HEALTH POINT PREVALENCE OF HELICOBACTER PYLORI IN CENTRAL HOSPITAL WARRI, NIGERIA

Jemikalajah DJ[1], Okogun GRA[2]
Department of Medical Microbiology and Parasitology, Delta State University, Abraka, Nigeria
Parasitology and Entomology Unit, Department of Medical Laboratory Science, Ambrose Alli University, Nigeria

Corresponding author: Jemikalajah DJ
Email:jemikalajahjohnson2007@yahoo.com

ABSTRACT

Aim: More than 50% of the world's population harbor Helicobacter pylori in their upper gastrointestinal tract. Infection is more prevalent in developing countries, and the incidence is decreasing in the West. This study aims to determine the health prevalence rate H. pylori in Central Hospital Warri.

Method: All patients suspected of dyspepsia or/and gastritis from 2012 to 2014 were tested for H. pylori. Subjects were screened for H.pylori antibodies using qualitative membrane immunoassay.

Results: A total of 936 patients were tested. A prevalence rate of 12.7% was obtained. Also, prevalence of 8.1% and 4.6% were recorded for females and males respectively. The highest prevalence of 3.5% was observed in the age group of 31 – 40 years. While the lowest prevalence of 0.3% and 0.2% was obtained among the children and the elderly

Conclusion: This study has shown a decline in the trend of H. pylori infection in the study area.

Keywords: Prevalence, Dyspepsia, Gastritis, Helicobacter pylori

INTRODUCTION

Helicobacter pylori previously named Campylobacter pylori, is a Gram-negative, micro aerophilic bacterium found in the stomach. Previous research has shown that H. Pylori is present in patients with chronic gastritis, duodenal ulcers , stomach cancer and gastric ulcers, conditions not previously believed to have a microbial cause. Over 50% of the world's population harbor H. pylori in their upper gastrointestinal tract. Infection is more prevalent in developing countries, and incidence is decreasing in Western countries (Yamaoka, 2008 and Brown, 2000). Up to 85% of people infected with H. pylori never experience symptoms or complications (Bytzer et al., 2011). Acute infection may appear as an acute gastritis with abdominal pain or nausea (Butcher, 2003). Infection rates vary from nation to nation; the developing world has much higher infection rates than the West where rates are estimated to be around 25% (Pounder and Ng, 1995). The age at which this bacterium is acquired seems to influence the possible pathologic outcome of the infection. People infected with it at an early age are likely to develop more intense inflammation that may be followed by atrophic gastritis with a higher subsequent risk of gastric ulcer, gastric cancer, or both. Infections are usually acquired in early childhood in all countries (Kusters et al., 2006). The infection rate of children in developing nations is higher than in industrialized nations, probably due to poor sanitary conditions, perhaps combined with lower antibiotics usage for unrelated pathologies. In developed nations, it is currently uncommon to find infected children, but the percentage of infected people increases with age, with about 50% infected for those over the age of 60 compared with around 10% between 18 and 30 years (Pounder and Ng, 1995). The higher prevalence among the elderly reflects higher infection rates in the past when the individuals were children rather than more

recent infection at a later age of the individual (Kusters et al., 2006). In the United States, prevalence appears to be higher in African-American and Hispanic populations, most likely due to socioeconomic factors (Smoak et al., 1994 and Everhart et al., 2000). In Nigeria, prevalence of 86.5% was reported in Abeokuta, Ogun State (Ejilude et al., 2009) and 85.6% in North-Ethiopia (Feleke et al., 2006). The lower rate of infection in the West is largely attributed to higher hygiene standards and widespread use of antibiotics. Despite high rates of infection in certain areas of the world, the overall frequency of H. pylori infection is declining (Malaty, 2007). The bacteria have been isolated from feces, saliva, and dental plaque of some infected people. It is more easily transmitted by gastric mucus than saliva. Transmission occurs mainly within families in developed nations, yet can also be acquired from the community in developing countries (Delport and Van der Merwe, 2007). H. pylori may also be transmitted through the ingestion of waste-tainted water, so a hygienic environment could help decrease the risk of H. pylori infection (Brown, 2000). The present study is to determine the prevalence rate of H. pylori in Warri, Delta State Nigeria.

MATERIALS AND METHOD

This study was conducted in Central Hospital Warri, a Medical facility located in South-Southern Nigeria. The study area lies approximately between longitude $5^0.00'$ and $6^0.45'$ East and longitude $5^0.00'$ and $6^0.30'$ South Southern Nigeria. The vegetation varies from the mangrove swamp to evergreen forest in the middle with two seasons; the wet or raining season (April To October) and the dry season (November To March). Warri environment is rich in mineral deposit and the occupants are mainly traders, transporters, fishermen, oil prospectors and civil servants. The area has serious ecological implications for the spread of diseases. These ecological problems are erosion, oil spillage and flood, in addition to overcrowding and poor unsanitary condition. All these activities expose them to communicable diseases including H. pylori infection.

Sample Collection

Venous blood was collected from 936 patients suspected of dyspepsia, peptic ulcer and gastritis by stratified random sampling and apparently healthy subjects used as control. Samples were collected into EDTA containers after informed consent. The sample size of the study was determine using the statistical formula

$$n = \frac{1.96 \Pi (1-\Pi)}{e^2}$$

n=sample size.
Π=Literature prevalence rate of attribute in population.
E=error margin accepted.

All samples were analyzed immediately.

Sample Analysis

Samples were analyzed for H. pylori antibodies using H. pylori kit device (Spodex limited USA) which is based on qualitative membrane immunoassay. In this test procedure, antihuman globulin (IgG) is immobilized in the test line region of the test. When sample is added to the sample well of the cassette, it reacts with H. pylori antigen coated particles in the test. The mixture migrates chromatographically along the line of the test and interacts with the immobilized antihuman globulin. If the sample contains H. pylori antibodies a colored line will appear in the test line region indicating a positive result. If the sample does not contain H. pylori antibodies, a colored line will not appear in this region indicating a negative result. A procedural control colored line will always appear in the control line region indicating that proper volume of sample has been added and membrane wicking has occurred. The result of the test should be read at 10 minutes.

Data Analysis

Data obtained were presented in tables of percentages.

RESULTS

Out of the total 936 patients screened for H. pylori, a prevalence of 12.7% was recorded. This was found to be higher in females 8.1% than in males 4.6% (Table: 1). Highest percentages of 1.6%, 3.5%, 2.4% and 2.4% were obtained for age groups of 21 – 30, 31 –40, 41 – 50 and 51 – 60 years respectively. The lowest percentages of 0.3%, 0.9% and 0.7%,

0.7%, 0.2% were obtained in the age groups of 0 – 10, 11 – 20 for children and 61 – 70, 71 – 80, 81 – 90 years for elderly respectively (Table: 2). Table 3 shows high prevalence in the middle

age groups and sexes of 21 – 30, 31 – 40, 41- 50 51 – 60 years, with percentages of 1.5%, 3.6%, 2.0% and 2.2% in females; 1.7%, 3.1%, 3.1% and 2.8% in males respectively.

Table 1: Health point prevalence of H. pylori

Sex	No (%)Tested	No (%)Infected
Female	650(69.4)	76(8.1)
Male	286(30.6)	43(4.6)
Total	936(100)	119(12.7)

Table 2: Age distribution of H. pylori

Age (Yr)	No (%)Tested	No (%)Infected
0-10	20(2.1)	3(0.3)
11-20	102(10.9)	8(0.9)
21-30	206(22.0)	15(1.6)
31-40	210(22.4)	33(3.5)
41-50	161(17.2)	22(2.4)
51-60	121(12.9)	22(2.4)
61-70	68(7.3)	7(0.7)
71-80	37(4.0)	7(0.7)
81-90	11(1.2)	2(0.2)
Total	936(100)	119(12.7)

Table 3: Age and sex related distribution of H. pylori.

Age	Total No (%)Tested	No (%) of Female Tested	No (%) of Female Infected	No (%) of Male Tested	No (%) of Male Infected
0-10	20(2.1)	14(2.2)	1(0.2)	6(2.1)	2(0.7)
11-20	102(10.9)	70(10.7)	4(0.6)	32(11.2)	4(1.4)
21-30	206(22.0)	146(22.5)	10(1.5)	60(21.0)	5(1.7)
31-40	210(22.4)	134(20.6)	24(3.6)	76(26.6)	9(3.1)
41-50	161(17.2)	115(17.7)	13(2.0)	46(16.1)	9(3.1)
51-60	121(12.9)	84(12.9)	14(2.2)	37(12.9)	8(2.8)
61-70	68(7.3)	52(8.0)	6(0.9)	16(5.6)	1(0.4)
71-80	37(4.0)	26(4.0)	3(0.5)	11(3.8)	4(1.4)
81-90	11(1.2)	9(1.4)	1(0.2)	2(0.7)	1(0.3)
Total	936(100)	650(100)	76(11.7)	286(100)	43(15.0)

DISCUSSION

Prevalence of 12.7% was obtained in this study. This report disagreed with the findings of Feleke et al., (2006) and Ejilude et al., (2009) who reported 85.6% and 86.5% in the North Ethiopia and Abeokuta, Ogun State of Nigeria in their studies respectively. This difference may be associated with social economic status of the environment, which may be largely attributed to higher hygiene standards and wide spread use of antibiotics in the area studied. However, our findings agreed with Malaty, (2007) who stated that frequency of H. pylori infection is declining despite the high rates of infection in certain areas of the world. It was observed that H. pylori infection was higher in the females than

the males. This may be due to the female's method of cleaning up after defecation and the anatomical proximity of the females' urethra to the anus since fecal contamination has earlier been reported by Brown (2000) as one of the major route of infection. The high rate of infection reported among the middle age group for both sexes may be attributed to higher rates of infection in the past when the individuals were children rather than more recent infection as opined by Kusters et al., (2006). It could also be attributed to the poor eating habit of these age groups by way of visiting restaurants, eateries, overcrowding and unsanitary places. The low infection rates among the children and elderly in this study is in consonance with the earlier findings of Hida et al., (1999) who stated

that H. pylori prevalence variation is in proportion to age, ethnicity and social economic status of individual subjects screened. Although, H.pylori infection is more prevalent in developing countries has earlier reported by Yamaoka (2008) and Brown (2000), this study has shown that the infection rates is on the decline compare to the West world where infections rates are estimated to be around 25% as reported by Pounder and Ng, (1995). In conclusion, the 12.7% prevalence rate reported in this study shows a declining trend in H. pylori infection in the area studied. However, the social economic factors of this area need to be improved upon in order to further reduce the current prevalent rate.

REFRENCES
Blaser, MJ (2006). Who are we? Indigenous microbes and the ecology of human diseases. EMBO Reports 7 (10): 956 – 60.

Brown LM (2000). Helicobacter pylori: epidemiology and routes of transmission. Epidemol Rev 22 (2): 283-97.

Butcher GP (2003). Gastroenterology: An Illustrated colour text. Elsevier Health Sciences. P.25.

Bytzer P, Dahlerup JF, Eriksen JR (2011). Diagnosis and treatment of Helicobacter pylori infection. Dan Med Bull. 58 (4): C4271.

Delport W and Vander Merwe SW (2007). The transmission of H. pylori the effects of analysis method and study population on inference: Best proct. Res Clin Gastrointestinal 21(2): 215-36

Ejilude OA, Akinduti PA, Umaihon KO (200). Sero prevalence of Helicobacter pylori IgG in patients with symptomatic peptic ulcer. Journal of Medical Laboratory Science. Vol.18 (1): 29-35.

Everhart JE, Kruszon-Moran D, Perez-Perez GI, (2000). Sero prevalence and ethnic differences in Helicobacter pylori infection among adults in the United States. J. Infect. Dis. 181 (4): 1359-63

Feleke M, Afework K, Getahun M, Solomon A, (2006): Seroprevalence of Helicobacter pylori in dyspeptic patients and its relationship with HIV infection, ABO blood group and life style in University Hospital, Northwest Ethiopia. World J. Gastroenterol. 12 (12): 1957-1961.

Hida NS, Himoyama T, Neville p (1999). Increased expression of interleukin 10 and lL-12(P40) mRNA in H. pylori infected gastric mucosa relationship to bacteria COAS status of peptic ulceration. J.Clin Path.52: 658-664

Kusters JG, van Vliet AH, Kuipers EJ (2006). Pathogenesis of Helicobacter pylori infection. Clin. Microbiol. Rev. 19 (3): 449-90.

Malaty HM (2007). Epidemiology of Helicobacter pylori infection. Best Pract Res. Clin Gastroenterol 21 (2): 205-14

Pounder RE, NG, D (1995). The prevalence of Helicobacter pylori infection in different countries. Aliment. Pharmacol. Ther. 9 (Suppl 2): 33-9.

Smoak BL, Kelley PW. Taylor DN (1994). Seroprevalence of Helicobater pylori infection in a cohort of US Army recruits. Am. J. Epidemiol. 139 (5

Yamaoka, Yoshio (2008). Helicobacter pylori: Molecular Genetics and Cellular Biology. Caister Academic