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RESEARCH ARTICLE

Histopathological Study of Gastro Esophageal Reflux Disease (GERD) and Its Correlation with Endoscopic Finding

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Abstract

Background: Gastro esophageal reflux disease (GERD) is a common burden on health care resources in the Western world and deteriorates the health-related quality of life of those affected, but its manifestations in the general population are as yet unclear

Aim of the Study: The aim of the study was to find out the Histopathological findings of Gastro Esophageal Reflux Disease and its correlation with Endoscopic finding.

Methods: This prospective research was carried out at the Department of Department of Anatomy, MD, MSc (Gastroenterology), Army Medical College Jashore, Jashore Cantonment, Bangladesh and different private Hospital in Jashore. The study spanned from July 2022 to July 2023.The study included 320 patients who provided informed consent for upper gastrointestinal (GI) endoscopy. It meticulously documented various aspects, including baseline characteristics, medical history, and extensive investigations, such as complete blood count, erythrocyte sedimentation rate (ESR), random blood sugar (RBS), urea, creatinine, serum electrolytes, electrocardiogram, abdominal ultrasonography (USG), and upper GI endoscopy.

Result: This prospective study involving 320 participants examined the population's demographics, incidence rates, and clinical manifestations. Participants had an average age of 36.08 years, with 70% male and 30% female. 31.88% reported experiencing gastroesophageal reflux disease (GERD), with associated symptoms like heartburn, reflux, burning sensation, chest pain, vomiting, dyspepsia, belching, and loss of appetite detailed. Dietary patterns revealed 62.50% following a vegetarian diet and 37.50% a mixed diet. The duration of symptoms varied, with 25% having symptoms for three months or less and 31.25% each for 4-6 months, 7-12 months, and over 12 months. Esophagitis and gastritis were common diagnoses (24.06% each), followed by ulcers (11.88%). Endoscopy showed no abnormalities (34.06%). GERD treatment yielded partial relief (50%), complete relief (37.5%), and no relief (12.5%).

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Conclusion: The most common presenting complaint in patients of GERD was heartburn followed by regurgitation of gastric contents. Prevalence of GERD was found 32% in APD. In 12 (24%) of patients oesophagitis was seen on endoscopic examination. After medical treatment for 6-8 weeks, 37.5% of subjects become asymptomatic and 50% had partial symptomatic relief.

Keywords: Acid peptic disease, Gastroesophageal reflux disease, Endoscopy, Heartburn.

1. Introduction

Gastroesophageal reflux disease (GERD) is a prevalent gastrointestinal condition characterized by the backflow of stomach contents into the esophagus, often resulting in troublesome symptoms and complications. Long-term GERD can lead to a precancerous condition known as Barrett's esophagus [1]. Studies have reported an increasing prevalence of GERD, ranging from 18.1% to 27.8% [2,3]. Additionally, 25.9%, 33.1%, 11.6%, and 23% prevalence rates have been observed in Europe, the Middle East, Australia, and South America, respectively [3-6]. Diagnosing GERD accurately and promptly is crucial since its long-term complications, including erosive esophagitis, laryngitis, esophageal strictures, Barrett's esophagus, and laryngeal stricture, can result in significant morbidity [7]. Barrett's esophagus is particularly concerned, as it elevates the risk of developing esophageal adenocarcinoma [8]. Clinical presentations of GERD can vary, encompassing both symptomatic and asymptomatic cases. Symptomatic GERD is characterized by epigastric pain, chest burning sensations or heartburn, and regurgitation. Conversely, typical or asymptomatic GERD may manifest as symptoms like sore throat, hoarseness, lung issues, dysphagia, or abdominal discomfort [9]. Barrett's esophagus typically arises from longstanding GERD and carries the potential for malignancy. Its diagnosis can be reliably accomplished through upper gastrointestinal endoscopy. However, there is limited research on GERD clinical symptoms and endoscopic findings. While GERD can be diagnostically identified through endoscopy, it plays a vital role in addressing GERD-related comorbidities, particularly malignancy or Barrett's esophagus, as the gold standard [10]. Early detection and identification of GERD symptoms are essential in effectively preventing GERD complications [11]. One study examined the endoscopic clinical characteristics associated with GERD indications in patients. These findings provided valuable evidence for early diagnosis and initiating prompt treatment for suspected cases of gastroesophageal reflux disease [12]. Esophagogastroduodenoscopy (EGD) is the invasive gold standard for evaluating and grading esophagitis and excluding other esophageal conditions. Although endoscopy exhibits low sensitivity for GERD, it boasts an impressive specificity of 90-95% [13]. Reflux esophagitis is typically diagnosed through endoscopy by identifying mucosal breaks in the esophagus, making it a reliable indicator. The Los Angeles classification system is employed for grading esophageal reflux. Esophagogastroduodenoscopy also offers preoperative management options for various conditions, including ulcers, hernias, gastric carcinoma, and Barrett's esophagus. The study aimed to find out the Histopathological findings of Gastro Esophageal Reflux Disease (GERD) and its correlation with Endoscopic finding.

2. Methodology and Materials

This prospective research was carried out at the Department of Department of Anatomy, MD, MSc (Gastroenterology), Army Medical College Jashore, Jashore Cantonment, Bangladesh and different private Hospital in Jashore. The study spanned from July 2022 to July 2023, during which a total of 320 patients were recruited and subjected to analysis. All participants provided informed consent for undergoing upper gastrointestinal (GI) endoscopy. The study meticulously documented various aspects of the cases, including baseline characteristics, medical history, and comprehensive investigations. These investigations encompassed a complete blood count with erythrocyte sedimentation rate (ESR), random blood sugar (RBS) levels, urea and creatinine levels, serum electrolyte levels, electrocardiogram results, ultrasonography (USG) of the abdomen, and upper GI endoscopy, among others.

2.1 Inclusion Criteria

The study included individuals who exhibited a range of symptoms associated with Acid Peptic Disorder (APD), such as dyspepsia, epigastric discomfort, a burning sensation in the upper abdominal region, central chest discomfort, excessive belching, a sensation of abdominal bloating, acid regurgitation, episodes of vomiting, a feeling akin to a "ball rolling" in the upper abdomen, and the presence of blood in vomit.

2.2 Exclusion Criteria

The study excluded individuals who had coronary artery disease, preexisting medical conditions previously diagnosed, patients who had been treated with proton pump inhibitors recently, and individuals who had undergone major surgery or experienced significant trauma recently.

Patients displaying symptoms of APD were clinically diagnosed and underwent upper GI endoscopy using the Pentax FG29 gastroscope. Those with classic heartburn and reflux symptoms were clinically diagnosed with GERD and examined for erosive changes through endoscopy without requiring tissue biopsy. In cases where GERD patients showed no visible abnormalities during endoscopy, biopsy samples were collected from the lower esophagus and sent for histopathological analysis. Patients diagnosed with GERD received a treatment regimen of pharmacological and supportive measures. Supportive management encompassed weight reduction, raising the head of the bed by approximately 4-6 inches using blocks, and eliminating factors that increase abdominal pressure. Patients were advised to avoid smoking and avoid consuming fatty and spicy foods, coffee, chocolate, alcohol, mint, orange juice, and medications such as anticholinergic drugs, calcium channel blockers, and other smooth-muscle relaxants.

The information was organized in an easily digestible format, with tables and graphs tailored to the nature of the data. A detailed description accompanied each table and graph to ensure clear comprehension. Statistical analysis was conducted using the Statistical Package for Social Science (SPSS) program on a Windows platform. The data was presented as mean values along with their standard deviations for continuous variables, while categorical variables were expressed in frequency and percentage.

3. Results

In this prospective study, 320 patients participated and underwent comprehensive analysis. The demographic characteristics, incidence rates, and clinical manifestations of the study population are detailed in Table 1. The average age of the participants was 36.08 years, with a standard deviation of 11.20. Among the participants, 70% were male, while 30% were female. Notably, 31.88% of the patients reported experiencing gastroesophageal reflux disease (GERD), amounting to 102 patients, whereas 68.13% reported no GERD symptoms. Table 1 also presents various symptoms associated with GERD, including heartburn (100.00%), reflux (81.25%), burning sensation (62.50%), chest pain (12.50%), vomiting (56.25%), dyspepsia (68.75%), belching (50.00%), and loss of appetite (62.50%). Table 2 provides insights into the

Table 1. *Demographic characteristics, incidence and clinical spectrum of GERD.*

Baseline characteristics	Frequency (n)	Percentage (%)
Age		
Mean±SD	36.08±11.20	
Gender		
Male	224	70.00
Female	96	30.00
GERD		
Yes	102	31.88
No	218	68.13
Symptoms		
Heart burns	320	100.00
Reflux	260	81.25
Burning sensation	200	62.50
Chest pain	40	12.50
Vomiting	180	56.25
Dyspepsia	220	68.75
Belching	160	50.00
Blood in vomitus	0	0.00
Loss of appetite	200	62.50
Total	320	100.00

patients' dietary patterns. Of the participants, 62.50% adhered to a vegetarian diet, while 37.50% followed a mixed diet. Regarding the duration of symptoms in months, Table 2 indicates that 25.00% of patients experienced symptoms for three months or less, 31.25% for 4 to 6 months, another 31.25% for 7 to 12 months, and 31.25% had been enduring symptoms for 12 months or more. Furthermore, 68.75% of patients reported alcohol consumption, whereas 31.25% did not. Regarding smoking habits, 56.25% were smokers, while 43.75% were non-smokers (Table 2). Esophagitis and gastritis emerged as the most prevalent conditions, each accounting for 24.06% of the cases. Ulcers represented the most common diagnosis, encompassing 11.88% of the cases. Less frequently, growth-related issues were observed in 1.88% of cases, while varices accounted for 4.06% of cases. The "Within Normal Limits" (WNL) category indicated that 34.06% of cases exhibited no abnormalities during the endoscopy (Table 3). Figure 1 illustrates the response to treatment in GERD patients. Half of the patients experienced partial relief, 37.5% achieved complete relief, and 12.5% reported no relief.

Table 2. *Patients profile of study population.*

Patients profile	Frequency (n)	Percentage (%)
Dietary pattern		
Vegetarian	200	62.50
Mix diet	120	37.50
Duration of symptoms (in months)		
≤3	80	25.00
4-6	100	31.25
7-12	100	31.25
≥12	100	31.25
Alcohol intake		
Yes	220	68.75
No	100	31.25
Smoking		
Yes	180	56.25
No	140	43.75
Total	320	100.00

Table 3. *UGI endoscopy findings in APD patients.*

UGI endoscopy	Frequency (n)	Percentage (%)
Esophagitis	77	24.06
Gastritis	77	24.06
Ulcers	38	11.88
Growth	6	1.88
Varices	13	4.06
WNL	109	34.06
Total	320	100.00

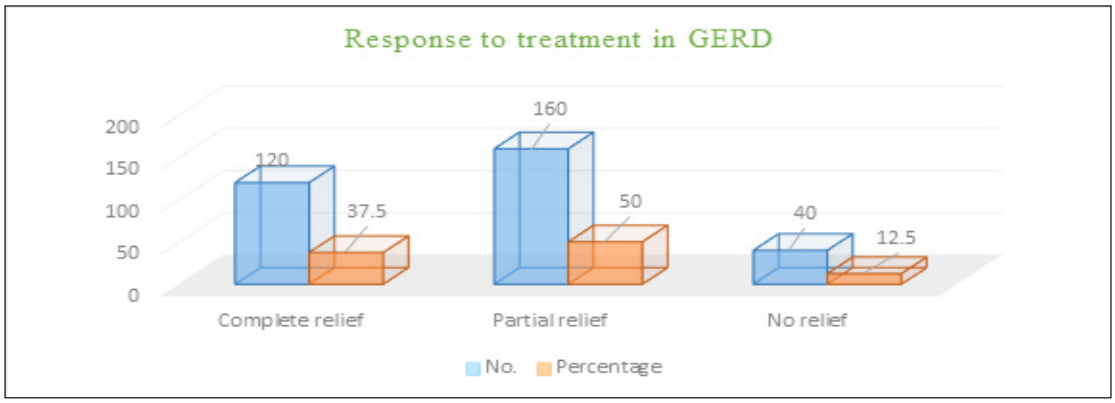

Figure 1. *Response to treatment in GERD.*

4. Discussion

Gastroesophageal reflux is suitable for population-based research due to its prevalence within the community. The diagnosis can rely on symptoms, and individuals may not always seek medical attention. Notably, 70.00% of patients diagnosed with APD were male, with 30.00% female. This distribution may be attributed to more male patients in our outpatient department (OPD) than females. A similar trend was observed in a study conducted by Thrift et al. [14]. Additionally, most subjects, accounting for 54% (n=27), fell within the age group of 30-49 years, with a mean age of 36.08+11.20 years. These findings closely resemble the results of a study conducted by Toppo et al. in India [15]. A statistically significant but slight trend was identified, linking the severity of heartburn with increasing age. In our study, the incidence of GERD in APD was 31.88%. Yang et al. reported that acid regurgitation was the most frequent and bothersome symptom among GERD patients [16]. Another study in India discovered a 32% prevalence of GERD in APD [15]. Several studies have reported that 21-37% of individuals experience heartburn at least once a month, and 13-25% experience it at least once a week or more frequently [17-19]. Elderly patients with GERD were also at a higher risk of developing severe erosive esophagitis. Therefore, elderly patients experiencing heartburn or dysphagia may require particularly close clinical evaluation. In our study, the clinical features of GERD closely resembled those reported in studies by Hollenz et al. and Klauser et al. The most frequent presenting complaint among subjects was heartburn, which was present in 100% of patients. This was followed by a sensation of sour or bitter fluid moving up from the abdomen into the mouth. Nausea and vomiting were observed in 56.25% of patients as associated symptoms. Interestingly, 12.5% of patients experienced non-cardiac chest pain, and more than 160 (50.00%) patients reported belching as a symptom [20-21]. Among the patients, 40 (12.5%) had experienced GERD symptoms for over a year, while in 31.25% of subjects, these symptoms had been present for the last six months to a year, and in another 31.25%, the symptoms persisted from the last three months to 6 months. Endoscopy revealed signs of reflux esophagitis in 77 (24.06%) subjects, with gastritis seen in the same percentage (24.06%). After receiving proton pump inhibitor treatment for 6 to 8 weeks, 87.5% of subjects experienced relief from their symptoms, while in 12.5% of cases, symptoms persisted despite treatment. Locky et al. conducted a study that reported an 82% response to medical treatment, which is consistent with the findings of Toppo et al. [15,22]. Similarly, in a study by Zagari et al., dysphagia resolved in 83% of patients after once-daily PPI treatment [23].

Limitations of the Study

The limitation of this study lies in its single-centre design and relatively small sample size, which may not fully represent the diversity of GERD cases in the general population. Additionally, the study's focus on a specific geographic location (Bangladesh) may limit the generalizability of its findings to other regions with potentially different dietary and lifestyle factors affecting GERD. The reliance on self-reported symptoms and clinical diagnosis without objective measures like pH monitoring could introduce bias and misclassification of GERD cases.

5. Conclusion and Recommendations

This study provides valuable insights into the histopathological findings of Gastroesophageal Reflux Disease (GERD) and its correlation with endoscopic findings in a population in Bangladesh. The prevalence of GERD in the study population was 31.88%, with a predominance of male patients. Heartburn was the most common symptom, followed by reflux, burning sensation, and dyspepsia. Endoscopic findings revealed esophagitis and gastritis as the most prevalent conditions. Notably, a significant proportion of patients exhibited normal endoscopic findings. Healthcare providers should consider GERD a potential diagnosis when patients present with typical symptoms and early referral for endoscopy should be encouraged. Elderly patients with GERD symptoms should receive close clinical evaluation, as they may be at a higher risk of developing severe erosive esophagitis. Continued research is needed to explore the long-term outcomes and effectiveness of different treatment modalities in GERD patients, especially in diverse populations. Overall, early diagnosis and management of GERD are crucial to preventing its complications, and this study contributes to our understanding of GERD in Bangladesh.

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6. References

1. Almani KA, Keerio SH, Zeb SH, Arshad IM, Ali SA. Study on the Correlation Between Endoscopic Findings and Symptoms of Gastro-Esophageal Reflux Disease. PJMH S. 2021;15(9):2413-6.

2. Czinn SJ, Blanchard SS. Pediatric gastroenterology, an issue of pediatric clinics of North America. Elsevier Health Sciences; 2017 May 22.
3. Roman S, Pandolfino JE, Kahrilas PJ. Gastroesophageal reflux disease. Yamada's Textbook of Gastroenterology. 2022 Apr 15:815-38.
4. Silvia C, Serena S, Chiara M, Alberto B, Antonio N, Gioacchino L, Tiziana M, Gian LD. Diagnosis of GERD in typical and atypical manifestations. Acta Bio Medica: Atenei Parmensis. 2018;89(Suppl 8):33.
5. Seleit I, Bakry OA, Al-Sharaky DR, Ragab RA. Evaluation of hypoxia inducible factor-1α and glucose transporter-1 expression in non-melanoma skin cancer: an immunohistochemical study. Journal of Clinical and Diagnostic Research: JCDR. 2017 Jun;11(6):EC09.
6. El-Serag HB, Sweet S, Winchester CC, Dent J. Update on the epidemiology of gastro-oesophageal reflux disease: a systematic review. Gut. 2014 Jun 1;63(6):871-80.
7. Mardhiyah R, Makmun D, Syam AF, Setiati S. The effects of Ramadhan fasting on clinical symptoms in patients with gastroesophageal reflux disease. Acta Med Indones. 2016 Jul 1;48(3):169-74.
8. Jarosz M, Taraszewska A. Risk factors for gastroesophageal reflux disease–the role of diet. Gastroenterology Review/Przegląd Gastroenterologiczny. 2014 Jan 1;9(5):297-301.
9. Simarmata DO, Wahyudi Y, Bestari MB, Supriadi R. Relationship between Gastroesophageal reflux disease questionnaire (GERD-Q) score and reflux oesophagitis in gastroesophageal reflux disease (GERD) suspected patients in Bandung. The Indonesian Journal of Gastroenterology, Hepatology, and Digestive Endoscopy. 2020 Jul 23;20(3):154-60.
10. Wang M, Zhang JZ, Kang XJ, Li L, Huang XL, Aihemaijiang K, Ayinuer A, Li YX, He XL, Gao F. Relevance between GerdQ score and the severity of reflux esophagitis in Uygur and Han Chinese. Oncotarget. 2017 Sep 9;8(43):74371.
11. Abdullah M, Makmun D, Syam AF, Fauzi A, Renaldi K, Maulahela H, Utari AP. Prevalence, risk factors and socio-epidemiological study of gastroesophageal reflux disease: An urban population-based study in Indonesia. Asian Journal of Epidemiology. 2016;9(1-3):18-23.
12. Hapsari FC, Putri LA, Rahardja C, Utari AP, Syam AF. Prevalence of Gastroesophageal Reflux Disease and Its Risk Factors In Rural Area. Indonesian Journal of Gastroenterology, Hepatology & Digestive Endoscopy. 2017 Apr 1;18(1).
13. Bai Y, Du Y, Zou D, Jin Z, Zhan X, Li ZS, Yang Y, Liu Y, Zhang S, Qian J, Zhou L. Gastroesophageal Reflux Disease Questionnaire (GerdQ) in real-world practice: a national multicenter survey on 8065 patients. Journal of gastroenterology and hepatology. 2013 Apr;28(4):626-31.
14. Thrift AP, Kramer JR, Qureshi Z, Richardson PA, El-Serag HB. Age at onset of GERD symptoms predicts risk of Barrett's esophagus. The American journal of gastroenterology. 2013 Jun;108(6):915.
15. Bulut F, Tetiker AT, Çelikkol A, Yılmaz A, Ballica B. Low antioxidant enzyme levels and oxidative stress in laryngopharyngeal reflux (LPR) patients. Journal of Voice. 2021 Jul 10.
16. Song JH, Chung SJ, Lee JH, Kim YH, Chang DK, Son HJ, Kim JJ, Rhee JC, Rhee PL. Relationship between gastroesophageal reflux symptoms and dietary factors in Korea. Journal of neurogastroenterology and motility. 2011 Jan;17(1):54.
17. Talley NJ, Zinsmeister AR, Schleck CD, Melton III LJ. Dyspepsia and dyspepsia subgroups: a population-based study. Gastroenterology. 1992 Apr 1;102(4):1259-68.
18. El-Serag HB, Petersen NJ, Carter J, Graham DY, Richardson P, Genta RM, Rabeneck L. Gastroesophageal reflux among different racial groups in the United States. Gastroenterology. 2004 Jun 1;126(7):1692-9.
19. Mohammed I, Nightingale P, Trudgill NJ. Risk factors for gastro-oesophageal reflux disease symptoms: a community study. Alimentary pharmacology & therapeutics. 2005 Apr;21(7):821-7.
20. Hollenz M, Stolte M, Labenz J. Prevalence of gastro-oesophageal reflux disease in general practice. Deutsche Medizinische Wochenschrift (1946). 2002 May 1;127(19):1007-12.
21. Klauser AG, Schindlbeck NE, Müller-Lissner SA. Symptoms in gastro-oesophageal reflux disease. The Lancet. 1990 Jan 27;335(8683):205-8.
22. Locke 3rd GR, Talley NJ, Fett SL, Zinsmeister AR, Melton 3rd LJ. Prevalence and clinical spectrum of gastroesophageal reflux: a population-based study in Olmsted County, Minnesota. Gastroenterology. 1997 May 1;112(5):1448-56.
23. Zagari M, Villa KF, Freston JW. Proton pump inhibitors versus H2-receptor antagonists for the treatment of erosive gastroesophageal reflux disease: a cost-comparative study. Am J Managed Care. 1995;1:247-55.