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Helicobacter Pylori Associated Gastritis In North-Eastern Nigeria: A Histopathologic Study

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Abstract

A retrospective study of 603 antral biopsies already processed into paraffin wax was undertaken. The study spanned 2003 to 2008 and the age range of the patient was 14-90 years. Each biopsy was stained by Haematoxylin and Eosin method, Giemsa's method and the Grocott's modification of Hexamine Silver method. Peak incidence of 24.8% was obtained in 2008 while the age group with the highest incidence was 31-40years. Gastritis in general was recorded in 94.9% of patients while H. pylori associated gastritis was recorded in 57.2%. The age group of patients with the highest prevalence (26%) of H. pylori associated gastritis was 41-50years. Specific diagnosis of H.pylori associated gastritis is crucial in the prevention of cancer.

Introduction

Gastritis is an inflammation of the lining of the stomach, and has many possible causes. The major etiologic association of chronic gastritis are: Chronic infection by *H. pylori*; Immunologic (autoimmune) in association with pernicious anemia; toxic as in alcohol and cigarette smoking; postsurgical especially following antrectomy with reflux of bilious duodenal secretions; Motor and mechanical including obstruction; granulomatous conditions (e.g Crohn's disease); Miscellaneous- amyloidosis, graft- versus-host disease, uremia (1). The link between gastritis and *H. pylori* was discovered in 1983, when it was called *Campylobacter pyloridis*. After initial exposure to *H. pylori*, gastritis occurs in two patterns: a predominantly antral-type gastritis with high acid production and elevated risk for duodenal ulcer, and a pan-gastritis that is followed by multifocal atrophy (multifocal atrophic gastritis) with lower gastric acid secretion and higher risk of adenocarcinoma. Infection with *H. pylori* occurs worldwide, but the prevalence varies greatly among countries and among population groups in the same country. It is more common in developing countries where the prevalence is generally over 80% in middle aged adults as compared to 20-50% in industrialized countries. In North America and Western Europe it is 90%, (2), Japan 88% (3), Brazil 63.4%, North Western Nigeria (4). The overall prevalence of *H. pylori* infection is strongly correlated with socioeconomic conditions and prevalence tends to increase with age (5) (6)**.** *H. pylori* is the causative agent in more than 90% of cases of chronic gastritis, peptic ulcer disease, primary gastric mucosa-associated lymphoid tissue (MALT) lymphoma, and gastric cancer (adenocacinoma) (7). This work therefore seeks to study

the prevalence and association of *H. pylori* infection with gastritis and its age and sex distribution in a population of Nigerians with a low socio-economic condition to see if a focal population can be identified for preventive monitoring.

Key words: Helicobacter pylori; gastritis; prevalence; stomach; adenocarcinoma

Materials and Methods

A retrospective study on a total of 603 antral biopsies of patients with upper gastrointestinal discomfort received in Histopathology Department of University of Maiduguri Teaching Hospital, Borno State, Nigeria between January 2003 and October 2008. The age range of the patients is 14 – 90years. Other bio-data which include age and sex were obtained from the laboratory request form. The Sydney system, however, requires taking two biopsies from both antral and fundic (body) mucosa. The latter are more useful in those patients who had been previously treated with antisecretory drugs. Our patients had received no prior treatment, therefore, two biopsies from antrum were considered sufficient. All the antral biopsies were fixed in 10 % formalin and were routinely stained with Heamatoxylin and Eosin method, Giemsa's method and the Gomori's modification of Hexamine silver impregnation method(8).

Results

Gastritis in general, was reported in 572 (95%) out of a total of 603 antral biopsies with peak incidence of 24.8% in 2008. Three hundred and twenty seven (57.2%) of the biopsies were found to harbour *H. pylori* made up of 153 (46.8%) males and 174 (53.2%) females. Two hundred and forty-five 245 (42.8%) were non- H pylori associated gastritis (Figure 1). The age group with highest frequency of *H. pylori* was 41 to 50 years (Table 2).

Discussion

The overall prevalence of gastritis in the North-East sub-region of Nigeria using antral biopsies is 94.9% which is consistent with the previous work of Mustapha (4). The prevalence of *Helicobacter pylori* associated gastritis in the region was 57.2% (Fig. 1). This is less than that reported, that is 90% in the United Kingdom, 88% in Japan (3); 63.4% in Pelotas, Southern Brazil, 78.5% in Ghana, 85% in Kenya and Zimbabwe (2). Mustapha (4) reported 78.5% among patients undergoing endoscopy, but they used only the Heamatoxylin and eosin method which is less specific than the Giemsa's method we adopted in addition to the method they used. The difference in our finding in contrast to that of Mustapha (4), in the same region, may be due to the fact that the methods we used, especially the Giemsa's method, minimized missed diagnosis. The prevalence we reported does not agree with the assertion that this infection is more common in developing countries than in the industrialized countries. The ratio of non- *H. pylori* associated gastritis to *H. pylori* associated gastritis is 1:1.33 (Fig.1) This is significant especially in view of the increasing yearly prevalence of gastritis in general (Table 1) and the established fact that untreated *H. pylori* infection is the major cause of chronic gastritis, a condition that initiates the pathogenic sequence of events leading to atrophic gastritis, metaplasia, dysplasia and subsequently cancer. It was further observed that *H. pylori* associated gastritis was most prevalent in the age range of 21-50 years, with a mean prevalence of 23.2% and cumulative

prevalence of 69.7%. This is the economically viable age group and therefore underscores the economic significance of the infection as observed by Suerbaums and Michetts (5). *H. pylori* is least prevalent in the age group 81-90 years, with an average of 1.2%. (Table2). A cursory look at the prevalence from childhood to old age, suggests that the prevalence rises with age and attains peak levels at middle age and then sharply drops at old age. This is consistent with the report of Suerbaums and Michetti (5) who reported that prevalence is highest in middle aged adults, although they reported 80% and above, which is higher than our finding of 69.7% for the same age range (Table 2). The prevalence of *H. pylori* associated gastritis among females (53.2%) is higher than in males (46.8%), but the trend of rise and fall in both sexes across age groups was similar. The 53.2% for females reported in the study is however lower than that reported among women in Europe. (9)

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Table 1: Age and Sex Distribution of Gastritis in General

Sex Frequency (%)			
Age groups(yrs)	Male	Female	Total Number (%)
11-20	14(2.5)	27(4.7)	41(7.2)
21-30	60(10.5)	66(11.5)	126(22.0)
31-40	75(13.1)	68(11.9)	143(25.0)
41-50	59(10.3)	73(12.8)	132(23.1)
51-60	31(5.4)	42(7.3)	73(12.8)
61-70	16(2.8)	25(4.4)	41(7.2)
71-80	3(0.5)	7(1.2)	10(1.7)
81-90	3(0.5)	3(0.5)	6(1.0)
TOTAL	261(45.6%)	311(54.4%)	572(100%)

Table 2: Age and Sex Distribution of *H. Pylori* Associated Gastritis

	Sex Frequency (%)		
Age Groups(yrs)	Males	Females	Total Number(%)
11-20	11(3.6)	16(4.9)	27(8.5)
21-30	36(11.0)	46(14.1)	82(25.1)
31-40	41(12.5)	33(10.1)	74(22.6)
41-50	42(12.8)	43(13.1)	85(25.9)
51-60	13(3.9)	20(6.1)	33(10.0)
61-70	6(1.8)	10(3.1)	16(4.9)
71-80	2(0.6)	4(1.2)	6(1.8)
81-90	2(0.6)	2(0.6)	4(1.2)
TOTAL	153(46.8%)	174(53.2%)	327(100%)

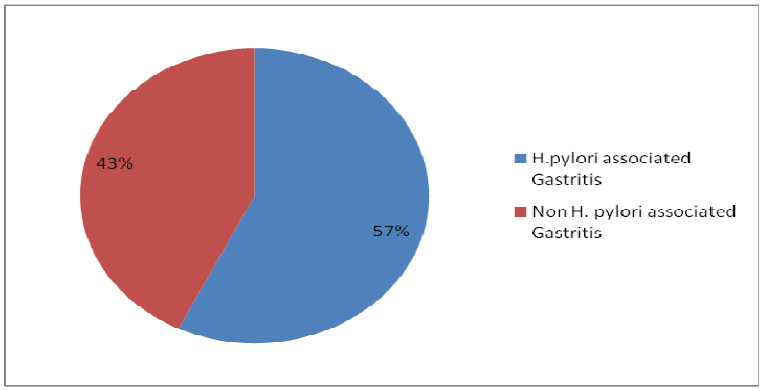

Figure 1: Proportion of *H. pylori* Associated Gastritis and Non- *H. pylori* Associated Gastritis (Ratio 1:1.33)