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Original article

Prevalence of Helicobacter Pylori Infection in El-Beida City

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ABSTRACT

***Background and objectives**: Helicobacter pylori is a spiral-shaped, Gram-negative, microaerophilic rod with four to seven flagella. Infection with H pylori is increasingly recognized as a global issue. It is one of the common causes of gastritis and peptic ulcers and has been considered a risk factor for gastric cancer. Oral-oral or fecal-oral route is the most common route of H pylori infection. Mainly, there are two types of investigations for detecting the presence of H pylori non-invasive and invasive methods. This study determines the prevalence of H Pylori among people in El -Beida city and correlates the rate of infection between both sexes in different age groups. **Methods.** To achieve the aim of this study, random samples (1600) were collected from five local laboratories and the method of investigation was a stool antigen test. The data collected and analyses were performed using Microsoft excel. **Results.** Out of 1600 cases, 386 tested positive for H pylori with an overall incidence of 24.12%. Rate of infection in males was 24.6% while in females 23.9%. Additionally, the following percentage rates were found in various age group. 0-10 years (20.5 %); 11-20 years (20.9 %); 21-30 years (25.4 %); 31-40 years (25.8 %); 41-50 years (26.04 %); 51-60 years (27.9 %); 61-70 years (15.6 %); 71-80 years and (18.2 %); >80 years (20 %). **Conclusions.** The prevalence of H. pylori in El Beida city seems to be the same in both genders. The incidence of H pylori infection varies in different age groups, where the highest rate of infection was in the age range (21-40) years and the lowest rate of infection after 70 years old.*

Keywords: H pylori, Prevalence, SAT, male, female, positive, negative

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INTRODUCTION

H-pylori is a gram-negative bacterium [1], the genus helicobacter is a member of the ε subdivision of the Proteobacteria, order Campylobacterales, family Heliobacteria [2], situated on the luminal surface of the gastric epithelium, it was first insulated by Warren and Marshall in 1983 [3]. It provokes a sequence of chronic inflammation in the gastric mucosal layer [1]. H. pylorus is a transmissible disease, although the exact mode of transmission is still unknown, the most common route among people is either the oral-oral or fecal-oral route. H. pylori has been shown to survive for many days in milk and tap water in its infectious bacillary form and several months in river water in its coccoid form [2]. Although humans appear to be the primary reservoir for H. pylori infection, H. pylori have also been isolated from nonhuman primates and domestic cats [2]. Additionally, the possibility of iatrogenic infection in patients following endoscopy is a potential risk factor not only for H. pylori but also for other infectious diseases such as hepatitis B, hepatitis C, tuberculosis, and possibly human

immunodeficiency virus, due to difficulty in disinfecting the endoscope's complex structure [4].

Regarding the diagnosis of H pylori infection, there are several techniques for detecting the presence of H. pylori, each with its own set of benefits, drawbacks, and limits. Firstly, Endoscopy is required as a basic approach to categorizing the procedures. Additionally, histological assessment, culture, polymerase chain reaction (PCR), and the rapid urease test (RUT) are examples of biopsy-based assays that are done on tissue acquired during endoscopy [5]. On the other hand, non-invasive methods such as the urea breath test (UBT), serology, and stool antigen test (SAT) are commonly used for H pylori diagnosis. Researchers and doctors can also use PCR to detect H. pylori in tiny samples with few germs. The stool antigen test (SAT) is the common lab test used, based on identifying the presence of antigens against H. pylori in stool samples, the SAT employs an enzyme immunoassay. It is a solid way to diagnose an active infection and confirm an efficient infection treatment [5]. It has been found that the sensitivity of the antigen test is 94.1%, and the specificity 91.8% [6]. Additionally, four weeks after the end of therapy the SAT gives reliable results (sensitivity of 95.6% and specificity of 94.7% relative to the urea breath test) [7]. However, the SAT results may be influenced by digestive tract diseases, proton pump Inhibitors (PPI) therapy, or the presence of a bleeding ulcer [5].

The incidence of H. pylori infection is higher in developing countries than in developed countries [8]. However, the prevalence of *H pylori* varies significantly among countries and resident groups within the same country [3].

It is a strong relationship between age and the carcinogenic effect of H. pylori. H. pylori infection early in life predisposes patients to gastric cancer whereases, acquisition of infection later leads to the development of duodenal ulcer [9]. Regarding gender, previous studies suggested an increased incidence of H. pylori infection in men compared with women, but it did not reach statistical significance [10]. The main aim of this study is to determine the prevalence of H Pylori among people in El-Beida city and correlates the rate of infection between both sexes in different age groups.

METHODS

Study design and sampling

This retrospective study was conducted on random specimens (1600 samples) that were collected from local laboratories in El-Bieda city, Libya (El-Bieda medical center, Al-Slam private hospital, Al-Tarahom private clinic, Al-Jamee private clinic, Al-Burj private laboratory, Al-Razi private laboratory) from 20 September 2020 to 10 March 2022 and were analyzed using a stool antigen test SAT.

Data analysis

The data collected were entered into the computer and then analyzed using Microsoft Excel 2010.

RESULTS

Out of 1600 cases (707 males and 893 females), 386 individuals tested positive for H. Pylori, resulting in an overall incidence of 24.12 %. Males were infected at a rate of 24.6 %, while females were infected at a rate of 23.9 % (Figure 1).

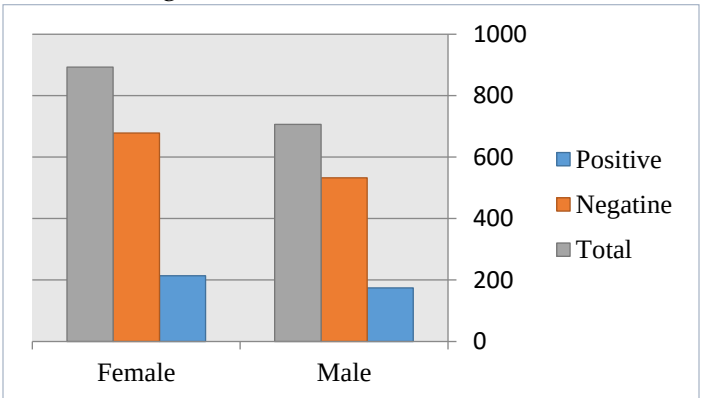

Figure 1. prevalence of H pylori among males and females

Table 1 shows the prevalence of infections among the population according to age group in both

genders. the peak of infections is in age groups 21-40, 41-50, and 51-60 years with a percentage of 25.8%, 26.04%, and 27.9% respectively.

Table 1. prevalence of infections among the population according to age group in both genders

Age range	H Pylori positive/total (%)		
	Male	Female	Total
0-10	20/92(21.7%)	21/108(19.4%)	41/200(20.5%)
11-20	9/53(16.98%)	33/148(22.3%)	42/201(20.9%)
21-30	38/147(25.8%)	46/183(25.1%)	84/330(25.4%)
31-40	50/169(29.6%)	38/172(22.1%)	88/341(25.8%)
41-50	26/120(21.6%)	43/145(29.6%)	69/265(26.04%)
51-60	20/71(28.1%)	25/90(27.7%)	45/161(27.9%)
61-70	7/36(19.4%)	3/28(10.7%)	10/64(15.6%)
71-80	3/14(21.4%)	3/19(15.8%)	6/33(18.2%)
>80	1/5(20%)	0/0(0%)	1/5(20%)
Total	174/707(24.6 %)	214/893(23.9 %)	386/1600(24.12 %)

DISCUSSION

H. pylori is a Gram-negative spiral bacterium situated on the luminal surface of the human stomach [11]. It is associated with numerous GIT disorders, including ulcers, lymphoma, and gastric cancers in adults [12]. The exact mode of transmission is not yet known. Many previous studies regarding the prevalence of H pylori infection have been published globally. Due to the high occurrence of H pylori infection and its associated disorder among the Libyan population, numerous studies have been done in Libya.

In this study, the prevalence of H. pylori in both genders appears to be almost the same, (24.6 %, 23.9 % For males and females respectively). This result agrees with a study performed in Tripoli where they found that the prevalence of H Pylori infections was almost the same, 35.9% (males) and 36% (females), [13]. Additionally, other studies also agree with these findings, where no significant differences were found between gender and H pylori infections [14-17]. On the other hand, a study conducted in El beida city found that the prevalence of H pylori infection in females more than in males (81.6%, 60.7% respectively) [18]. However, the difference in the type of investigations used to detect H pylori infection might be the cause of the variation in the prevalence rate, as the sensitivity and specificity rates vary between the tools of investigations. In addition, taking Proton-pump inhibitors seem to affect the accuracy of the stool antigen test which should be considered during the collection of the samples.

With regards to age, in the current study, the highest prevalence of H pylori infection was in the age group 21-50 years in both genders. Similarly, a study done in Libya found the same trend of infection in this age group (Bakka et al. 2002). Moreover, the prevalence of H pylori infection decreased with an increase in age up to 80 years. This finding agreed with a study in Tripoli where they found a sharp dropping in the percentage of H pylori infection in the 60-69 and 80 years [13]. These findings go in line with those found in previous literature globally [15, 19].

Although our study has not included marital status, clinical data, and socioeconomic status, our population is large and covers almost all age groups.

CONCLUSION

In summary, we found that H.pylori is highly prevalent in El Beida city among both genders. The incidence of H pylori infection varies in different age groups, where the highest rate of infection was in the age range (21-40) years and the lowest rate of infection after 70 years old. However, detailed clinical data such as risk factors, and medical history were not available in this study. Also, knowing the last time of having the H pylori eradication therapy should be available in the next study.

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