Original Article

Sero-prevalence of Helicobacter pyloriin Libyan patient with gastroenteritis

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Abstract

Helicobacter pylori (H. Pylori) is a gram-negative spiral bacterium that colonizes only the mucous layer of the human stomach. They are found in about half of the world's population. H. pylori infection is currently considered one of the most common bacterial infections in humans. The discovery of H. pylori has revolutionized the treatment of many gastrointestinal illnesses. This bacterium has been identified as a major cause of several gastrointestinal illnesses, including gastric adenocarcinoma, gastric ulcer disease and mucosal-related tissue. Some studies are consistently showing the association between H. pyloriinfection and gastric cancer. The study aimed to establish evaluating the prevalence of H. pylori infection with gastroenteritis in Mesllata-Libya. The serum samples were collected from 69 patients with gastrointestinal disorders, all of them have been livingin Mesllata-Libya. And each sample screened against anti H. pylori IgG to evaluate the prevalence of H. pylori infection in those patients. A total of 69 sera samples werecollected and analyzed. The first group was aged (10-25) years contains 15 patients are females only. Whereas 11 (73.3%) of them were infected. The second group was aged (26-40) years contains 26 patients, 12 males (46.15%) and 14 females (53.85%). Eight (66.7%) of males were infected while 4 (33.3%) were non-infected, 13 (92.86%) of females were infected and one patient (6.14%) was non-infected.

The third group was the elderly aged (>41) years contains 28 patients, 15 males (53.57%) and 13 females (46.43%). Eleven (73.3%) of males were infected while 4 (26.7) were non-infected, 10 (76.9%) of females were infected and 3 patient (23.1%) were non-infected.

Based on the findings of this study,no significant correlation was observed between gender and agewith *H. pylori* infection, infection with H. pylori is highly prevalent in the Libyan patient with gastroenteritis.

Introduction:

Helicobacter pylori is a gram negative spiral bacterium that colonizes only the mucus layer of the human stomach. It was first reported by Warren and Marshall in 1984. The discovery of H. pylori revolutionized the management of many gastrointestinal diseases (3,5).

Human is the only natural host of H. pylori, and the bacterium has been established as the main cause of several gastrointestinal diseases, including peptic ulcer disease, gastric adenocarcinoma, and mucosa associated lymphoid tissue (MALT) lymphoma. So, several studies have consistently shown an association between infection with H. pylori and gastric cancer. (1, 2) The exact mechanism of transmission is not clear; it is likely to be oral or fecal oral route (4)

Seroepidemiologic investigations have indicated that infection with H. pylori is very common throughout the world andmost infections are acquired during childhood. The prevalence of such infection ranges from 25% in developed countries to 90% in developing countries (5). Factors such as age, socio-economic level and living conditions, especially

during childhood, have been postulated as important determinants in the acquisition of the microorganism (6).

Diagnostic methods are of two types Invasive tests and non-invasive tests. The invasive tests include endoscopic biopsy of the gastric mucosa is examined by histology, culture and rapid urease tests. Non-invasive method is mainly for antibody detection by ELISA, PCR and Urease breath tests etc. All these tests have its own merits and demerits to choose. Serology is now generally accepted as a valid noninvasive screening method for the detection of H. pylori infection. Enzyme linked immuno sorbent assay (ELISA) detects anti-H pylori IgG, IgM and IgA antibodies indicating current or past infection (7).

There are few studies have been done to evaluate the prevalence of H. pylori infection in Libyan patient as no data available with gastrointestinal diseases. Whereas the aim of the study is to establish the prevalence of H. pylori infection in the patients with gastrointestinal disorders in Mesllata-Libya, using enzyme immunoassays for detection of anti-H pylori IgG antibodies.

Material andMethods
Data collection:
This study was carried out in Higher Institute of Science and Technology, Mesllata, Libya, in the period between March to June 2020. The study was conducted on 69 Libyan patients with gastrointestinal disorders (27 males and 42 females). All of them were live in Mesllata, Libya. Each sample screened against anti H. pylori IgG to evaluate the prevalence of

H. pylori infection in those patients. The ages ranged between 10 and 46 years.
About 5 ml of venous blood were collected from the participants for serology. Blood samples were allowed to clot and centrifuged at 3000 RPM for 10 minutes; sera were separated and refrigerated at -20°C until tested.
The H. pylori IgG antibodies were identified at the Laboratory of Microbiology of Higher Institute of Medical Professions, using the enzyme-

linked immunosorbent assay (ELISA). All serum samples were tested qualitatively for the presence of H. pylori IgG antibodies using a Helicobacter pylori IgG CLIA Kit following the instructions given

Results:

percentage of Anti-*H. pylori* in age group.

Among 69 patients, 27 patients (39.1%) were males and 42 (60.9%) were females. The mean age was 46.4 years for males and 35.9 years for females. The overall prevalence of anti-*H. pylori* IgG positivity among the 69 patients was 76.8% (53/69).

H. pylori distribution among different age groups. The data were expressed as the number of patients in each group. The first group is the young people aged (10-25) years contains 15 patients are females only. Whereas, 11 (73.3%) of them are

by the manufacturer (Abnova, China). All tests were performed and results were analyzed by the principal investigator and rechecked by a specialized laboratory technician.

infected, 4(26.7%) are non-infected. The second group is the age (26-40) years contains 26 patients, 12 (46.15%) of them are males were 8 (66.7%) of them are infected, 4 (33.3%) are non-infected. and 14 (53.85%) females were 13 (92.86%) of them are infected, one patient (6.14%) are non-infected. The third group is the elderly people aged (>41) years contains 28 patients, 15 of them are males, were 11 (73.3%) of them are infected, 4 (26.7%) are non-infected. and 13 females, were 10 (76.9%) of them are infected, 3 patients (23.1%) are non-infected.
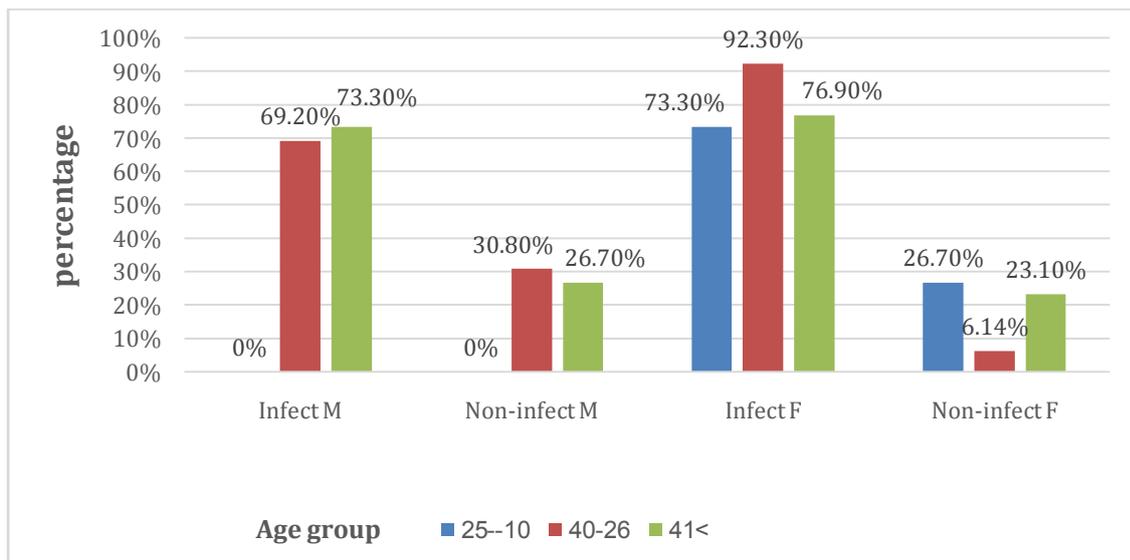

Figure1 : percentage of Anti-*H. pylori* in age group.

H. pylori infection was detected in 53 (76.8%) of 69 Libyan patients with gastrointestinal disorders. (table 2).

Table2: *H. pylori* Prevalence in 69 patients with gastroenteritis

Anti-H. pylori-IgG	Count	Percentages
NEG	16	23,2
POS	53	76.8
Total	69	100

The seroprevalence of *H. pylori* infection among 27 males was 70.4% (19/27), and the seroprevalence of Anti-H. pylori-IgG among 42 females was 80.9% (34/42) (table 3).

Table3: Analysis of patients' gender and age

Gender	Anti-H. pylori IgG		Total	Mean of the age	Minimum	Maximum	Range	Std. Dev	Median
	NEG	POS							
F	8	34	42	46.4	28	85	57	16.33	43
M	8	19	27	35.9	10	86	76	15.37	31
Total	16	53	69	40.0	10	86	76	16.47	36

Data from this experiment was prepared and tabulated in Excel. The mean age for male and female were calculated. The significance of the difference between mean ages was tested using a two-sample t- test at a confidence interval for differences in means of 95 %, i.e. A P value < 0.05 was considered to be statistically significant. All statistical analysis was carried out using SPSS software.

No statistically significant relationship was found between patients' age, gender and a corresponding *H. pylori* infection.

Discussion:

Since the discovery of *H. pylori* by Warren and Marshalltwo decades ago, evidence has been accumulating to indicate that it plays a significant role in the development of chronic gastritis, peptic ulcer diseases, mucosa-associated lymphoid tissue lymphoma, and gastric cancer.Factors such as age, socioeconomic level and living conditions, especially during childhood, have been postulated as important determinants in the acquisition of the microorganism (8).

Seroepidemiologic investigations have indicated that infection with *H. pylori* is now recognized as one of the most common bacterial infections in humans. It is estimated that more than half of the world populations are currently infected with this organism. The prevalence of such infection ranges from 25% in developed countries to >90% in

developing countries, and most infections are acquired during childhood (9).

Overall, the sero-prevalence of H. pylori among patients with gastrointestinal disorders in Mesllata city was 76.8% through the detection of anti-*H. pylori* antibody in the serum samples, which is in agreement with two results reported from Libya; 71.4 % and 70.8% respectively in Benghazi (10,11). In contrast, our finding was higher than other results reported from Libya; 43% in Zawia (12) and 35% in Tripoli (13), 53% in Egypt (14), 54% in Bahrain (15), 66.1% in South Africa (16), 14.3% in North Sulawesi and Indonesia (17).

The higher prevalence of *H. pylori* infection may be attributed to poor living conditions which favor *H.pylori* transmission in the study area. Another

reason could be due to the difference in sample size as that of this study is relatively lower.

In this study, no statistically significant difference in the sero-prevalenceresults between females (80.9%, 34/42) and males (70.4%, 19/27) and similar results have been reported elsewhere (18).

In this study, the Sero-prevalencefound to be increase with age though this was not statistically significant. The study findings are consistent with studies in Ethiopia (19) and Tanzania (20) noted that age was not statistically significant predictor of *H. pylori* sero-prevalence. In contrast to results in this study, a studies in Saudi Arabia (21) and in Augsburg, Germany (22), noted that age as a statistically significant predictor of *H. pylori* infection.

Conclusion

In conclusion, the observed sero-prevalence of *H. pylori* infection among Libyan patient with gastroenteritis is very high in the study area. This study

indicates that gender and age had no effect on the sero-prevalence of *H. pylori* infections. Further research is needed to establish the potential role of *H. pylori* in gastroenteritis infection.

Disclaimer
The article has not been previously presented or published, and is not part of a thesis project.

Conflict of Interest
There are no financial, personal, or professional conflicts of interest to declare.

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