IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 7 Ver. VIII (July. 2016), PP 73-77
www.iosrjournals.org

The Prevalence of Helicobacter Pylori Infection in Benghazi, Libya

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Abstract
Background: *Helicobacter pylori infection is usually acquired in early childhood and relatedtonumerous upper gastrointestinal disorders. Local information on the infection epidemiology is uncommon in Libya. This study was performed for the determination of antibodies of seroprevalence of H.pylori in people.*
Methods: *Convenient sampling has been performed in participants that attending to many poly clinics in Benghazi. Venous blood has been collected from people and sera separated. Enzyme-linked immunoflurescent assay (ELFA) has been used to determine H. pylori IgG antibodies in all sera.*
Results: *A total of 200 samples have been collected. H. pylori antibodies have been found in 113(56.5%) people. A 33.6% seroprevalence has been found in subjects of an age of (20<30) years, which regularly decreased with age and get to 8.8% in subjects up to an age of(60 ≤) years of age. No major association was detected between presence of H.pylori antibodies and age, sex, occupation, marital status, education level, socioeconomic status, place o f life, source o f d rink water, waste system, size of family, smoke and drink Coffee.and.tea,but.correlated.with.eat.raw.vegetables*
Conclusion: *with H pyloriInfection is widespread in the general population of Benghazi, Libya. Anationwide epidemiological research is necessary for determining the seroprevalence of H. pylori in Libya*
Keywords: *Epidemiology, ELFA, Helicobacterpylori, Libya, Serolog*

I. Introduction

Helicobacter pylori (*H.pylori*HP) are gram negative spiral bacteria that colonize the human stomach (1). HP is found in half the population of the world. Its prevalence is highly variable in relation to geography, ethnicity, age, and socioeconomic factors. The incidence of HP infection in the developing world is higher than developed countries, and occurs at younger age(2). Infection once established can persist for life if left untreated, and only 30% of those infected are clinically symptomatic(3,4).*H.pylori* is associated with serious digestive tract diseases including chronic gastritis, peptic ulcers, mucosa-associated changes to lymphoma and gastric cancers in adults (5).The exact mode of contracting *H. pylori*infection is unknown, but direct contact between people (oral-oral or faecal-oral) is regarded as the main route of transmission of infection, followed by contaminated sources of water and food (6).The analytical tests for the infection of *H.pylori* could be approximatelyseparated into two classes: biopsy-based tests that are invasive tests due to theirneed for gastroscopy, such as culture, histological examination, quick urease test and tests of molecular methods, and minimally invasive or non-invasive tests where no gastroscopy is needed and the feces, serum, expired air, urine, whole blood or saliva are used for testing (7).

There weresome reports from different areas of Libya on the *H.pylori*infection in patients with gastrointestinal sicknessesrepresenting a commonness rate of (69.7%) (81%) (8, 9),however,fewdata is obtainable on the *H.pylori*seroprevalencein healthy asymptomatic people.However, the purpose of this work was to provide important answers on the seroprevalence of HP IgG inhealthy people.

II. Materials and Methods

2.1 Participants:-

This study was carried out on 200 Libyan individuals attending to many polyclinics in Benghazi from May to October 2014. Their ages ranged between 20 to 75 years (mean 39.12 year).

2.2 Collection of specimens:-

About 5ml of venous blood were collected from participants in EDTA tube and sera were separated and stored until tested.

2.3 Questionnaire sheets:-

Information was collected on structured questionnaire.

2.4 Serology assays:-

*H.pylori*IgG antibodies have beencontrolled at the lab of polyclinic (1) (Al-Oroba), Benghazi, Libya, by ELFA technique (Enzyme Linked Fluorescent Assay).However, all samples of sera have beenverifiedqualitatively for *H.pylori*IgG antibodies used the commercially available VIDAS *H.pylori*IgG (HPY) (bioMérieux Diagnostic, France, kit).

2.5 Statistical analysis:-

Data were fed to the computer and analyzed using IBM-SPSS software package version20.Comparison between different groups regarding categorical variables was tested using Chi-square test. Statistical significance was $P \leq 0.05$.

III. Results

The prevalence of *Helicobacter pylori* infection in all participants was56.5%. However, the generalseroprevalence decreased with age, subjects between the age of (20 < 30) years showed 33.6% seroprevalence, whereasthe lowest in age group(60≤) years 8.8 %(Table 1).Nosignificant differences were attributable to gender,marital status, occupation and level of education with *H. pylori* infection. The HP IgG was seen in (41.6%) males compared to (58.4%) of females.*H. pylori* infection rate was 66.4% in married and 33.6 % in single participants (Table 2).

Summarizes demographic data as well as some of the assumed risk factors for acquiring HP infection, socioeconomic status, place of life , source of drinking water, waste system, size of family ,drink coffee and tea and smoking, all no correlated with positive HP seroprevalence, but eating raw vegetables was significant relation (Table 3).

Table 1. Relationship between age and HP infection**.**

	H. pylori infection				**Total (n = 200)**		**(p) Value**
	Positive (n = 113)		**Negative (n = 87)**				
	No.	**%**	**No.**	**%**	**No.**	**%**	
Age (years)							
20 - <30	38	33.6	23	26.4	61	30.5	**(0.058)**
30 - <40	28	24.8	12	13.8	40	20.0	
40 - < 50	26	23.0	24	27.6	50	25.0	
50 - <60	11	9.7	19	21.8	30	15.0	
60 - ≤	10	8.8	9	10.3	19	9.5	
Total	**113**	**56.5**	**87**	**43.5**	**200**	**100.0**	
Min. – Max.	20.0 - 73.0		20.0 - 75.0		20.0 - 75.0		
Mean ± SD.	37.74 ± 12.96		40.90 ± 14.13		39.12 ± 13.54		**(0.103)**
Median	37.0		40.0		39.0		

Table 2. Relationship between gender, marital status,occupation,level education and HP infection

	H. pylori infection				**Total (n = 200)**		**(p) Value**
	Positive (n = 113)		**Negative (n = 87)**				
	No.	**%**	**No.**	**%**	**No.**	**%**	
Gender							
Male	47	41.6	29	33.3	76	38.0	**(0.233)**
Female	66	58.4	58	66.7	124	62.0	
Marital status							
Single	38	33.6	24	27.6	62	31.0	**(0.360)**
Married	75	66.4	63	72.4	138	69.0	
Occupation							
Medical staff	37	32.7	19	21.8	56	28.0	**(0.156)**
Employee	24	21.0	14	16.1	38	19.0	
Student	12	10.6	18	20.7	30	15.0	
Free business	11	9.7	11	12.6	22	11.0	
House wife	29	25.7	25	28.7	54	27.0	
Level of education							
Illiterate	15	13.3	16	18.4	31	15.5	**(0.441)**
Primary	17	15.0	15	17.2	32	16.0	
Secondary	44	38.9	36	41.4	80	40.0	
High	37	32.7	20	23.0	57	28.5	

Table 3. Relationship between different parameters and HP infection**.**

	H. pylori infection				**Total (n = 200)**		**(p) Value**
	Positive (n = 113)		**Negative (n = 87)**				
	No.	**%**	**No.**	**%**	**No.**	**%**	
Socioeconomic							
Low	9	8.0	7	8.0	16	8.0	**(0.080)**
Good	98	86.7	80	92.0	178	89.0	
High	6	5.3	0	0.0	6	3.0	
Place of life							
Rural	27	23.9	30	34.5	57	28.5	**(0.100)**
Modern	86	76.1	57	65.5	143	71.5	
Source of drinking water							
Tap	43	38	29	33.3	72	36.0	**(0.766)**
Well	2	1.8	2	2.3	4	2.0	
Municipality	68	60.2	56	64.4	124	62.0	
Eat raw vegetables							
Yes	87	77.0	53	60.9	140	70.0	**(0.014)**
No	26	23.0	34	39.1	60	30.0	
Waste system							
Good	67	59.3	51	58.6	118	59.0	**(0.940)**
Fair	26	23.0	19	21.8	45	22.5	
Bad	20	17.7	17	19.5	37	18.5	
Size of family							
1 – 4	40	35.4	24	27.6	64	32.0	**(0.399)**
5 – 8	58	51.3	47	54.0	105	52.5	
9 - 12	15	13.3	16	18.4	31	15.5	
Drink coffee, tea							
Yes	97	85.8	71	81.6	168	84.0	**(0.418)**
No	16	14.2	16	18.4	32	16.0	
Smoking							
Yes	19	168	12	13.8	31	15.5	**(0.558)**
No	94	83.2	75	86.2	169	84.5	
Total	**113**	**56.5**	**87**	**43.5**	**200**	**100.0**	

IV. Discussion

Epidemiological surveys usually use serological tests for high sensitivity and specificity which will not limit the accuracy of prevalence estimates (10). The epidemiology of HP infection in Libyan population remains important for public health investigations because of high prevalence of this infection and its association with peptic ulcers and chronic dyspepsia (11). Most of the data available on the prevalence of *H.pylori* are unsatisfactory. This is because very few studies have assessed a truly normal population in Libya. The current study evaluated various factors related to the aquiring HP infection using IgG serology.

The present study demonstrated an overall seroprevalence rate of 56.5 % in general population.No statistically significant relation between age and *H.pylori* infection, however the percentage decrease with age. These result agreed with many studies (12, 13).The contrast results observed by Libyan study which reported the differences prevalence among children, middle age and elderly was statistically significant (11).And in study in Kuwait was found the percentage of *H.pylori* infection increase with age (14).The number of participants of the older age is limited, therefore, our results may be affected. This wasclarified as being because of a decrease in the specific serological response among older people and/or because of a reduced number of microorganisms as a gastric atrophy consequence.

Both of genders appear to be equally exposed to *H.pylori* infection, since quite increase infection in female than males (58.4 % , 41.6 %). This result agree with many studies (11, 12, 15). And disagree with a meta-analysisshowed that male gender is anissuerelatedto increased prevalence for the infection of*H.pylori* (16).No significant relationship between marital status and *H.pylori*infection, although a slightly higher percentage among married subjects. These results agree with Palastine and Libyan studies(12, 15). In contrast of another Libyan study which reported that marital ststus, positively correlated with positive*H.pylori*seroprevalence (11).And spouse-to-spouse transmission has also a major role for *H.pylori* infection and continuous contact is required for the establishment of such infection (13).In present study as the level of education increases there is increase percentage in *H.pylori* infection among participants and these findings are agree with study which reported the literacy was no a statistically significant association with seroprevalence of *H.pylori*(13),but contrast with many studies (11, 12).According to occupation our results disagree with Mohammad *et al.,* 2011 who observed the role of occupation on *H.pylori*seropositivities has significant differences and the highest group was medical staff this may indicator to nosocomial infection (11), this state found in our study too with 37.2% from all positive cases(Table 2).

The prevalence of *H.pylori* infection varies in different societies and geographical locations; it also depends on the socio demographic character, socioeconomic status, hygiene and life style of the population (13).The socioeconomic status, place of life, drinking water, waste system, size of family, consume stimulates (smoking, coffee, tea),appear no relation with *H.pylori* infection in present study (Table 3).Our results agree with study in Mexico which showed that prevalence was similar in urban and rural community (17).But Sudanese study observed that there is a positive correlation between rural life and the presence of *H.pylori*infection (18).Although, the absence of running water in the childhood home was shown to be a major risk factor for the infection of*H.pylori* (19).The importance of overcrowding is associated with an increased prevalence of*H. pylori* infection (11, 20).There is statistical significance relation between eating raw vegetables and *H.pylori*infection in current study. More indirect environmental transmissionwas also suggested following the identification feedingof raw vegetables as aninfectionrisk factor (21).

In fact a higher percentage of positive *H.pylori*has been detected in people drink tea and coffee 85.8% than those who do not 14.2%. One study observed the drinking coffee was also not associated but it was positively associated in some studies with a justification that coffee intake supports the growth of *H.pylori* by suppressing acid production (13).Our result contrast with Rana 2007 who showed a significant finding of her study is that tea consumption is a protective factor (12). In our study smokers were not more likely to have *H.pylori* infection than non-smokers. Other cross-sectional surveys have reported an association between smoking and increased HP prevalence (22). In certain study the infection risk for smokers was 5.3 times higher than non-smokers (23).The purpose to this work was to provide important answers on the seroprevalence of HP IgG in apparently healthy people in Benghazi, Libya.

V. Conclusion

The outcomes of this studymaintainedindirectly the theory that*H.pylori*infection seems to be multifactorial. Moreover,*H. pylori*acquisition happens initially in childhood and continue throughout life.

Acknowledgements

We would like to thank prof Saleh H. Elmajberi for hishelpful comments, and the staff of AlOroba polyclinic lab for their help in analysis the samples.

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