohol Brenner *et al* 1997 indicated that drinking alcohol decreased O/R of *H. pylori.*

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