Gastroduodenal Endoscopic Findings and Seroprevalence of *Helicobacter pylori* among Suspected Individuals

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Abstract

The peptic ulcer was developed and appeared recently as a contagious disease, distributed all over the world and the most common cause of this disease is *H.pylori*. Laboratory diagnosis was used to detect this bacterium by several methods which include invasive and non-invasive methods. ELISA technique was used to identify IgG, IgM, and IgA antibodies against *H.pylori*. All participants underwent endoscopic procedures at the Duhok City/Azadi Hospital/Endoscopy Center, and a highly skilled endoscopist carried out the procedures, As well questionnaire form has been filled out through the interview with the participants to enroll the socio-demographic factors which include occupation, history of treatment, and endoscopic findings. Among the 90 participants, the serological prevalence is 72%, 7% and 30% of positive antibodies IgG, IgM, and IgA respectively. The housewife group recorded a high percentage of positive IgG whereas low percentages were recorded for the military group. A significant immune reaction of IgG in the student group has been noted. In addition to the housewife group to the positive IgM. The effect of those who had treatment previously has been revealed by positive IgG. Moreover, antral gastritis had a significant relationship with positive IgG by using ELISA. in the conclusion, the Housewives group was more infected with this bacterium, and a significant association was found between antral gastritis and seropositive IgG.

1. Introduction:

Helicobacter pylorus is a gram-negative, spiral curved, and flagellated bacterium that colonizes the human stomach, it can grow under microaerophilic conditions. It has been called a fastidious bacteria because of its requirement for food and failure to create an environment that is suitable to growth [1]. lately Those who suggested the presence of this microorganism were Robin Warren and Barry Marshall in 1983 in the mucosal layer of the stomach, basically was called

Campylobacter pyloridis and then reclassified as *Helicobacter pylori* [2].

Endoscopy is a non-surgical operation that has been used to find and investigate the symptoms inspection of the interior organs of the body and confirmation of diagnosis [3]. *H.pylori* is related to different gastroduodenal disease such as peptic ulcer, gastritis and duodenitis, and dyspeptic symptoms [4]. The prevalence of *H. pylori* infection has been attributed to differences among various population groups and geographical regions [5]. In developed countries, 50% of the population is prominent among children and achieves 90% of maturity, compared to 50% in developing countries [6]. Many challenges have occurred in the planning of treatment who suffered from an infection of the stomach, previously microbiological specialists believed the stomach was an unfavorable environment

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Table 1. Seroprevalence percentage of *Helicobacter pylori*.

Serological tests	Seroreactive of *H. pylori*		Non seroreactive of *H. Pylori*	
	No.	%	No.	%
IgG	65	72	25	27
IgM	7	8	83	92
IgA	27	30	63	70

Table 2. Relationship between seropositivity of *Helicobacter pylori* and occupation factor among symptomatic people.

Occupation	No.	Seropositive IgG		Seropositive IgM		Seropositive IgA	
		No.	%	No.	%	No.	%
Housewives	33	26	79%	5	15%	14	42%
Government employment	9	7	78%	0	0%	4	44%
Free worker	17	14	82%	0	0%	3	18%
Retired	11	8	73%	0	0%	5	45%
Students	12	9	75%	1	8%	1	8%
Military job	8	1	13%	1	13%	0	0%
Total	90	65		7		27	

for the colonization of any kind of microorganism due to the high acidity Consequently, the only reason of their treatments was to decrease acid. It has been proven through a number of investigations that *H. pylorus* is the main factor in the development of lesions in the mucosa of the gastroduodenal portion of the digestive tract. As a result, acid-reducing drugs were replaced with treatments that also have antibacterial and anti-acid characteristics as a treatment strategy [7].

Many previous studies proposed that medication against this bacterium contributes to the eradication of infection through different strategies. Subsequently, could reduce the pathogenicity and associated factors with the inflammation and cancer of the stomach and duodenum [8]. *H. pylori* can cause inflammation in the deep layers of the stomach by secretion of an effective such as urease which can alter the acidic environment of the gaster medium. Besides, secretion of biological activators and toxins such as cytotoxin-associated gene A (CagA) and vacuolating cytotoxin A (VacA) act as virulence factors which make facilitate pathogenicity. Other mediators like adhesins proteins have a crucial role in adherence of H.pylori to the stomach layer and Cecropins its function is inhibit of the growth of other microorganisms [9]. Many agents can increase the high possibility of infection by *H.pylori* such as those who have suffered from the impaired immune response (acute leukemia, Human immunodeficiency virus) as well the heterogenetic structure of *H.pylori* which make it more adequate for inflammation in the host.[10].

The purpose of this study is to conduct endoscopic screening and its relationship to this infection by serological diagnosis among symptomatic people.

2. Materials and Methods:

About 5 ml of blood were drawn from each suspected person under sterile conditions by highly skilled staff members, and then used a centrifuge to separate the serum. All samples were then kept in the freezer until the end of the collection, and then they were evaluated using commercial ELISA test kit (Monobind Inc., USA) for the presence of anti-*Helicobacter pylori* IgG, IgM, and IgA antibodies. All participants underwent endoscopic procedures at the Duhok City/Azadi Hospital/Endoscopy Center, and a highly skilled endoscopist carried out the procedures.

The endoscopic staff member filled out a report of the conclusion and saved it in the stores documents. Face-to-face interviews were used to gather socio-demographic information from potential participants, which included information on their occupation, medical history, and results of an endoscopic examination. The statistical package for social sciences (SPSS) version 25 was used to analyze the current data, and the probability value or P-value (typically 0.05) is regarded as significant.

3. Results and Discussion:

In 90 suspected people, immunoglobulin G was revealed to have the highest seropositive of *H. pylori* at 72%, immunoglobulin A was second with 30% and immunoglobulin M had the lowest seropositive at 7%, as shown in Table (1).

Table 3. Relationship between seropositivity of *Helicobacter pylori* and history of treatment among symptomatic people.

History of treatment	No.	Seropositive IgM		Seropositive IgG		Seropositive IgA	
		No.	%	No.	%	No.	%
Medication	35	2	6%	26	71%	12	23%
No medication	55	5	9%	39	74%	15	26%
Total	90	7	7%	65	72%	27	30%

Table 4. Relationship between seropositivity *Helicobacter pylori* and endoscopic findings among symptomatic people.

Endoscopic findings	No.	Seropositive IgG		Seropositive IgM		Seropositive IgA	
		No.	%	No.	%	No.	%
Normal EGD	40	23	58%	0	0%	4	12%
Gastroesophageal reflux disease	9	4	44%	1	11%	3	60%
Antral gastritis	28	27	96%	4	14%	15	34%
Duodenitis	2	1	50%	1	50%	2	15%
Gasteroduodenal ulcer	11	10	90%	1	0%	3	20%
Total	90	65		7		27	

The highest positive rate was found in the housewife group while the lowest rate pointed to the military group. The student group and seroreactive IgG were shown to be significantly correlated, while the housewife group and seroreactive IgM were also significantly linked, as shown in Table (2).

A significant correlation was found between those who had not previously received treatment and positive IgG with recording the highest rate of infected individuals in comparison to the lowest rate of infected individuals in those who had a history of treatment and no significant correlation has been observed, as shown in Table (3).

A notable correlation was detected between gastritis criteria and positive IgG. Normal Esophagogastroduodenoscopy (EGD) was recorded as the highest value of participants in comparison to other endoscopic findings parameters, as shown in Table (4).

In the framework of the current study, the semi-automated ELISA technique was used and detected 72% of Immunoglobulin G, 7% of immunoglobulin M, and 30% of Immunoglobulin A. antibodies from 90 participants. this outcome was similar to [11] who identified 66.13% of serum Anti-*Helicobacter pylori* IgG and 12% of IgM by ELISA and also comparable to [12] who detected the highest seroreactive level of IgG and IgA in patients who suffered from antral gastritis with the recording of significant association between antral gastritis parameter and ELISA IgG. The current study result was similar to [13] who demonstrated the high titer of IgG 72% and low titer of IgM 36% by ELISA and obtained notable correlation between anti-*H.pylori* IgG and antral gastritis. Many studies' findings disagreed with the result of the present study as in [14] who found the highest level of IgM 63.33%, and IgG 13.33% by ELISA technique. Many factors contribute to this variation such as the methodology of the study, impairment of immune response of the host against this pathogenic microorganism, a limited number of samples, the kind of captured antigens used for detection of immunoglobulins, geographical distribution of the *H. pylori* infection and stage of infection. According to the results of the current study, ELISA IgM showed a statistically significant relationship with the highest percentage of seropositive cases in the housewives group. This outcome is similar to that seen in [15] who conducted serodiagnostic to investigate 49.6% of seropositive samples of housewives workers from 152 dyspeptic patients and demonstrated a static relation with *H. pylori.* Additionally, it is in accordance with a previous study by [16] who observed a considerable correlation between seroreactive of *H. pylori* and housewives factor, detecting seroreactive cases in approximately 57.7% of patients with dyspepsia symptoms.

The results of the current study differed from those obtained by [17] who observed that symptomatic patients had a serum anti-*H. pylori* IgG concentration of about 28.3% and that there was no significant correlation between this bacterial infection and housewives workers. These differences are the result of a number of factors, such as the research place, the interaction between the social and economic habits of a group of people, the low proportion of specimens, and the usage of contaminated cooking equipment, physiological and hormonal factors. The rate of serum IgG titer with this bacterium among the student group was significantly higher in the current findings, and a notable association between stu-

dents and this pathogenic microbe was observed. This result is consistent with those of other studies, such as [18] who found that serum IgG titer with this bacterium was 93% from 71 participants using the ELISA procedure.

It was discovered to be significantly associated. This study's seropositivity rate disagreement with findings from [19] observed that the ELISA assay showed that 67.6% of students were seropositive of IgG for *H. pylori* infection and with there were no statistically significant differences between the group of students who had this illness based on the occupation factor.There are various influential agents that could affect the host immune responses, so the host immune response is not a sufficient protective mechanism to eliminate this harmful bacterium. Close interaction between children in crowded places like schools and entertainment parks , as well as environmental circumstances like poor environmental sanitary conditions and host genetic predisposition to *H. pylori* infection, could have been possible factors that increase the rate of infection of this harmful bacterium., and as a result, managing this pathogenic microbe presented a spectacular challenge strategy has been changed by medication, which has changed from acid-suppressing drugs into antacids and antimicrobial agents.

In the present study, it was revealed that people who had a history of treatment had a lower risk of infection than those who hadn't, with a noticeable relationship to those who hadn't taken treatment and seropositive IgG. All these data were the same as those reported by [20] who observed that using both NSAIDs and antibacterial medications considerably reduced *H. pylori* growth such as aspirin significantly reduced the activity of *H. pylori* virulence factors in a dose-dependent manner and also made *H. pylori* more susceptible to antibiotics such clarithromycin, metronidazole, and amoxicillin by increases endocellular concentrations of antimicrobials possibly through changing outer membrane proteins of *H. pylori*. The same conclusion was made by [21] who suggest the absence of treatment could spread wide prevalence of infection.

4. Conclusion:

In conclusion, it can be seen that the housewife group is more infected to *H.pylori* as well there is no statistical relationship between endoscopic findings and clinical symptoms of suspected individuals except gastritis has a significant correlation with ELISA IgG. It can be suggested that not all clear endoscopic parameters mean there is no infection. Individuals who have not previously taken treatment have a relationship with *H. pylori* as proposed by the present data.

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Data Availability Statement: All of the data supporting the findings of the presented study are available from corresponding author on request.

Declarations:

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نتائج تنظير المعدة والاثني عشري والانتشار المصلي لجرثومة هيليكوباكتر بيلوري بين الأفراد المشتبه

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الخلاصة

ظهرت القرحة الهضمية مؤخرًا كمرض معدي ومنتشر في جميع أنحاء العالم والسبب الأكثر شيوعًا لهذا المرض هو جرثومة المعدة. تم استخدام التشخيص المختبري للكشف عن هذه البكتيريا بعدة طرق تشمل الطرق الغازية وغير الغازية. وتم استخدام تقنية *ELISA* لتحديد الأجسام المضادة *IgG* و *IgM* و *IgA* ضد *H.Pylori* وايضا خضع جميع المشاركين لإجراءات التنظير الداخلي في مدينة دهوك / مستشفى آزادي / مركز التنظير، وقام أخصائي تنظير ماهر للغاية بتنفيذ الإجراءات، كما تم ملء استمارة الاستبيان من خلال المقابلة مع المشاركين لتسجيل العوامل الاجتماعية والديموغرافية التي تشمل المهنة وتاريخ العلاج ونتائج التنظير الداخلي. من بين 90 مشاركًا، كان الانتشار المصلي % 72 ، % 7 ، % 30 من الأجسام المضادة الإيجابية *IgG* و *IgM* و *IgA* على التوالي. سجلت مجموعة ربات البيوت نسبة عالية من *IgG* الموجب بينما سجلت نسب منخفضة للمجموعة العسكرية. لوحظ تفاعل مناعي كبير لـ *IgG* في مجموعة الطلاب. بالإضافة إلى مجموعة ربات البيوت الموجبة *IgM* تم الكشف عن تأثير أولئك الذين عولجوا سابقًا بواسطة *IgG* الإيجابي. علاوة على ذلك، كان لالتهاب المعدة الغاري علاقة معنوية مع *IgG* الإيجابي باستخدام *ELISA* في الختام، كانت مجموعة ربات البيوت أكثر إصابة بهذه البكتيريا، ووجد ارتباط معنوي بين التهاب المعدة الغار و *IgG* المصل.

الكلمات الدالة: الجرثومة المَلْوِيَةْ البَوابية، التنظير، الامصال.

التمويل: لايوجد.

بيان توفر البيانات: جميع البيانات الداعمة لنتائج الدراسة المقدمة يمكن طلبها من المؤلف المسؤول.

اقرارات:

تضارب المصالح: يقر المؤلفون أنه ليس لديهم تضارب في المصالح.

الموافقة الأخلاقية: لم يتم نشر المخطوطة أو تقديمها لمجلة أخرى، كما أنها ليست قيد المراجعة.