ORIGINAL ARTICLE

Declining Prevalence of Helicobacter Pylori Infection- A ^{13}C Urea Breath Test (UBT) Based Study in Symptomatic Subjects in Dhaka, Bangladesh

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ABSTRACT

Background: Helicobacter pylori (HP) infection is an important cause of peptic ulcer disease (PUD) in the world. This study was aimed to know the trend of H.P. infection among the symptomatic subjects

Method: This was a retrospective observational study conducted from January 2015 to July 2018 in three different hospitals in Dhaka city. Patient who presented with dyspepsia underwent ^{13}C urea breath test. Positive cases were analyzed.

Results: A total 1343 patients were taken for UBT where 308 (23%) patients were found positive. The mean age group was 41.21+13.6. Male were more infected (61%) than female (39%).

Conclusion: Improving sanitary and hygienic condition of this region along with significantly increasing HP eradication therapy and PPI use by the symptomatic individuals might have contributed to the decreasing trend of infection.

Key Words: peptic ulcer disease, Helicobacter pylori, urea breath test.

Introduction

Helicobacter pylori is a microaerophillic gram negative bacteria. This germ enters our digestive tract and cause gastritis[1] that may progress to PUD[3-5], gastric carcinoma[6] and gastric lymphoma.[7] Its relation with non-ulcer dyspepsia has not been clear.[8] Infection with H. pylori infection is common. About two-third of the population in the world carry HP in their bodies. The infection was acquired in the childhood[10] and persist despite of local and systemic immune response.[9] Majority of the infections remain asymptomatic and only 10-20% progress to clinical disease.[11] A couple of decades ago epidemiological studies were done in different parts of Asia. HP seroprevalence rate especially in Bangladesh and India was high. Study done by Ahmed *et al*. have shown highest prevalence rates of 90% among the asymptomatic individuals.[14] Later it has considerably declined. Recently some studies based on CLO test shows it is 67%. Moreover, the overall HP prevalence in other Asian countries including. India (79% by ELISA), Pakistan (84% by PCR), and Japan (41% by measuring urinary levels of anti-H. pylori antibody) was also reported high. In Europe (<40%) and the United States (<40%), a significantly lower prevalence rate of H. pylori was observed. A study of adults in Ontario, Canada, found that the overall seroprevalence was 23.1% that was higher in men (29.4%) than women (14.9%).[13] One explanation that has been proposed for the lower seroprevalence

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in women that they may be more likely to clear HP infection because of higher rates of incidental antibiotic use for other indications.[13] Bangladesh a developing country has been showing steady improvement of its socioeconomic along with overall sanitary condition for last few years. Recent data from Asian countries including Bangladesh have shown a significant decline in frequency of PUD compared to the past. Presently UBT has been used in our setup as a choice of method in test and treat strategy for HP infection. The present study was aimed to know the current frequency of HP infection in symptomatic patients with dyspepsia.

Method

This is a retrospective observational study conducted by using data collected from ^{13}C UBT registry. Patients with abdominal symptoms referred to Dhaka GI clinics from January 2015 to July 2018 were enrolled. ^{13}C UBT was done by the KNS Canada (BD) Dhaka. Delta over base line (DOB) of $>4\%$ (30 minutes after test dose of 75gm. ^{13}C-Urea) is considered positive for HP infection. A total 1343 symptomatic patients were enrolled among them 308 patients were found to be positive. These cases were not taking any antibiotic or PPI in last two months. The mean age was 41.21 ± 13.6 (range 15-85 years). Total positive male was 188 and female was 120. The clinical, demographic features and socioeconomic status were recorded. The frequency of infection was high 51 % in 21-40 age groups and less in older age group.

Results

Among 1343 patients positive UBT found in 308 patients. Mean age was 41.21 ± 13 (range 15-80 years) male and female were 188 and 120 respectively. The overall HP infection was more in male. More than 50% of individuals were between 21 to 40 ages. Markedly decreased HP infection rate (23%) by UBT based test were seen in these cross section of symptomatic subject. In statistical point of view the result according to age and sex is insignificant because the P value is $>.05$.

Table-1: Baseline data with results

Period of study	January 2015 to July 2018
Sample size	1343
Mean age (yrs) $\pm$SD	41.21 ± 13.6
Test under taken to detect H. Pylori	Urea breath test
No. of subjects to be positive	308
Prevalence of H. Pylori	23%

Table-2: Number of Helicobacter pylori positive patients according to sex

Sex	Total Subjects	Subjects positive for HP	Percentage	P value
Male	800	188	61.03	0.896
Female	543	120	38.96	

Table-3: Number of Helicobacter pylori positive patients according to age

Age group (years)	Total Subjects patients	No. of positive	Percentage	P value
< 20	63	16	5.19	
21 - 40	645	163	52.92	0.586
41 - 60	505	109	35.38	
> 60	130	27	8.76	

Discussion

In our study we found Prevalence of HP was 23%. Most common in 21-40 years (52.92%) than <20 (5.19%) and 40-60 (35.38%) and less in >60 (8.76%). High HP infection rates in developing countries compared to the developed world may be the consequence of poor socioeconomic conditions and unhygienic life styles.[13] Until now, some studies have tried to show the prevalence of HP infection in Bangladesh by serological methods, urea breath test, or CLO test.[14,20]

Mahalanabis *et al.* in a study of ^{13}C-urea breath test also reported that the prevalence of H. pylori was 63% in infants aged 1-3 months, 33% in 10-15-month-old children, 84% in 6-9 years old.[16-18] Although previous studies showed that the HP prevalence increased with age, Another study done by AM Habib *et al.* in 2016 in Chittagong has shown a decrease in the prevalence of HP in the older age groups. It was observed that H. pylori prevalence was higher in patients under the age of 30 years (78.3%) than in patients with ages between

30 and 40 years and over 40 years (63.3%).[20] In India among men, H. pylori was present in 45.7% while the frequency of infection in women was lower at 33.2% ($p<0.001$). In the 15-30 years age group (n=303), the frequency of infection was 42.6% while it was 48.3% in the 31-50 years group (n=350) and 34.9% in the above 50 years group (n=347).[21] This could be due to a reduced number of microbes as a result of gastric atrophy. Male sex was a significant risk factor for H. pylori infection ($p<0.001$). Another reason could be the fact that young people in the city are more exposed to unhygienic environment, crowd, and are less aware of drinking pure water than people of older ages. HP positive cases in this study were more for men than women.

Studies done in several regions of Bangladesh has shown different incidence and prevalence and variations in different age group of HP infection. These different results might be due to different time and different socioeconomic background of study population.

Table-4: recent reports from India and Bangladesh have shown lower prevalence of (<50%) H.Pylori infection among symptomatic patients

Author	Country	Number	H.Pylori prevelence
Habib *et al.* (2016)	Bangladesh	111	49% by PCR 54% by CLO
Aftab *et al.* (2018)	Bangladesh	133	47%
Ahmed M M (2018) serology	Bangladesh	4009	52%
Datta *et al.* (2017)	India	703	42%

Conclusions

We conclude that markedly decreased HP infection rates (23%) by UBT based test were seen in these cross - section of symptomatic subjects. Improving sanitary and hygienic condition of this region along with significantly increasing HP eradication therapy and PPI use by the symptomatic individuals might have contributed to the decreasing trend of infection. Enrolment of hospital based subjects & lack of information about HP eradication may underestimate the true prevalence of HP infection to some extent in this study.

Conflict of interest: We have no conflict of interest.

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