

Original Article**Endoscopic Observation Around the Gastroesophageal Junction in Patients with Symptomatic Reflux Disease****Muhammad Usama, Muhammad Naeem Afzal, Tabish Raza, Muhammad Arif Nadeem***Department of Medicine, Services Institute of Medical Sciences, Lahore.***Abstract**

Objective: To determine the endoscopic findings around the gastro esophageal junction in patient with symptomatic reflux disease.

Methods: This was a Cross sectional study, conducted in Gastroenterology Ward (M-III), Services Hospital Lahore from 15-03-2016 to 14-09-2017. Two hundred and fifty patients were enrolled in the study. Demographic data was collected from each patient. Patients were evaluated for the presence of various abnormalities on endoscopy (i.e., RE, HH and CLE). All data was collected through a predefined proforma. Data was analyzed through SPSS version 21.

Results: Mean age of patients was 34.40 ± 3.78 . Most of the patients (54%) were between the ages of 31-50 years. Majority of the patient were male. Endoscopic findings in the patients of gastroesophageal reflux disease (GERD) include reflux esophagitis (RE), hiatus hernia (HH) and columnar lined esophagitis (CLE) with prevalence of 11.9%, 16.2% and 10% respectively. A total of 62% patients have normal endoscopy. There was no significant relationship between age, sex, duration of GERD, presence of DM and HTN with endoscopic findings.

Conclusion: Majority of the patients with clinical GERD have normal endoscopic findings and other findings include RE, HH and CLE with prevalence of 11.9%, 16.2% and 10%.

Keywords | GERD, Endoscopy Hiatus Hernia

How to cite this:

Usama M, Afzal MN, Raza T, Nadeem MA. Endoscopic observation around the gastro esophageal junction in patients with symptomatic reflux disease. J Pak Soc Intern Med. 2020;1(1):50-54.

Corresponding Author: Prof. Muhammad Arif Nadeem **Email:** arifnadeem1234@gmail.com

Introduction

Gastroesophageal reflux disease (GERD) is the common disease in Western countries with 10-20% of population suffering weekly symptoms of GERD.¹ In Asia, the incidence of GERD during 2005-2010 was 5.2-8.5% in Eastern Asia and 6.3-18.3% in Iran.² Hospital-based incidence of GERD from Pakistan have been reported as 24.0%. The typical symptoms of GERD are heartburn and acid regurgitation, and extra esophageal symptoms like atypical chest pain, sleep disturbances, cough, hoarseness, asthma, and dental erosions form part of GERD symptoms.³ GERD is a clinical diagnosis while

gastroscopy is performed to evaluate the degree of esophagitis and its complications.⁴

Identification of nonerosive reflux disease (NERD) as an independent presentation of GERD is one the most important development in the last decade.⁵ NERD is defined as the presence of classic GERD symptoms without esophageal mucosal injury during upper GI endoscopy. GERD is the result of the failure of the normal antireflux barrier to protect against frequent and abnormal amounts of refluxed gastric contents. Most symptomatic patients have no visible mucosal damage at the time of endoscopy (NERD), whereas others may have esophagitis,

peptic strictures, or Barrett's esophagus. In 2009, there were 8.9 million outpatient clinic visits of patients with GERD, the leading diagnosis for all GI disorders in USA.⁶ A study conducted in Sri Lanka on endoscopic findings around Gastroesophageal junction found the frequency of Hiatus hernia, Columnar Lined Esophagus and Reflux Esophagitis as 14.3% (n=165), 9.5% (n=109) and 13.3% (n=153), respectively.⁷ In the Columnar Lined Esophagus group, 48 patients had Barrett's esophagus. Of all these patients, 94.8% had mild esophagitis (Los Angeles classification A and B) and all were younger male having Hiatus Hernia, and grade 3 or 4 Gastroesophageal flap valve (GEFV). As far as already published literature is concerned, this is the only international study available. Locally no study is available. This study was therefore done to generate the baseline data for endoscopic abnormalities in and around gastroesophageal junction in patients with Reflux Diseases to help gastroenterologist in future for better treatment. The rational of the study is to assess the endoscopic findings at the gastroesophageal junction in symptomatic GERD patients.

Material and Methods

This was a Cross sectional study, conducted in Gastroenterology Ward (M-III), Services Hospital Lahore from 15-03-2016 to 14-09-2017. Sampling technique was non-probability, consecutive and sample size of 210 patients was estimated using 4% margin of error, 95% confidence interval and taking expected prevalence of Columnar Lined Esophagus as 9.5%.⁸ Patients of both gender with age range 18-50 years with clinical diagnosis of GERD for at least three months were included. Patients with hematemesis, melena dysphasia and typical symptoms of peptic ulcer disease were excluded.

Inclusion criteria:

- Patients between 18-50 years.
- Both gender.
- Patients diagnosed with GERD for at least 3 months.
- Patients who give written informed consent to be part of the study.

Exclusion criteria:

- Patients with peptic ulcer, nonspecific dyspepsia.
- Patients who were taking anti-platelet agents,

non-steroidal anti-inflammatory drugs (NSAIDs) or bisphosphonates.

- Patients who had dysphagia, hematemesis, and melena.
- Patients who had history of ERCP procedure.

Data Collection Procedure:

Two hundred and ten patients who presented for endoscopy and had GERD in Medical Unit III, Services Institute of Medical Sciences, Lahore and who fulfilled above criteria were counseled and explained the details of study. Written informed consent and detailed history was taken from each patient. Demographic data was collected from each patient. Patients were evaluated for the presence of various abnormalities on endoscopy (i.e., RE, HH, and CLE) as mentioned in the operational definition by a single consultant level gastroenterologist. All data was collected through a predefined proforma.

Data Analysis Procedure:

All the collected data was analyzed with SPSS version 21. Numerical variables i.e., age was presented by mean \pm SD. Categorical variables i.e., gender and endoscopic abnormalities (i.e., RE, HH, CLE) in and around gastroesophageal junction (as per operational definition) were presented as frequency and percentage. Data was stratified for age, gender, duration of GERD, diabetes, BMI, and hypertension. Post stratification chi-square test was applied keeping a p-value ≤ 0.05 as significant.

Results

Two hundred and ten patients were included in the study. The mean age of patients was 34.40 years with standard deviation of 3.78. Most of the patients (54%) were between the ages of 31-50 years while remaining 46% were between the ages of 18-30 (**Table-1**). Majority of the patient i.e., 62% were male while 38% females(**Table 2**). When we stratified our data according to the age of patients, it was observed that endoscopic findings were normal in 57 patients, CLE in 13 patients, hiatal hernia in 15 patients and reflux esophagitis in 11 patients between ages of 18-30 (**Table-2**). On the other hand, for the patients between ages of 31-50, endoscopic findings were normal in 73 patients, hiatal hernia in 14 patients, reflux esophagitis in 19 patients and columnar lined was present epithelium in 8 patients.

The p-value was not significant i.e., 0.466 (**Table-3**). When we stratified our data according to the gender, it was seen that 87 male patients had normal endoscopy in comparison with 43 females who had normal endoscopic findings. Eleven male patients had columnar lined epithelium whereas 10 female patients had it. In this study, 18 male patients were having reflux esophagitis while 16 female patients had it. Regarding hiatal hernia, 14 male and 11 female had hiatal hernia on endoscopy. (p = 0.981) (**Table 3**). When we stratified our data according to the duration of GERD, 55 patients who had GERD for \geq 6 month had normal endoscopy while 75 patients with GERD < 6 months had normal endoscopy. According to the results of our study, 13 and 16 patients with GERD for \geq 6 months had CLE and HH, respectively. The p value was 0.115 i.e., non-significant. When we stratified the data according to the presence of diabetes mellitus, it was observed that diabetes mellitus was not significantly associated with GERD i.e., p value was 0.968. Similarly, hypertension was also not significantly associated with endoscopic findings of GERD i.e., p value=0.687 (**Table-3**). When we stratified our data according to the diabetes mellitus the p-value was 0.968 and results shown in (**Table-3**). When we stratified our data according to BMI of patients, it was seen that BMI was strongly associated with endoscopic findings i.e., p-value was 0.046 (**Table-3**). When we stratified our data according to hypertension the p-value was 0.687 (**Table -3**).

Table-1: Age and gender distribution (n=210).

Age (in Years)	No. of Patients	Percentage
18 - 30	96	46.0%
31 - 50	114	54%
Total	210	350 (100%)
Male	130	62.0%
Female	80	38.0%

Mean \pm SD: 34.40 \pm 3.78 years

Table-2 Frequency of endoscopic abnormalities (n=210).

Endoscopic Abnormalities	No. of Patients	Percentage
RE	25	11.9%
HH	34	16.2%

CLE	21	10.0%
Absent	130	61.9%
Total	210	100.0%

Table-3: Frequency of endoscopic abnormalities (n=210).

Age Years	Endoscopic Abnormalities				P-Value
	HH	RE	CLE	No	
18-30	11	15	13	57	
31-50	14	19	8	73	0.466
Total	25	24	21	130	
Gender					
Male	14	18	11	87	
Female	11	16	10	43	0.9581
Total	25	34	21	130	
Duration of Gerd					
> 6 Months	16	17	13	55	
< 6 Months	9	17	8	75	0.115
Total	25	21	21	130	
Diabetes					
Yes	12	18	10	67	0.968
No	13	16	11	63	
Total	25	34	21	130	
BMI					
> 25 Kg/m ²	15	21	13	78	
> 25 Kg/m ²	10	13	8	52	0.046
Total	25	34	21	130	
Hypertension					
Yes	13	20	12	63	
No	12	14	9	67	0.687
Total	25	34	21	130	

Discussion

The present study “endoscopic observation around the gastro oesophageal junction in patient with symptomatic reflux disease” was conducted at Medical Unit-III, Services Hospital Lahore. Purpose of this study was to establish a baseline data for endoscopic abnormalities at the gastroesophageal junction in patients with Reflux

Diseases in Pakistan and to help gastroenterologist to treat this most commonly occurring endoscopic finding in patients of GERD. A total of two hundred and ten patients participated in our study. According to the results of our study, 61.9% had normal endoscopy. These results were comparable with the results of other studies. According to a study conducted in Sri Lanka, 62.9% patients with GERD had normal endoscopy.⁷ In another study conducted in Sweden, 77% patients had normal endoscopy.⁹ Reason for this high frequency of normal endoscopic findings was since this study was conducted on normal subjects and our study was conducted on patients with GERD.

According to our result, 16.2% patients had hiatal hernia. These results were comparable with the results of other studies. According to the study conducted in Sri Lanka, 14.3% patients had hiatal hernia.⁷ In another study conducted at Korea, hiatal hernia was present in 9.8% of patients with GERD.¹⁰ The reason for this low prevalence is the low BMI index in Korean population (average BMI index was 23.2). In another study conducted at Sweden, Hiatal hernia was present in 21% of patients with GERD.⁹ Furthermore, according to the results of one study conducted at Japan, hiatal hernia was found in 17.5% of patients with GERD.¹¹ In one study conducted in Norway showed that frequency of hiatal hernia in GERD patients was 16.6% and in a study conducted at USA, frequency of GERD was 22%.¹²⁻¹³ Reason for this slight high incidence in Sweden, USA and Norway was because of the fact that overall frequency of GERD has shown an increasing trend in Western World, and this is associated with high BMI in these population. In some studies, incidence of Hiatal hernia was low in GERD patients e.g., hiatus hernia was found in 2.2% and 7% in Taiwan.¹⁴⁻¹⁵ In a study conducted in Singapore, it was found that 2.9% of GERD patients had Hiatal hernia.¹⁶ Yet in another study conducted at Korea 4.1% of 1010 patients with GERD had hiatal hernia.¹⁷ Reason for this low prevalence is its uncommon occurrence in the Far East, and the prevalence of hiatus hernia also follow this trend. According to the results of our study, 11.9% patients had reflux esophagitis. These results were comparable with the results of other studies. In one study conducted at Korea, it was seen that reflux esophagitis was present in

9.9% of GERD patients.¹⁰ Similar results were also obtained in other studies conducted in Korea.¹⁸⁻¹⁹ Some other studies conducted in Asia, it was found that incidence of reflux esophagitis is rising with overall prevalence of 3-16%.²⁰⁻²³ Similar results were also obtained in a study conducted at Egypt. According to this study, RE was present in 24% of GERD patients.²⁴ In our study, columnar lined epithelium was present in 21% of patients. These results were comparable with the results of our study. In one study conducted in Korea, CLE was found to be 23.3% of patients.²⁵ Yet in other studies, CLE was found in 10-15% of patients with GERD.²⁶ In a study conducted in Sri Lanka, CLE was found in 9.5% of patients.⁷

Conclusion

Non erosive reflux disease (NERD) is the most common endoscopic finding in symptomatic GERD patients. Its prevalence is 62%. These patients should be treated as GERD. The prevalence of RE, HH, and CLE is patients of GERD is 11.9%, 16.2% and 10% respectively. These patients should also be treated and follow up endoscopies should be done for screening of Barrett's esophagus, especially in those with CLE.

References

1. El-Serag HB, Sweet S, Winchester CC, Dent J. Update on the epidemiology of gastroesophageal reflux disease: a systematic review. Gut 2014; 63(6):871-80.
2. Jung H-K. Epidemiology of gastroesophageal reflux disease in Asia: a systematic review. J Neurogastroenterol Motil. 2011; 17(1):14.
3. Shiwanji MH. Short Communication-Treatment of Gastroesophageal Reflux Disease: A call for increase awareness and local research. J Pak Med Assoc 2011; 61(3):283.
4. Armstrong D, Bennett JR, Blum AL, Dent J, De Dombal FT, Galmiche J, et al. The endoscopic assessment of esophagitis: a progress report on observer agreement. Gastroenterol 2012; 111(1):85-92.
5. Wright RA, Hurwitz AL. Relationship of hiatal hernia to endoscopy proven esophagitis. Dig Dis Sci 1979; 24(4): 311-3.
6. Boyce HW. Endoscopic definitions of esophagogastric junction regional anatomy.

- Gastrointest Endos. 2011; 51(5):586-92.
7. Navarathne NMM, Abeysuriya V, Illeperuma A, Thoufeek UL. Endoscopic observations around the gastroesophageal junction in patients with symptomatic gastroesophageal reflux disease in South Asia. Indian J Gastroenterol. 2010; 29(5):184
 8. Boyce HW. Endoscopic definitions of esophagogastric junction regional anatomy. Gastrointest Endos. 2011; 51(5):586-92.
 9. Kim JH, Hwang JK, Kim J, Lee SD, Lee BJ, Kim JS, Bak YT. Endoscopic findings around the gastroesophageal junction: an experience from a tertiary hospital in Korea. Korean J Intern Med. 2008; 23(3):127-33.
 10. Furukawa N, Iwakiri R, Koyama T, et al. Proportion of reflux esophagitis in 6010 Japanese adults: prospective evaluation by endoscopy. J Gastroenterol 1999; 34(4): 441-4.
 11. eom SJ, Park HJ, Cho JS, Lee SI, Park IS. Reflux esophagitis and its relationship to hiatal hernia. Korean J Med Sci 1999; 14(3): 253-6.
 12. Kim GH, Kang DH, Song GA, Kim TO, Heo J, Cho M, Kim JS, Lee BJ, Wang SG. Gastroesophageal flap valve is associated with gastroesophageal and gastropharyngeal reflux. J Gastroenterol. 2006; 41(7):654-61.
 13. Lee JY, Hong WK, Sohn KM, Kim DY, Kim YM, Choi HH, Choi CS, Kim SJ, Baek KH, Kim JB, Kim DJ. Prevalence and clinical characteristics of gastroesophageal reflux disease and reflux esophagitis in Chuncheon city: health care examination study. Korean J Med. 2008; 74(4):385-90.
 14. Goh KL. Changing epidemiology of gastroesophageal reflux disease in the Asian-Pacific region: an overview. J Gastroenterol Hepatol. 2004; 19(Suppl 3): S22-5.
 15. Ho KY, Chan YH, Kang JY. Increasing trend of reflux esophagitis and decreasing trend of Helicobacter pylori infection in patients from a multiethnic Asian country. Am J Gastroenterol. 2005; 100(9):1923-8.
 16. Wong BC, Kinoshita Y. Systemic review on epidemiology of gastroesophageal reflux disease in Asia. Clin Gastroenterol Hepatol. 2006; 4(4):398-407.
 17. Gado A, Ebeid B, Abdel Mohsen A, Axon A. Prevalence of reflux esophagitis among patients undergoing endoscopy in a secondary referral hospital in Giza, Egypt. Alexandria Journal of Medicine 2015; 51(2):89-94
 18. Kim GH. Columnar-lined Esophagus: Its Prevalence and Predictors in Patients with Gastroesophageal Reflux Disease. J Neurogastroenterol Motil. 2013;19(2):261-263.
 19. Balasubramanian G, Singh M, Gupta N, Gaddam S, Giacchino M, Wani SB, et al. Prevalence and predictors of columnar lined esophagus in gastroesophageal reflux disease (GERD) patients undergoing upper endoscopy. Am J Gastroenterol. 2012; 107(11):1655-61.
 20. Spechler SJ, Zeroogian JM, Antonioli DA, Wang HH and Goyal RK. Prevalence of metaplasia at the gastro-oesophageal junction. Lancet 1994; 344(8936): 1533-6.
 21. Wallner B, Sylvan A, Stenling R and Janunger KG. The Z-line appearance and prevalence of intestinal metaplasia among patients without symptoms or endoscopical signs indicating gastroesophageal reflux. Surg Endosc 2001; 15(8): 886-9.