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ORIGINAL ARTICLE

Prevalence of H. Pylori Infection among Patients with Recurrent Gastric Ulcer in Arbil City

BAKHTYIAR SHWAN AZEEZ[1], SANA RAFAT YASSIN[2], AYSHAN RAFAT YASSIN[3]
[1]*Erbil Polytechnic University, Shaqlawa Technical College, Veterinary Department, Iraq*
[2]*Erbil Polytechnic University, Erbil Health Technical College, Medical Laboratory Department, Iraq*
[3]*Hawler Medical University, College of Health Sciences, Clinical Biochemistry Department, Iraq*
Correspondence author: Bakhtyiar Shwan Azeez, Email: bakhtyar_shwan@yahoo.com

ABSTRACT

Aim: This study's goal is to identify the prevalence of H. pylori infection among patients with recurrent gastric ulcers in Arbil, Iraq.

Study design: A cross-sectional study

Place & duration of the study: From Oct 2021 to Feb 2022 in the private laboratories in Arbil city/Iraq.

Methodology: A total of 83 patients with recurrent gastric ulcers were admitted to the private laboratories in Arbil city. Blood samples were collected for detection of anti-Helicobacter pylori antibodies IgG and IgA in patient serum samples by the serological method by Enzyme-linked immunosorbent assays. A special questionnaire sheet was designed and used for each patient subject.

Results: Among 83 screened samples, the overall seroprevalence rate of H. pylori infection patients with recurrent gastric ulcer was 47 (56.6%). H. pylori infection was more common in female patients (59.1%) compared to male patients (53.8%). The rate of Helicobacter pylori infection was higher (84.2%) among the young adult-aged patient group (21-30) years, and (63.4%) in urban patients. A higher seropositive rate of H. pylori infection was among married patients (51.8%). Regarding marital status, most of the seropositive patients were among married patients (51.8%), (64%) among nonuse therapy, (56.7%) in the A blood group, (66.6%) among severe symptom patients, and (69.2%) among patients with a previous history of H. pylori infection respectively.

Conclusions: Patients with recurrent stomach ulcers had greater levels of helicobacter pylori antibodies, which were linked to negative outcomes.

Keywords: H. pylori, gastric ulcer, recurrent infection IgG, IgA

INTRODUCTION

Helicobacter pylori (H. pylori) are a widespread bacterial infection among individuals worldwide. This bacterium is a Gram-negative flagellated bacterium that is found in around 50 percent of western countries and more than 80 percent of persons living in poor countries (1). Inflammation in human stomach mucosa and long-term colonisation of H. pylori is considered the main cause of persistent infection (2) and its helix shape is believed to have evolved to allow it to pierce the mucoid lining of the stomach (3). The bacterium is typically associated with gastric mucosa. It is discovered as a human pathogen by (4). Many disorders have been linked to H. pylori. For the diagnosis and eradication of H. pylori, reliable diagnostic techniques and therapeutic approaches are already available. (5). Instead of being a disease in and of itself, H. pylori colonisation is a condition that is connected to a number of upper gastrointestinal disorders (6). It has a connection to the emergence of stomach cancer and duodenal ulcers (7). Furthermore, more than 80% of those infected with this bacterium show no symptoms (8).

The transmission way of it is still questionable how H. pylori are transmitted (9). According to recent research, transmission can occur via the faecal-oral or oral-oral routes. It could be directly related to the contaminated drinking water source (10). Numerous illnesses, such as iron deficiency anaemia, migraines, and coronary heart disease, are linked to H. pylori infection (2). H. pylori infection increases with age, according to epidemiological studies. Disease prevalence is connected with rising age and low socioeconomic level; however, the rate of prevalence varies greatly by area, and patient population investigated (3). The prevalence is higher in emerging nations and among people with poor socioeconomic levels. This might be caused by an unsanitary environment, cramped living quarters, and a lack of sanitisation (11).

Adults and those over the age of 50 have a higher infection rate, ranging from 30-60%, compared to younger age groups, especially children and adolescents in developed countries (1). Serologic evidence of H. pylori is rarely detected in the USA before the age of 10 years, but it climbs to 10% in people between the ages of 18 and 30 and to 50% in people over 60 years. (12). The infection rate of this bacterium varies in different countries, e.g. in Kuwait, 81% (13), in Jordan, 82% (14) in Turkey, 63% and Iraq, 11-73% (15).

In Iraq, the frequency of H. pylori infection varied by city, Baghdad having the highest rate at 59.2% (16), followed by Arbil city 55.8% (17), 55.8% in Tikrit city (18), 54.5% in Basrah city (19), 51.2% in Hilla city (20), , 51.2% in Sulaimani city (21), 51.11% in Misan city (22), 49.62% in Kirkuk city (23), and finally Duhok city having lowest rate at 28% (24). The purpose of this study is to determine the prevalence of H. pylori infection among patients with recurrent gastric ulcer Arbil city.

METHODOLOGY

This cross-sectional study was carried out on 83 patients with (recurrent gastric ulcers) 39 males and 44 with a mean age of 38.45 years (range, 15 to 80 years) at private laboratories over a period of starting from Oct 2021 to Feb 2022 in Erbil city. Patients were coming from different private clinics, and all of them carried physician reports litter sent them to the laboratory for diagnosis, after registration patient basic information by lab reception staff and inputting into lab data, and complete information about the infection with H. pylori and its consequences asked to attend patients. At the time of their attendance at the laboratory, blood was taken from every patient for serological testing. The serum was separated and analysed immediately after collection. Age, gender, and personal information are all examples of demographic data.

Under completely aseptic procedures, blood samples were drawn from a vein using a sterile, disposable syringe. Each patient had a blood sample obtained from them, which was then put on a particular kit for finding H. Pylori. The test was conducted in a single step using an antigen cassette test (Linear chemicals, S.L, Barcelona, Spain). It is a high-quality immunochromatographic test that makes use of monoclonal antibodies.

Following previously described procedures (15, 16), anti-H. pylori IgG and IgA levels in serum samples were diagnosed by using enzyme-linked immunosorbent assays (ELISA).

Tests were performed in accordance with the manufacturer's instructions using a commercial ELISA kit, IgG produced by

Helicobacter pylori, and IgA produced by (IBL INTERNATIONAL GMBH). The same circumstances applied to each assay. Fresh serum was diluted, added to the wells, and left to sit at room temperature for 60 minutes. After washing, horseradish peroxidase-conjugated diluted anti-human IgG or IgA was reacted for 30 min at room temperature. After a second washing, the wells were developed for 20 minutes with tetramethylbenzidine (TMB), and the optical densities at 450 nm were read with an ELISA reader. The cutoffs (in index values) for IgG and IgA were 8, 8 to 12, and >12, respectively, for positive results. All contradictory findings were confirmed.

Data were analysed using (GraphPad Prism Virsion8.2.1) chi-square test to determine the prevalence of H. pylori infection in the patients. The differences between means were considered significant when P≤0.05.

RESULTS

Results from this study revealed that the seroprevalence of H. pylori infection among recurrent gastric ulcers was 36/83 (56.6%), 21(53.8%) of them were male, and 26(59%) were female. The rate of infection was higher at 26(59%) among female patients than in male patients at 21(56.6%) (Table 1).

Table 1: Anti-H.pylori antibody seroprevalence in relation to gender

Gender	H. pylori test Positive	Negative	Total
Male	21(53.8%)	18 (46.1%)	39 (46.9%)
Female	26 (59%)	18 (41%)	44 (53.1%)
Total	47(56.6%)	36 (43.4%)	83 (100%)

P= 0.675

H. pylori infection rate was higher (84.2%) among young adult-aged patients (21-30) years and > 50 years (80%) than those in other aged patient groups (Table 2).

Table 2: Anti-H.pylori antibody seroprevalence in relation to patient age groups

Age of patients	H. pylori test Positive	Negative	Total
15-20	6 (66.6%)	3(33.4 %)	9 (10.8 %)
21-30	16(84.2%)	3(15.8 %)	19(22.9%)
31-40	11(44%)	14(66%)	25(30.1%)
41-50	4 (25 %)	12 (75%)	16(19.3 %)
51-60	4(80%)	1(20%)	5(6%)
61-70	2(66.6%)	1(33.4 %)	3(3.6%)
71-80	4 (66.6%)	2(33.4 %)	6 (7.2 %)
Total	47 (56.6%)	36(43.4 %)	83(100%)

P=0.014

Table 3: Anti-H.pylori antibody seroprevalence in relation to the residency

Residence of Patients	H. pylori test Positive	Negative	Total
Urban	33(63.4%)	19(36.3%)	52 (62.6%)
Rural	18(58%)	13(42%)	31 (37.4%)
Total	47(56.6%)	36 (43.4%)	83 (100%)

P= 0.838

Table 4: Anti-H.pylori antibody seroprevalence in relation to the marital status

Marital status of Patients	H. pylori test Positive	Negative	Total
Single	4(16.6%)	20(83.4%)	24(28.9%)
Married	28(51.8%)	26 (48.2%)	54 (65%)
Divorced	1 (25%)	4 (75%)	5 (6%)
Total	47(56.6%)	36 (43.4%)	83 (100%)

P=0.038

Fifty-two patients live in urban (Arbil) and 31 from rural (living in a hostel in Arbil city). The H. pylori infection rate in urban patients was higher (63.4%) than in rural patients was (58%), but no significant difference found between them (Table 3). Regarding marital status, most of the seropositive patients (51.8%) were married patients (Table 4). Among patients who receive therapy against H. pylori, nonuse therapy patients were at a higher rate (64%) in comparison with use therapy patients at 45.4 (Table 5).

Table 5: Anti-H.pylori antibody seroprevalence in relation to the therapy using against H. pylori

Therapy using by Patients	H. pylori test Positive	Negative	Total
Using	15(45.4%)	18(54.6%)	33(39.7%)
Not using	32(64%)	18(36%)	50(60.3%)
Total	47(56.6%)	36 (43.4%)	83 (100%)

P=0.075

Helicobacter positivity and patient blood groups were not significant, but the seroprevalence was higher in the A blood group (56.7%) (Table 6). In addition, regarding H. pylori symptoms, no significant differences were found, but the most prevalence was 66.6 in severe symptom patients (Table 7, 8). The prevalence was higher among patients with a previous history of H. pylori (69.2%) than in patients without a previous history of H. pylori.

Table 6: Anti-H.pylori antibody seroprevalence in relation to the blood group

Blood group of Patients	H. pylori test Positive	Negative	Total
A	21(56.7%)	16(43.3%)	37(44.6%)
B	17(53.1%)	15 (46.9%)	32 (38.6%)
O	5(35.7%)	12 (64.3%)	14 (16.9%)
Total	47(56.6%)	36 (43.4%)	83 (100%)

P=0.781

Table 7: Anti-H.pylori antibody seroprevalence in relation to the H. pylori symptoms

H. pylori symptoms of Patients	H. pylori test Positive	Negative	Total
Mild	21(61.7%)	13(38.3%)	34(40.9%)
Moderate	22(51.1%)	21(48.9%)	43(51.8%)
Severe	4 (66.6%)	2 (33.4%)	6(7.2%)
Total	47(56.6%)	36 (43.4%)	83 (100%)

P=0.567

Table 8: Anti-H.pylori antibody seroprevalence in relation to the previous history of H. pylori

Previous history in Patients	H. pylori test Positive	Negative	Total
Yes	27(69.2%)	12(30.8%)	39(47.0%)
No	20(45.4%)	24(54.6%)	44 (53.0%)
Total	47(56.6%)	36 (43.4%)	83 (100%)

P=0.02

DISCUSSION

The current findings revealed that the overall percentage of H. pylori infection among patients with recurrent ulcers was 56.6%. This is comparable with other studies done in different cities in Iraq in which H. pylori infection has been documented, such as 55.8 % (17), 53.3% (15) in Arbil city, 55.8% in Tikrit city (18), 54.5% in Basrah city (19), while in Baghdad, a greater percentage than our findings (71.3%), was observed (25) and 61.3% (26) in Mosul /Iraq. Furthermore, lower H. pylori percentage rates of 11.3% have been reported (27) in Arbil and 28% in Duhok city (24). Factors such as patient age and health, sample size, population cultural customs, socioeconomic status, ethnicity, testing procedures, and geographic dispersion may account for observed percentage difference in results (6, 7, 15).

The seroprevalence of H. pylori infection rate in female patients 26 (59%) was higher than in male patients 21(53.8%). The increased seroprevalence of H. pylori infection in females was also reported by other researchers (15, 28-30). This was contrary to others (31). Cultural factors may explain why women, rather than men, often prepare meals and do housework. The prevalence of H. pylori infection has not been observed to differ across the sexes, according to other studies (15, 17, 21, 32).

It was shown that there was a non-significant correlation between age groups and the rate of H. pylori infection. Young adult

patients (aged 21 to 30) had a greater seropositivity percentage for H. pylori infection than patients over the age of 50 (80 %), while patients aged 41 to 50 had a lower seropositivity percentage (25 %). This outcome is in line with earlier studies that showed a high incidence of H. pylori infection (15, 25, 33, 34). However, it is different from other research carried out in Diyala (35) and (26) in Mosul, Iraq. The patient's nutritional level, social situation, inadequate sanitation, water supply, and environmental condition may be responsible for the disparities between the current results and the results of the previous research.

Our findings showed that the risk of H. pylori infection was higher among urban patients (63.4%) than in rural patients (58%). This disagrees with other studies in Arbil/Iraq (15) and with the study conducted in Tanzania by (36). This may be due to a more complicated lifestyle, bad city environment, crowded people, and continuous war (2, 14, 30). Regarding the marital status, the H. pylori infection rate was significantly higher (51.8%) among marital status maybe is due to their lifestyle and have children with the crowded member of the family which agreed with (2, 6, 11).

There was a significant association between patients receiving therapy against H. pylori infection; the seroprevalence was higher (64%) among non-using medication against H. pylori infection, is due to the effect and acting of antibiotic medication which somewhat controls the disease our result close agreed with (1, 11).

The infection rate of H. pylori was high (56.7%) among blood A group patients compared to other blood types (B=53.1% and O=35.7%). H. pylori infection was shown to be more common in patients with the A blood group, while patients with the B and O blood groups were at lower risk of infection. Consistency with other investigations carried out in Ethiopia (37) and Nigeria (38) supported this conclusion.

Higher susceptibility to H. pylori infection is most likely attributable to either the high prevalence of infection among people of blood type A or the fact that the H antigen represents a crucial receptor expressed in the gastroduodenal mucosal cells that adhere to and promote H. pylori colonisation. Seroprevalence rate of H. pylori antibodies among patients with recurrent ulcers, a high percentage of (66.6%) was found in patients with recurrent H. pylori antibodies in patients with severe H. pylori signs, followed by 61.7% among the mild and a low percentage of 51.1% from the moderate group. No study was done, including the same or different results.

The seropositivity percentage of H. pylori infection was higher among patients with a previous history of H. pylori (69.2%) than patients with a previous non-history of H. pylori 45.4%, which is due to bacteria persistence and survival in the stomach of patients (11, 15, 26).

CONCLUSION

The prevalence percentage of H. pylori infection was high among survived recurrent gastric ulcers in Arbil city. A high prevalence was seen in female patients. The prevalence of H. pylori infection is increasing with age, especially in middle age. Higher frequency anti-H. pylori antibodies were found in married, urban patients with A blood group, patients with moderate symptoms of an ulcer, patients who receive therapy against H. pylori, and patients with previous H. pylori history.

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