Sero-Prevalence of Helicobacter Pylori Antibodies and Peptic Ulcer Patients in Aguata and Orumba Local Government Area of Anambra State, Nigeria

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ABSTRACT *The objective of this study is to assess the sero prevalence of H. pylori antibodies among patients with recurrent abdominal pains attending hospitals in two local government Areas of Anambra State, Nigeria. A total of 1000 samples were collected for examination, questionnaire were administered to all the patients. The blood and stools samples were analysed using a qualitative membrane device based immunoassay ((Hema screen TM-KIT Americal Association for Clinical Chemistry for treating stomach infection, Rapid test kit) the results showed: out of 1000 samples tested, for H. pylori 318 (31.8%) were occult/serum positive, while 682 (68.2%) were negative. Infected females were 200 (62.88%) while 118 (372%) infected were males. H. pylori was commonly occurred among the ages of 21 – 40 years of age. There was no marked difference between occurrence of H. pylori among people of Aguata and Orumba on geographical setting. Re-current abdominal pain was positive indicator of H pyori Infection (93.0%) complaints.*

Biostatistical Analysis revealed that λ2 cal <λ2 4.7684<15.086) so that null hypothesis accepted Ho a= 0.01 with 5 degrees of freedom and was concluded that the prevalence of H. pylori in all the groups was dependent of peptic ulcer re-current.

INTRODUCTION

Ulcers in the stomach and duodenum are referred to as peptic ulcers (Cullen, etal, 1997). The stomach defends itself from hydrochloric acid and pepsin by creating a mucus coating that shields stomach tissue by producing bicarbonate and by circulating blood to the stomach living to aid in cell renewal and repair. If any of these functions are impaired it can lead to the formation of an ulcer (Loughlin, 2003). The primary cause of ulcer is the bacterium called Helicobacter pylori (H. pylori) unlike other bacterium, H pylori is able to twist through the layer of mucous that protects the stomach cavity and attach to cells on the surface of the stomach wall where it produces urease, an enzyme that penetrates ammonia (Soll, 1990) urease generates substances that neutralize mucous stomach's acid and allows H. pylori to thrive H. pylori weakens the stomach's defenses by thinning the mucous coating of the stomach, making it more susceptible to the damaging effects of acid and pepsin inflaming the area poisoning nearby cells and producing more stomach acid. Although H. pyori is the primary cause of ulcers, there are other factors that play a role in ulcer development, the factors are the use of non-steroidal inflammatory drugs such as aspirin, ibuprofen and piroxican. Helicobacter pylori is a motile, gram negative rods, which is microaerophilic bacterium that infects various area of stomach and duodenum. (The etal 1999). The organism causes ulcer. There are about 23 species of Helicobacter that are Isolated from stomach and gastritis, duodintis perhaps cancer. upper intestines of human and other animal (Paldwin, etal 2007). The objective of the study is to determine the prevalence of H. pylori Antibodies among ulcer and non ulcer patents in Aguata and Orumba Local Government Areas, of Anambra State.

MATERIALS AND METHODS
Study Area:
The research study was conducted at the Medical Centre, General laboratory Federal Polytechnic, Oko.

Samples collection

Samples for the study were collected from eight(8) different hospitals in two local Government Areas (Aguata and Orumba) in Anambra State of Nigeria.

The Hospitals were
Community Hospital – Nkpologwu/Samples - (45) Samples
General Hospital Ekwulobia - (290)
Medical Centre, Fed Poly-Oko - (350)
General Hosiptal, Amaokpala - (75)
General Hosiptal, Umuchu - (60)
General Hosiptal, Uga - (60)
Community Hosiptal, Oko - (70)
General Hosiptal, Ezenitite - (50)

Methods of Collection: Clinical samples of stools and blood, were collected by the assistance of Medical Technologists and Nurses in the hospitals some were collected by the researcher, during the collection, oral consent were obtained from patients and collections were based on symptoms of constant abdominal discomfort while few patients were without complaints. The study spanned from January 2013 – December 2014.

Data collection: The questionnaires that contain demographic information of age, sex, place of residence, sources of water were filled by the patients.

Sample Size: A total of one thousand (1000) stools and blood samples were collected of which five hundred and ninety eight (498) were from females patients, while males were four hundred and two (402) samples were collected.

Methods of occult blood: The samples for occult blood test were analyzed using (Hema Kit screen, America Association for clinical chemistry) for treating stomach infection). A sample of stool specimen was collected by stabbing and a thin smear made on the centre of the Hema screen TM slide that was inside the area indicated with Roman numeral I, Same application was used and a different portion of the stool was smeared to another designated II.

And on the back of the slide an open perforated section marked I and 2 were applied with 2 drops of Hema screen developing solution to expose test paper. The prepared specimen was allowed for 30 – 60 seconds and the results were interpreted the paper around fecal smear with blue-black as positive.

Detection of H pyloric antibody – serological testing for H. pylori was done using a qualitative membrane device based on immunoassay. H pylori test device kit, American Association for clinical chemistry the test utilize a combination of H. pylori antigen coated particles and antihuman IgG to qualitative and selectively detects H. pylori antibodies on serum blood samples of 5ml venous blood collected from 318 patients tested positive to H. pylori infection. Before collection a consent of the patients was obtained the collection was done by first cleaned the hand with alcohol swab, using a sterile needle, blood was transferred to sterile containers and were allowed to clot for separation. The serum when separated was stored at -4^{0}c for a short time.

Test procedure. The test device specimen and buffer were allowed to equilibrate to room temperature of 30^{oC} and mixed well, the test device was removed from the foil and placed on a clean and level surface using a dropper, 4 drops of the serum was vertically transferred to the specimen well of the device and allowed for 10 minutes. A red line appears in the control region designated with another red line also appeared on the test region later that is designated (T). The two distinct red lines indicates a positive (t) result, while Negative was one line control, no, apparent red or pink line appears in the lest region(T) and invalid, is were control line fails to appear.

Results

The result of one thousand (1000) patients studied for H. pylori antibodies in stools and blood serum samples in two Local Government area of Anambra State Nigeria (Aguata and Orumba). It was observed that Aguata LGA recorded 505 (50.5%) and Ormba LGA recorded 495 (49.5%). On analysis, a total of 318 (31.8% sample were found to be positive of H. pylori, while 682 (68.2%) were negative of H. pylori bacterium from the positive sample, 118 (37.2%) were male, while 200 (62.8% samples were Isolated from females. On distribution of occult blood in patients according to ages it was observed that the ages of 21 – 30 years recorded highest occurrence of H. pylori among patients examined and also observed that H. pylori was distributed among the ages of 21 – 30 years in serum of the patients examined for H. pylori antibodies it was also observed that H pylori was prevalence among female sex 53 (16.6%) than male sex 4 (12.8%). On re-current abdominal pains as symptoms from the patients it was noted that 295 (93.%) of the patients complaint of abdominal pains, while 23 (7.2% complaint of other related problems.

Biostatitscal Analysis

Biostatistical analysis revealed that λ^2 call $<\lambda^2$ tab 4.7684 <15.086). So the null hypothesis Ho a =0.01 with 5 degrees of freedom and was concluded that the prevalence of H. pyori in all the groups were dependent of peptic ulcer infection.

Distribution of H. pylori from sources of drinking water in the local government areas it was observed that H. pylori infection was contacted mostly from bore hole water 120 (37.7%) followed by well water source 100 (31.4%).

Table 1: Samples in different location in the Local Government Areas

Location	Total Sample	Male	Female	Positive sample	Negative sample
General Hospital Ekwulobia	290	150	140	60	230
Medical Centre, Fed- Poly, Oko	350	189	161	100	250
General Hospital Amaokpala	75	30	45	40	35
General Hospital, Umuchu	60	28	32	20	40
General Hospital Ezenifite	50	25	25	30	20
Community Hospital, Nkpoloqwu	45	20	25	20	15
General Hospital, Uga	60	30	30	18	42
Community Hospital, Oko	70	30	40	30	40
Total	1000	110	208	318	682

Table 2 Distribution of H Pylori Antibodies Among Occult Blood Positive Patients and Blood Serum Positive patients.

Age (years)	H.pylori prevalence (serum sample)	Percentage (%)	H. pylori from occult (blood sample)	Prevalence	Percentage (%)
5 -10	2	0.6	2	2	0.6
11 - 20	50	15.7	50	50	15.7
21 – 30	148	46.5	140	140	46.5
31 – 40	58	18.2	58	58	18.2
41 – 50	56	17.6	56	56	17.6
50 – above	4	1.2	4	4	1.2
Total	318	100	318	318	100

Table: 3 Distribution of H. Pylori According to Sex of patients

Age (years)	Male	Percentage (%) Distribution	Female	Percentage Distribution
0 -10	8	6.7	10	5
11 - 20	10	8.4	35	17.5
21 – 30	50	42.3	100	50
31 – 40	20	16.9	40	20
41 – 50	30	25.4	20	10
50 – above	-	-	5	2.5
	118	100	200	150

Table 4: Re-current of Abdominal pains from the patients with H. pylori infection.

Abdominal	Occurrence of H. Pylori	Percentage (%) Distribution
Abdominal pain complaints	295	92.7
None Abdominal pains	23	7.3
	318	100

Table 5: distribution of H. pylori among sources of drinking water

Source of water	Occurrence	Percentage of occurrence (%)
Bore hold water	120	37.7
Well water	100	31.4
Stream water	20	16.9
Ponds water	60	5.6
Pure water	18	18.8

Discussion

The study examines the detection of H. pylori antibodies from various patients diagnosed of symptomatic and asymptotic gastrointestinal conditions from different ulcer patients screened for H. pylori (31.8%) were zero positive, this is in line with the statement of Rust et al 2008, who observed that H. pylori is strongly linked to the development of duodenal and gastric ulcers. It was observed from the result that (92.7%) screened for H. pylori show symptoms of recurrent abdominal pains.

It is observed from the study that the age group of 21 – 30 has the highest prevalence rate (46.5% and from the study, the percentage of infected people increase with age, this is in line with the work of (Kusters, 2006) H. pylori infection is an important health problem, the presence of H. pylori in bore hold water (37.7%) and well water (31.4%) is an indication of water contamination, improper sanitary practices among the people of the populace in the community. H. Pylori infection association with unhygienic culture.

H. Pylori infection, is noted to be on the increase this reflects the long term problem as most of these cases had problem with re-current abdominal pains and heart burn due to large amount of the enzyme ureas which are localized inside and outside of the bacterium which breaks down, to produce carbon dioxide and ammonia as toxic to the epithelial cells with damage to the cells (Smoot 1997). In this study, females were highly associated with H. Pylori infection (50%) the high prevalence might be traced to the socio economic state of the local female people life style, lack of awareness and lack of good drinking water.

Conclusion

In conclusion, it is important that people wash their hands thoroughly at all times, prepare their foods properly, drinking water from safe source, since the bacterium could be contacted through food and water. People should indulge in proper personal hygiene.

Live in a well ventilated house and adequate sanitary provision. Good and well treated source of drinking water should be provided both for those in the urban and rural areas in an attempt to prevent H. pylori bacterium.

Recommendations
- Patients visiting hospitals for routine cheek-ups with histories or symptoms of abdominal; pain or heart burn should be subjected to. H. phylori Screening
- The Government should improve the socio-economic conditions of the populace, at the rural and urban areas
- There should be constant awareness on the effect of poor hygiene life style and damage associated with H. Pylori infection.

REFERENCE Baldwin shepherd B, Kraemep (2007), Identification of Helicobacter pylori genes that contribute to stomach colonization Infect-immune 72 (2) 105-6 Cullen, D Hawkey GM, Greenwood, DC (1997) peptic ulcer bleeding in the elderly relative roles of Helicobacter pylori and non-steroidal anti inflammatory drugs cul 41 (4) 459. PMID http/gut-bmj.com cgil pmidlookup. Gruel S. Besisk F, Demiretal After eradication of H. pylori infection in swiss adolescents prevalence and risk factors EUR gastroenterology Heptatol, 15(2) 179-180 Kusters, JG, and Vaon vliet (2006) pathogenesis of it pylori G Clin. Microbiology Rev. 19 (3) 449 – 450 PMID 5:333 Loughlin, MF (2003) Monotherapy with mastic does not eradicate Helicobacter pylori infection from Mice Antimicrobial Chemotherapy 51(2) 261. PMID 12562704 LIU, Chency, Tang w, Zhang JY, Gony YQ (2006) Gene – expression profile on gastric epithetrial cells stimulated with spiral and coccoid Helicobactor pylori J. Med. Microbiology (55) 1009 – 110 PMID 16849720 Malaty H M, 2003) Epidemology of Helicobacter pylori Infection Helicobacter, (8).8-9. Moagyedi, P and Hunt, R (2004) Helicobactor pylori public Health Implications Helicobacter (9) 67 – 68. Smoak, B C and Kelleg, PW (1994) Sero-prevalence of Helicobacter pylori infections in a cohort of us Army recruits Am. J. epidemiology. 139.(5) 513-9 PMID 8154475. Soll, A H (1990) pathogenesis of peptic ulcer and implication for therapy. New green-land J. Med (3) 225. The, B.H Lin, JT, WH (1999) Sero-prevalence and associated risk infections of Helicobacter pylori in Taiwan Anticancer Res. 14 (3B) 1389-90.