Research Article

Prevalence and association of *Helicobacter pylori* infection with gastritis and its age and sex distribution in a population of Karbala

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ABSTRACT

Background: *Helicobacter pylori* is a pathogenic bacterium that parasitizes the gastric mucous layer and the epithelial lining of the stomach that causes duodenal ulcers, gastric ulcers, and cardiovascular disease among others, is found in about half of world's population. The aim of this study is to find the prevalence and association of *H. pylori* infection with gastritis and its age and sex distribution in a population of Karbala. **Materials and Methods:** A 50 blood samples were collected from patients referred to Imam Al-Hussein Medical City in Karbala, from October 1, 2017, to January 1, 2018, with the mean ages of 1–75 years of both sexes. The samples were analyzed for the presence of *H. pylori* antibody in serum. **Results:** In the present study, determined the prevalence of *H. pylori*-associated gastritis in the population of Karbala is 94%. Chronic gastritis was found in 84% of patients with *H. pylori* infection and 16% of patients with gastritis of some other etiology.of 50 blood samples, 46% were seropositive with male and 48% female seroprevalences. The antibody prevalence was higher (30%) in middle-aged patients (16–45 years) than in younger patients (1–15 years) (8%) and older patients (61–75 years) (12%). There was no significant difference ($P > 0.05$) between both sexes regarding the incidence of gastritis with *H. pylori.* **Conclusions:** The most chronic gastritis infections are resulting from *H. pylori*. The middle-aged patients are the most susceptible to infection. There is no statistically significant difference in sex.

KEY WORDS: Gastritis, *Helicobacter pylori*, Prevalence and inflammation

INTRODUCTION

Gastritis is a common community problem, it is an inflammation to the mucous membrane lining in the stomach leads to dysfunction in the function and the appearance of various symptoms of the disease. The severity of the inflammation may be referred to suddenly as acute gastritis or lasts for a long time as chronic gastritis may persist for years or life unless it is treated.[1,2] Acute gastritis is a transient mucosal inflammatory process that may be without symptoms or cause multiple displays including abdominal pain, nausea, and vomiting. In the most severe cases, there may be erosion, ulceration or bleeding or rarely a statistically significant blood loss and lasts for long periods unless the causes of the inflammation are treated successfully and the disease becomes chronic gastritis.[2,3] *Helicobacter pylori* is recognized as the most major cause of gastritis, peptic ulcer (PU), and gastric cancer (GC) risk factor.[4] Solcia *et al.* reported the role of *H. pylori* gastritis in ulceration and carcinogenesis because it has a group of the most important factors: Motility, activate of mucinase, product of urea, adherence factors, heat-labile cytotoxins, hemolysin, polysaccharides, and glycocalyx.[5] *H. pylori* is a Gram-negative, non-spore-forming bacterium that grows under microaerophilic conditions at an optimum temperature of 35–37°C and high humidity.[6,7] *H. pylori* is the cause of most cases of chronic gastritis that has been transferred mainly from individual to individual in regions with poor sanitation and contaminated food or water; also, the infection rates may be higher than 80% in some developing countries.[8] Its prevalence rises with age as the socioeconomic situation declines during childhood and thus differs significantly across the world.[9] It is not known how often an acute infection with *H. pylori* spontaneously clears, studies in children suggest

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that spontaneous loss of infection may be prevalent. Infection in adults appears to be typically long lived and is probably lifelong. Most infected individuals have chronic active, non-atrophic superficial gastritis. This histological form is usually asymptomatic but may be associated with duodenal ulcer; chronic atrophic gastritis, gastric adenocarcinoma, or gastric lymphoma.[9,10] There are several reasons for gastritis and the most important is the infection of *H. pylori* as well excessive alcohol consumption, administer of anti-inflammatory drugs, shock through the nasal tube contagious, exposure to radiation, and autoimmune diseases.[11] Hence, the current study aims to find the prevalence and association of *H. pylori* infection with gastritis and its age and sex distribution in a population of Karbala.

MATERIALS AND METHODS

Samples

The study group was selected from patients referred to Imam Al-Hussein Medical City in Karbala, from October 1, 2017, to January 1, 2018, and was collected 50 blood samples, with the mean ages of 1–75 years of both sexes.

The following information was collected from the patients under the study included:

a) Diagnosis (chronic gastritis and acute gastritis)
b) Age
c) Sex (male and female).

Collection the Blood Specimen

Under this study, a 3 ml of blood was drawn from the patient's vein, placed in a gel tube, and left the tube at room temperature for 15 min, then centrifuged at 3000 rpm for 10 min to separate the serum that was pulled using the micropipette.

Detection of *H. pylori*

The bacteria were detected using anti-*H. pylori* IgM/IgG antibodies kit by the company (Calbiotech, U.S.).

Statistical Analysis

The sample collected in the current study was analyzed using the ANOVA: Single factor to difference the studied variables at a probability level of 0.05 by finding *P*-value in the ANOVA table in Microsoft Excel. The results of the study were also expressed in the form of real numbers and percentages.

RESULTS AND DISCUSSION

The most common infectious disease known to occur in human is now *H. pylori*, about 50% of the human population is infected. These bacteria can cause persistent gastritis and are directly related to the development of PU disease as well as gastric and mucosa-associated lymphoma of the stomach.[12] Individuals residing in countries with poor socioeconomic circumstances had soon obtained elevated prevalence rates of *H. pylori* acquired at an early age.[13]

The gastritis revealed in 47 patients infected with *H. pylori* and three patients infected by gastritis without *H. pylori*. As can be shown from Table 1, the percentage divided into the chronic gastritis by 84% and acute gastritis by 16%. The chronic gastritis includes with *H. pylori* by 80% compared with 4% without *H. pylori*, while the acute gastritis in 14% of patients with *H. pylori* also appears in 2% of patients without *H. pylori*.

During the study period, the number and percentage of the patients infected with gastritis were recorded by sex [Table 2], where 46% of males infected with *H. pylori* gastritis while females infected with *H. pylori* gastritis account for 48%. The percentage of males infected without *H. pylori* gastritis also appeared to be 4% and 2% of females infected without *H. pylori* gastritis.

This study found that there was no significant difference ($P > 0.05$) between both sexes regarding the incidence of gastritis with *H. pylori*.

Table 1: Percentage of patient infected with *H. pylori* in two types of gastritis

Gastritis	With *H. pylori*		Without *H. pylori*		Total	
	Number	%	Number	%	Number	%
Chronic gastritis	40	80	2	4	42	84
Acute gastritis	7	14	1	2	8	16
Total	47	94	3	6	50	100

Table 2: Percentage of male to female infected with gastritis

Gastritis	Male infected with gastritis		Female infected with gastritis		Total		*P*
	Number	%	Number	%	Number	%	
With *H. pylori*	23	46	24	48	47	94	0.83
Without *H. pylori*	2	4	1	2	3	6	0.52
Total	25	50	25	50	50	100	

The studied samples were divided into age groups between the 1 and 75 years, as shown in Table 3 and Chart 1. A significant increase ($P < 0.05$) was observed in the age groups of 16–30 and 31–45 years by 30% for both of them compared to smaller and larger of these age groups.

DISCUSSION

Epidemiological studies frequently are using serological tests for *H. pylori* infection detection, due to their inexpensiveness, rapidity, and acceptability to patients. The other benefits of serological testing are that the precision of serological testing is not influenced by ulcer bleeding, gastric atrophy, and the use of PPI or antibiotics, which cause false-negative results in other invasive or non-invasive testings.[14]

The percentage of *H. pylori*-associated gastritis was higher than non-*H. pylori*-associated gastritis. This is especially significant due to the increasing yearly incidence of gastritis in general and the established reality that untreated *H. pylori* infection is the major cause of chronic gastritis. It was also noted that *H. pylori*-associated gastritis was most prevalent between 16 and 45 years of age, with a mean prevalence of 30%. This is the economically viable age group and, therefore, underscores the economic significance of the infection as observed by Suerbaum and Michetti[15] and Shuker.[16] *H. pylori* is least prevalent in the age group of 1–15 and 61–75 years, with an average of 8% and 12%, respectively [Table 3]. A cursory look at the prevalence from childhood to old age demonstrates that the prevalence increases with age and attains peak levels at middle age and then sharply falls at old age. This is compatible with the Suerbaum and Michetti,[15] which reported that the highest prevalence among middle-aged adults, although 80% and above were recorded, which is higher than our finding. Aging is associated with a decreased rate of epithelial cell turnover and a reduced ability to repair the gastric mucosa,[17] which has been attributed to declining levels of prostaglandin in the gastric mucosa and so the age regarded as significance risk factor for colonization of *H. pylori*.[18] There was no statistically significant difference in the seroprevalence results between males and females, and similar results have been reported elsewhere.[19]

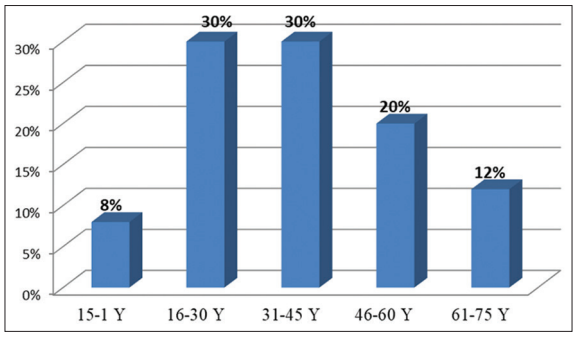

Chart 1: The distribution of infected patients with gastritis according to age

Table 3: The distribution of infected patients with gastritis according to age

Age groups	1–15	16–30	31–45	46–60	61–75	Total
Number	4	15	15	10	6	50
%	8	30*	30*	20	12	100
P			0.00814362			

CONCLUSIONS

The most chronic gastritis infections are resulting from *H. pylori*. The middle-aged patients are the most susceptible to infection. There is no statistically significant difference in sex.

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