H. pylori Infection in Healthy and Dyspeptic Adult populations Resident in Tripoli and Sabha of Libyan cities: A Seroepidemiologic Study

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Abstract Helicobacter pylorus (H. pylori) is the commonest bacterial pathogen found worldwide and more than half the world population is colonized with it. The infection rate is 85-90 % in developing countries. The prevalence of H. pylori infection varies according to geographic area, socioeconomic conditions and method used to detect H. pylori infection. There is a lack of information about the seroprevalence of anti-H. pylori antibodies in asymptomatic & symptomatic patients in Libya. Aims: - To determine the prevalence of the H. pylori infection in Healthy and Dyspeptic adult populations resident in two communities, Tripoli and Sabha regions. To correlate with the risk factors associated with H. pylori seropositivity in such two populations.

Materials & Methods: - A Blood sample from (100) healthy individuals from Sabha region & (175) healthy from Tripoli area. The dyspeptic patients (125, 94) were attending Gastroenterology Unit of Central Tripoli Hospital & Sabha Hospital respectively. Anti-H. pylori IgG was determined with ELISA method, questionnaire covering Sociodemographic variables were completed by interview.

Results: - In Sabha region, the overall prevalence of H. pylori was 57% in healthy & 37% in Dyspeptic patients respectively. In Tripoli region, the Healthy was 85.1%, dyspeptic patients was 83.2%.

Conclusions: - In the two cities, H. pylori detection in healthy and dyspeptic was high of individuals of aged 25-35 years. Further research in Libya is needed to establish the potential role of H. pylori in gastric and extra gastric pathologies.

Keywords: Helicobacter pylori, Prevalence, Serology, Asymptomatic, Libya.

ملخص بكتريا البيليكوياكتر بلوري (بكتريا المعدة الحزلزية) توجد بشكل شائع مرض في جميع أنحاء العالم في أكثر من نصف سكان العالم. معدل الاعتدوى بما بين 85-90% في الدول النامية وانتشار الاعتدوى بهذا البكتريا وفقاً للإحصاءات الجغرافية والموضوعي والظروف الاقتصادية والطرق العملية المستخدمة للكشف عنها. لا توجد معلومات حول مدى الانتشار المعظم للأقسام المشتركة لبكتريا البيليكوياكتر بلوري لكلا من المرضى والمرضي أو بدو نظراء اعراض الإصابة في بيبيا إذا كان هناك نقص في التحري عن مدى انتشارها بين الأشخاص والذين يعانون من اعراض البعض بين الأشخاص في كلا من مدينة طرابلس وبها. جمعت عينات من (100) من اصحاء من طرابلس (175) من طرابلس كما جمعت أيضاً عينات أخرى من الذين يعانون من اعراض البعض (125) على التوالي لكلا من المدنين من وحدة الم🎥رشاء بالمختبر ومقدار الإصابة من عشما باستخدام تقنية الالاف مع تجميع معلومات عمليات المرضي عبر استبيان.
نسبة سبيها كانت النتائج 75٪ موجبة بين الأصحاء 37٪ بين من يعانون من بعض البعض بينما النتائج من مدينة طرابلس كانت 85.1٪.
Introduction

*Helicobacter pylori* (*H. pylori*) is a spiral gram-negative microaerophilic bacterium which was first isolated by Warren and Marshall in 1984 [1]. In human, since its discovery, *H. pylori* infection considers to be the main cause of various upper gastrointestinal diseases including chronic gastritis and peptic ulcer disease. *H. pylori* infection has been linked to several extra gastric disorders [2]. In 1994 *H. pylori* infection has been consider a class 1 carcinogen - inducing gastric cancer. Moreover, there is a marked difference in clinical outcomes due to bacterial infection among different regions in the world. The risk of being colonized by *H. pylori* depends on geographic area, socioeconomic status and age of the host [3]. Most *H. pylori* transmission occurs in childhood, and in some countries up to 90% of children become infected by the age of 10 years, with reports of infection as early as the first months of life [4-5]. In developing countries the infection can be almost ubiquitous [6], whereas in industrialized countries *H. pylori* infects around 30-50% of adults [7].

Several tests are available for determining the presence of *H. pylori* infection. These may be invasive or non-invasive. Serological investigations (Non-invasive methods) represent the most rapid and convenient way of obtaining a picture of the prevalence of *H. pylori* infection in a population. A majority of serological studies from developing countries are now conducted with commercial kits which are inexpensive, simple, and available in the local market.

In Libya, a country of huge size, important regional differences are likely to occur. Nevertheless, no local data are available on the epidemiology of *H. pylori* infection from different regions of Libya; therefore, the primary aim was to evaluate the incidence of seropositivity *H. pylori* infection among asymptomatic and symptomatic population resident in two communities, Tripoli and Sabha regions. The secondary aim was to determine the risk factors (age, gender, blood group & socioeconomic status) which might be related to the infection with *H. pylori*.

Materials and Methods:

A cross-sectional descriptive study was conducted, on two groups: one group of hundred (100) healthy individuals (mean age 25 years), attending Sabha clinics, (175) healthy blood donors from Tripoli area (mean age 35 years), another group which consist of (125) & (94) dyspeptic patients attending Gastroenterology Unit of Central Tripoli Hospital, and Sabha Teaching Hospital respectively. Based on the questionnaire data, individuals with a history of gastro-duodenal ulcer, with current chronic complaints of the upper digestive tract for two months (nausea, vomiting, heartburn, pyrosis or indigestion) or those currently using anti-acid or anti-ulcer medications were excluded from the study. After we obtained written informed consent from each participant,
Prevalence of H. pylori was detected in the serum of (77.5%) children & teenagers, and in (84.7 %) adults [14]. In Kosovo, the seropositivity of H.pylori is moderately high (56.9%) among healthy blood donors [15]. In Iraq, a study conclude that H.pylori are highly prevalent (55.8%) among university students in Erbil region, higher prevalence found in older students and those from low social class [16].

A Norwegian group tested 1416 subjects of all age groups in an urban and rural community in Northern Norway by stool detection and found H.pylori infection in 0.6% of children, 20% of adolescents, and rising to 45% in the highest age group. They concluded that transmission might start not only in childhood, but also in adolescence, where potential transmission routes could be outdoor toilet use, private well water, and farm animals [17].

In our study, the prevalence of H.pylori in both regions is high; this could be explained by the increased chances of H.pylori transmission in these two populations was due to improper hygiene, food, vegetable contamination, and health care system. It is well known that Helicobacter species have been detected in 142 vertebrate species, including animals from every continent and all four non fish vertebrate taxonomic classes [18]. In a rural community, the prevalence of enteric Helicobacter species was investigated in domestic and free -living birds [19]. Helicobacter pullorum was detected in 68.6% of intensively farmed poultry and 21.7% of poultry raised in the rural farms. Helicobacter canadensis was detected in intensively reared Guinea fowl and for the first time in pheasants from rural farms. The detection of H. pullorum in turkeys was also reported for the first time [20].

One limitation of our study population is the source of water as a risk of H.pylori infection, where there is no data available of the source of water of our population study in both communities. In Libya, for the difficulty to culture H.pylori which required selective medium and Microaerophilic condition, Therefore, analysis the private well water from different regions of Libya, using molecular techniques such as Polymerase Chain Reaction (PCR) to confirm the presence of H.pylori or other Helicobacter species. Using molecular methods for detection of H.pylori in untreated well water, a study concluded that the presence of H.pylori in the wells correlated with clinical infection in the consumers, and with the presence of Escherichia coli, indicating fecal contamination, and consumption of untreated well water should be considered a risk factor for H.pylori infection [21].

Conclusion

The high prevalence of H.pylori positivity that we obtained in adult populations of two communities (Sabha & Tripoli), H.pylori detection in healthy and dyspeptic was high of aged 25-35 years, indicates that infection with this gastric gram negative bacterium is still a common health problem among our population. However, we find that the strict relations between H.pylori seropositivity, socioeconomic state and living in a crowded conditions, as risk factors in our study.
populations. These data support the finding that personal and environmental conditions do affect \textit{H. pylori} infectivity in young subjects living in rural region of Libya. Our data indicate that, knowledge about the reservoirs and modes of transmission could help to explain the high prevalence rates found for \textit{H. pylori} in the developing countries. Also we confirm that as a non- invasive method, the serologic test such as (ELISA) is a useful technique to detect \textit{H. pylori} infection in a country like Libya where the resources and the facility of the diagnosis of \textit{H. pylori} is limited. However Further research is needed to establish the potential role of \textit{H. pylori} in gastric and extra gastric pathologies.

\textbf{Abbreviations and Acronyms}

\textit{Helicobacter pylorus} (\textit{H. pylori}), Enzyme-linked immunosorbent assay (ELISA).

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\textbf{References}


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