

HELICOBACTER PYLORI INFECTION IN NIGERIANS WITH DYSPEPSIA

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SUMMARY

Background: *Helicobacter pylori* is the most common chronic bacterial infection, and a significant aetiological factor in acid peptic diseases and gastric cancer. Dyspepsia is a common gastrointestinal disorder, and the most common indication for gastroscopy. Detection of this organism during endoscopy has become standard clinical practice. We determine the prevalence of *H. pylori* infection among dyspeptic patients using serology and histology.

Methods: Patients with dyspepsia underwent gastroscopy, and biopsies were taken from the antral portions of their stomach and processed. Their serum samples were tested for *H. pylori* infection using ELISA to detect anti-bodies.

Results: One hundred and twenty-five patients, comprising 49 (39.2%) males and 76 (60.8%) females were studied. A prevalence rate of 93.6% for *H. pylori* was found by serology while a rate of 80.0% was found by histology.

Conclusion: There is a high prevalence of *H. pylori* infection in patients with dyspepsia; and a high percentage of detection by serological and histological tests.

Keywords: *Helicobacter pylori*, dyspepsia, serology, histology, Nigerians

INTRODUCTION

Dyspepsia is a chronic or frequently recurring epigastric pain or discomfort which is believed to originate in the gastro-duodenal region.¹ This may be associated with other upper gastrointestinal (GI) symptoms such as heartburn, postprandial fullness, and early satiety.¹ Dyspepsia is a GI disorder, and is the most common indication for upper GI endoscopy. *Helicobacter pylori* is a significant aetiological factor for acid peptic diseases and gastric cancer. *Helicobacter pylori* testing during upper GI endoscopy has become standard clinical practice.²

The prevalence of *H. pylori* infection worldwide varies greatly among countries and among population groups

in the same country. The infection is more common in developing countries where the prevalence rate ranges between 70 and 90% as compared to 20-50% in developed countries.³ The overall prevalence rate of *H. pylori* infection strongly correlates with low socioeconomic status, low living standards, poor personal and environmental hygiene, presence of *H. pylori*-positive family members and increasing age.⁴

In Nigeria, various studies on *H. pylori* show prevalence rates between 73.0% and 94.5% among patients with dyspepsia.^{2,5,6} Endoscopic biopsy of the gastric mucosa and serological testing were the methods of investigation employed in this study. Hence, this study aimed at determining the prevalence of *H. pylori* among dyspeptic patients.

METHODS

This hospital-based cross-sectional study was carried out at the University of Maiduguri Teaching Hospital, North-eastern Nigeria from October, 2006 to March, 2007. One hundred and twenty-five consecutively recruited patients with dyspepsia had upper GI endoscopy carried out on them according to standard protocol, and biopsies were taken from at least 4 sites in the antral portions of their stomach. The specimens were fixed in 10% buffered formalin and routinely processed with paraffin embedded. The tissues were sectioned at 3µm and stained with Haematoxylin and Eosin. Modified Giemsa stain was used to demonstrate the *H. pylori* micro-organism.

Serum samples were also collected from the patients and tested for *H. pylori* infection using ELISA to detect *H. pylori* anti-bodies. The bio-data of the patients such as age, sex, duration of dyspepsia, history of smoking, alcohol and NSAID use were recorded on a proforma. Patients who had taken proton pump inhibitors (PPIs) in the preceding 2 weeks and/or bismuth containing drugs and antibiotics in the preceding 4 weeks were excluded from this study.

RESULTS

One hundred and twenty-five dyspeptic patients had upper GI endoscopy with endoscopic biopsies. 49 (39.2%) were males while 76(60.8%) were females, giving a male to female ratio of 1:1.6. Their ages ranged between 18 and 84 years with a mean age of 35.3± 12.7 years. Table 1 shows the age distribution of all patients with dyspepsia. Majority of the patients with dyspepsia were between the third and fourth decades of life.

Table 1 The age distribution of patients with dyspepsia

| Age Group (yrs) | Frequency (%) |
|-----------------|-----------------|
| 18-22 | 17(13.6) |
| 23-27 | 13(10.4) |
| 28-32 | 23(18.4) |
| 33-37 | 16(12.8) |
| 38-42 | 24(19.2) |
| 43-47 | 7(5.6) |
| 48-52 | 7(5.6) |
| 53-57 | 8(6.4) |
| 58-62 | 6(4.8) |
| ≥63 | 4(3.2) |
| Total | 125(100) |

H. pylori was detected in 80.0% of the histological samples. The presence of *H. pylori* was indicated in 93.6% in the patients studied by the serological test.

Concerning the relationship between the degree of activity in chronic gastritis and, positive and negative *H. pylori* infection among patients with dyspepsia, *H. pylori* associated with severe activity accounted for 16.8%; moderate activity- 43.2%; mild activity - 20% and normal gastric mucosa - 6.2%.

DISCUSSION

Our study was endoscopy-based with the use of histology to detect *H. pylori*, and also serology-based which yielded prevalence rates of 80.0% and 93.6% among patients with dyspepsia respectively. These prevalence rates are similar to those of other investigators in our region, and in Nigeria. Holcombe *et al*⁵ using histology following Haematoxylin and Eosin, with modified Giemsa staining of antral biopsies in Maiduguri, North-eastern Nigeria found a prevalence rate of 84% for *H. pylori* among their patients with dyspepsia. Similarly, Ndububa *et al*² found a prevalence rate of 73% in Ile-ife, South-west Nigeria using histology and Campylobacteria-like organism (CLO) - urease test on gastric mucosal biopsies.

Furthermore, Otegbayo *et al*⁶ using serology to detect antibodies against *H. pylori* found a prevalence rate of 94.5% in Ibadan, South-west Nigeria. A study using CLO-urease test in the West Africa sub-region by Baako and Darko⁷ similarly found a high prevalence of 75.4% of *H. pylori* infection among Ghanaian patients with dyspepsia.

The high prevalence rates found for *H. pylori* infection among dyspeptic patients by various investigators may be due to early acquisition of the organism, similarities in the age of the patients enrolled, similarities in geographical location, socio-cultural practices, environmental and living conditions. Bani-Hani *et al*⁸ in their work in Jordan demonstrated that environmental factors such as barometric pressure and seasonal temperature variation rather than genetic background play a role in the prevalence of *H. pylori* in different populations. Megraud *et al*³ in their work in France showed that *H. pylori* infection increases with age. A similar pattern was also observed by them in Algeria, Vietnam and Ivory Coast.

Graham *et al*⁹ working in the USA found that the prevalence of *H. pylori* increases with age in both developing and developed countries. Pounder and Ng⁴ also postulated that the prevalence of *H. pylori* in a community is related to three factors: the rate of acquisition of *H. pylori* infection, the rate of loss of the infection, and the prolonged persistence of the bacterium in the gastro-duodenal mucosa. Furthermore, Castro and Coelho¹⁰ postulated that rapid acquisition in early life, poor sanitation and low living standards may influence the prevalence of *H. pylori*.

Histology has been considered by some to be the gold standard for the detection of *H. pylori*.¹¹ It however depends on a number of factors including the site, number, size of gastric biopsies, method of staining, and the level of experience of the examining pathologist.¹¹ Serology test, however relies on the detection of IgG antibodies specific to *H.pylori*. It becomes present approximately 21 days after infection and can remain positive for years following successful cure of the infection.¹² It is therefore of limited benefit in documenting eradication of *H. pylori*. This understandably limits its use in clinical practice especially in regions of high prevalence of *H. pylori* infection such as the West African sub-region.

In conclusion, our study confirms a high prevalence of *H. pylori* among patients with dyspepsia, and a strong correlation between histology and serology in the detection of *H. pylori*. However, the use of serology to detect *H. pylori* infection will be limited in clinical practice in the West African sub-region.

We therefore suggest an extensive study be carried out on *H. pylori* infection among our populace due to the peculiar geographical nature of the region, occupation and relationship of the organism with acid-peptic diseases and gastric malignancies.

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