

Gastroesophageal Reflux Disease A Clinical And Endoscopic Study Of Nigerian Patients

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Abstract

Background / Aims: Gastroesophageal reflux disease (GERD) occurs worldwide but its prevalence varies in different parts of the world. The main objectives of this study were to determine the spectrum of GERD and risk factors associated with it in Nigerians. **Methods:** Patients with upper gastrointestinal symptoms were administered Carlsson-Dent questionnaire to diagnose GERD. This was followed by standard upper gastrointestinal endoscopy. **Results:** Using the CD questionnaire GERD was diagnosed in 156 patients, but after upper endoscopy, only 40 patients (25.6%) had varying degrees of esophagitis. Body mass index correlated positively with GERD symptom score. **Conclusion:** Non erosive reflux disease is the predominant form of GERD seen in Nigerians. A symptom-driven patient-centered approach to the diagnosis of GERD is the best strategy that captures most cases. Body mass index has positive correlation with GERD.

INTRODUCTION

Gastroesophageal reflux disease (GERD) is a common disorder of the upper gastrointestinal tract with an incidence of 10 – 38% of adults in the Western population(1, 2)..Previously it was thought that GERD and its complications were rare in Africans(3). This misconception has held sway for a long time and has actually been sustained by a general lack of robust information on GERD in Africans.

In Nigeria, most studies on GERD were carried out on patients referred for upper gastrointestinal endoscopy where the diagnosis was limited to patients with endoscopically defined lesions(4-7). However, only about 50% of patients with GERD manifest macroscopic evidence on endoscopy (8-10).The current trend in diagnosis is to use a patient-centred, symptom-driven approach which is independent of endoscopic findings. The Montreal consensus group developed a global definition and classification of GERD that could be used clinically by primary care physicians(11). This definition is expected to provide a basis for universally accepted terminology that bridges cultures and countries and may simplify disease management, allow collaborative research, and make studies more generalizable, assisting patients, physicians, and regulatory agencies.

This study was designed to determine the prevalence,

clinico-pathologic spectrum and risk factors of GERD in patients with upper gastrointestinal symptoms, using a symptom-driven, patient-centred approach and complemented by endoscopy.

METHODS

This was a prospective cross sectional study in which all patients referred for endoscopy for upper gastrointestinal symptoms in 3 endoscopy centres in Enugu, South Eastern Nigeria were recruited. The centres were University of Nigeria Teaching Hospital Ituku/Ozalla, Annunciation Specialist Hospital, Emene, Enugu and Uzoma Specialist Clinic, Trans Ekulu, Enugu. The study lasted from August 1 2006 to April 30, 2009.

The recruitment of patients involved a two-stage process. Informed consent was obtained from all the participants and they were first administered a simple questionnaire containing the typical symptoms of GERD(11) (heart burn and regurgitation) and the typical symptoms of dyspepsia complex (12) (epigastric pain, epigastric burning, postprandial fullness and easy satiation). Patients were to indicate which of above symptoms they had by answering Yes or No against each symptom. Those who had heart burn and/or regurgitation were further studied regardless of whether they had any symptom of dyspepsia or not. Those whose symptoms had been investigated previously and a

diagnosis made were excluded. Also excluded were those who had alarm symptoms(13). The second stage of the recruitment involved the administration of a modified Carlsson-Dent (CD) questionnaire. The original CD questionnaire(14) is a 7-item questionnaire which utilizes a symptom description and analysis with numerical scores assigned to specific components of the analysis. When summed up, total scores ranged from -7 to +18. The severity of symptoms was also graded from 1 to 5 representing no problem at all, mild problem, moderate problem, severe problem and very severe problem.

Also included in the questionnaire were patients' biodata, body mass index (BMI), duration of symptoms, alcohol consumption, smoking, use of nonsteroidal anti-inflammatory drugs (NSAIDs), use of coffee and use of kolanut. Chest pain, sleep disturbance and extraesophageal features of GERD (cough, asthmatic attack and hoarseness of voice) were also documented. A diagnosis of GERD was made if a patient satisfied 2 conditions:

A total score of 4 or higher on the 7 – item CD questionnaire.

Mild symptoms occurring on 2 or more days a week or more severe symptoms occurring at least once a week (11, 15).

Patients who satisfied above conditions were further examined endoscopically using either a forward viewing Fujinon gastroscope UGI-FP7 seven series, Pentax gastroscope FG-29W- A112438 Japan, or Pentax videoscope FG-2901- AO12813 Japan. Esophageal mucosal lesions were classified according to the Los Angeles system(16). Esophageal lesions such as erythema, friability, and loss of clarity of Z-line which were short of definite mucosal breaks were also recorded.

Data was analysed using SPSS version 13 and expressed as means, standard deviation and percentages where appropriate. Difference between means and proportions were compared and a p value of < 0.05 was considered significant. Correlations between BMI and GERD score and between duration of symptoms and GERD score were also determined.

RESULTS

A total of 468 patients with upper gastrointestinal symptoms were screened with the first questionnaire. Two hundred and twenty two (222) patients had heart burn and/or regurgitation and were administered the modified CD questionnaire. One

hundred and fifty six (156) patients satisfied the criteria for a diagnosis of GERD. They consisted of 77 males (49.4%) and 79 females (50.6%). Their ages ranged from 13 years to 85 years with a mean of 41.3 ± 14.7 years.

Upper gastrointestinal endoscopy revealed normal esophageal mucosa (non erosive reflux disease or NERD) in 116 patients (55 males and 61 females). This represents 74.4% of patients with GERD.

Figure 1

Table 1: Profile of patients with Uninvestigated upper gastrointestinal symptoms

Category of Patients	Male	Female	Total
Uninvestigated upper GI symptoms	230	238	468
Heartburn ± Regurgitation	110	112	222
GERD using CD questionnaire	77	79	156
NERD	55	61	116
GERD with esophageal mucosal breaks	22	18	40

Varying degrees of esophagitis were noted in 40 patients (22 males and 18 females) representing 25.6% of patients with GERD. There were 18 patients who did not have definite esophageal mucosal break but had such lesions as erythema, friability or blurring of the Z-line. They consisted of 10 males and 8 females and represented 11.5% of all GERD patients.

Out of the 40 patients with esophagitis, 24 had grade A esophagitis (15.4%), 10 had grade B (6.4%), 4 had grade C (2.6%).

Figure 2

Table 2: Endoscopic Findings in Patients with GERD(Los Angeles classification)

Category	Male	Female	Total	Percentage
NERD	55	61	116	74.4
Grade A	13	11	24	15.4
Grade B	4	6	10	6.4
Grade C	3	1	4	2.6
Grade D	2	-	2	1.3
Total	77	79	156	100

Early or minimal esophagitis = 18 patients (10 males and 8 females), representing 11.5% of all GERD patients.

The mean age of patients with NERD was 41.4 ± 15.1 years while the mean age of patients with esophagitis was 41.3 ± 13.7 years. The difference between the means was not statistically significant ($t = 0.1613$, $P = 0.0821$, $df = 145$). There were 22 males and 18 females with esophagitis. There

was no statistically significant difference in the sex specific prevalence of esophagitis ($\chi^2 = 0.4053$, $p = 0.5244$).

The duration of symptoms (in months) ranged from 1 to 36 with a mean of 11.0 ± 7.3 months. The mean duration of symptoms for patients with NERD was 9.4 ± 6.8 months while the mean duration of symptoms for patients with esophagitis was 16.1 ± 6.4 months. The difference was statistically significant ($t = 5.33$; $df = 144$, $p < 0.0001$). A test of correlation was carried out between duration of symptoms and GERD score. The correlation was positive and significant [Pearson (ρ) = 0.2192, $p = 0.0076$]. Similarly a test of correlation between BMI and GERD score showed positive correlation [Pearson (ρ) = 0.4043, $p < 0.0001$].

Smoking was noted in 11 patients with esophagitis and 29 patients with NERD. The difference was not statistically significant ($\chi^2 = 0.5715$, $p = 0.8111$). Alcohol consumption was recorded in 18 patients with esophagitis and in 28 patients with NERD. The difference was not statistically significant ($\chi^2 = 3.158$, $p = 0.0755$). Consumption of coffee was noted in 8 patients with esophagitis and in 18 patients with NERD. The difference was not statistically significant ($\chi^2 = 0.3018$, $p = 0.5827$). Consumption of kolanut was recorded in 8 patients with esophagitis and in 15 patients with NERD. The difference was not statistically significant ($\chi^2 = 0.8536$, $p = 0.3555$). Use of NSAIDs was noted in 4 patients with esophagitis and 12 patients with NERD. The difference was not statistically significant ($\chi^2 = 0.003132$, $p = 0.9554$). Hiatus hernia was recorded in 11 patients with esophagitis and in 22 patients with NERD. The difference was not statistically significant ($\chi^2 = 0.818$, $p = 0.3658$).

Chest pain was noted in 6 patients with esophagitis and in 10 patients with NERD. The difference was not statistically significant ($\chi^2 = 1.042$, $p = 0.3074$). Sleep disturbance was noted in 12 patients with esophagitis and in 36 patients with NERD. The difference was not statistically significant ($\chi^2 = 0.007941$, $p = 0.9299$). Extraesophageal features were noted in 9 patients with esophagitis and in 18 patients with NERD. The difference was not significant ($\chi^2 = 0.6946$, $p = 0.4046$).

Figure 3

Table 3: Comparisons Between Reflux Esophagitis and NERD

Variable	Esophagitis (n = 40)	NERD (n = 116)	P-Value	Overall Percentage
Mean Age	41.3 ± 13.7	41.4 ± 15.1	0.0821	
Duration of symptoms (months)	16.1 ± 6.4	9.4 ± 6.8	<0.0001*	
Smoking	11	29	0.8111	25.6
Alcohol	18	28	0.0755	29.5
Coffee	8	18	0.5827	16.7
Kolanut	8	15	0.3555	14.7
NSAIDs	4	12	0.9554	10.3
Hiatus hernia	11	22	0.3658	21.2
Chest pain	6	10	0.3074	10.3
Sleep Disturbance	12	36	0.9299	30.8
Extraesophageal syndrome (Cough, hoarseness, asthma)	9	18	0.4046	17.3

* = statistically significant

DISCUSSION

About a third of patients who presented for endoscopy with various symptoms referable to the upper gastrointestinal tract had GERD when the CD questionnaire was used in diagnosis, with almost equal gender distribution. This is similar to the observation in some studies from Europe although there is male preponderance of esophagitis in those studies(17). Studies from China also identified age and sex as determinants of erosive esophagitis (18, 19). However, in this study these variables did not affect the prevalence of esophagitis. The explanation for this difference is not clear but may be related to racial or genetic factors.

Upper gastrointestinal endoscopy showed esophagitis in only 25.6% of patients with GERD in this study when the Los Angeles classification was used. This suggests that NERD is the predominant form of GERD in Nigerian patients (74.4%). The proportion of GERD patients with NERD in western countries is about 50%(9,10) while in a Chinese study, as many as 66.2% had endoscopic esophagitis (19). The prevalence of esophagitis in this study would have been higher if patients with “minimal esophagitis” had been included. These were patients who had mucosal erythema, friability or irregularity of the Z-line without definite mucosal break. This type of esophageal lesion, which is also called minimal esophagitis was seen in 18 patients which represented 11.5% of all patients with GERD.

Most experts regard mucosal break (as defined in the Los Angeles system) as the most reliable endoscopic finding of esophagitis (20,21). However there is an emerging trend towards recognizing minimal changes that are not mucosal break and this has led to modifications of the Los Angeles classification (22,23). Furthermore, there is increasing concern about the adequacy of conventional endoscopic identification of NERD. Efforts are underway to determine if new endoscopic techniques can identify changes heretofore invisible at the time of standard white light endoscopy. A lot of research is currently going on in areas of magnification endoscopy(24,25), chromoendoscopy(26), narrow-band imaging(27,28) and confocal laser endomicroscopy(29). However, studies to date are small and require validation in larger numbers of patients by larger numbers of endoscopists.

Most of the patients with esophagitis in this study (85%) had either grade A or B. The more severe grades were seen in only 15%. This suggests that severe esophagitis is not common among Nigerian patients. There were also no cases of esophageal stricture or Barrets esophagitis. This may be due to the fact that most patients would have tried many drugs before coming to hospital including proton pump inhibitors which patients get easily without prescription because of ineffective local regulations.

There was no significant difference between the mean age of patients with esophagitis and that of patients with NERD. This is different from the findings in studies from China(18,19). Similarly, there was no difference in prevalence of esophagitis in males compared to females in this study but in studies from Asia, male gender is a risk factor for erosive esophagitis, whereas females are more likely to be associated with NERD (30,31).

The duration of symptoms was significantly longer in patients with esophagitis compared to those with NERD. This suggests that patients with NERD may develop esophagitis with the passage of time if no treatment is given. This is also corroborated by the positive correlation between duration of symptoms and GERD score calculated from CD questionnaire. Furthermore, a study in Japan showed that symptomatic gastroesophageal reflux disease without endoscopic evidence of inflammation would develop into esophagitis³². However, other studies suggest that the severity of GERD symptoms, both on and off treatment, does not change over time in most patients³³⁻³⁵. Large studies of the natural history of GERD are unlikely to be conducted, as the majority of patients will be treated for their

symptoms.

In this study there was positive correlation between BMI and GERD score. Patients with high BMI tended to have higher GERD scores. The literature is replete with studies that showed an association between BMI and GERD symptoms(36,37), and those that failed to show such association(38,39). However a recent meta-analysis of previous studies demonstrated a dose-response relationship between BMI and risk of reporting symptoms of gastroesophageal reflux disease among both men and women(40).

The putative risk factors for GERD considered in this study were smoking, alcohol consumption, consumption of coffee, consumption of kolanut, use of NSAIDs and hiatus hernia. Even though some or all of them may have contributed to the reflux syndrome, none of them had any significant association with esophagitis. Similarly chest pain, sleep disturbance and extraesophageal features were more prevalent in the patients with esophagitis but the difference was not statistically significant.

CONCLUSION

Gastroesophageal reflux disease occurs in about a third of patients who present with upper gastrointestinal symptoms. The Montreal definition and classification of GERD provides a symptom-driven, patient-centred strategy for diagnosis because non erosive reflux disease is the predominant form of GERD, although patients with esophagitis tend to have a longer duration of symptoms. Severe esophagitis is not common in Nigerian patients. Body-mass index has a positive correlation with GERD.

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