

A STUDY OF CLINICAL, ENDOSCOPIC AND MANOMETRIC PROFILE OF PATIENTS WITH REFRACTORY GASTRO-ESOPHAGEAL REFLUX DISEASE IN A TERTIARY CARE HOSPITAL

Gastroenterology

Dr. M.S. Revathy	Professor and HOD, Department of Medical gastroenterology, Stanley Medical college, Chennai
Dr. Sathya	Assistant Professor, Department of Medical gastroenterology, Stanley Medical college, Chennai
Dr. V.V.M. Sreeram	Senior Resident, Department of Medical gastroenterology, Stanley Medical college, Chennai

ABSTRACT

Background: Abnormal esophageal motility has been implicated in pathogenesis and severity of Gastro Esophageal Reflux Disease (GERD). **Aim:** To find out the association of esophageal manometric findings with endoscopic findings in patients presenting with refractory GERD. **Materials and Methods:** This was a cross-sectional study carried out from MARCH 2021 to SEPTEMBER 2021 in patients with refractory GERD and subjected for high resolution Manometry and data was analysed. **Results:** Out of 60 patients 28 were males and 32 were females with their mean age 39.64 ± 8.54 . Clinical presentations included heart burn in 40(66.6%), acid regurgitation in 20(33.3%). Ineffective esophageal motility seen in 13(21.6%) low LES pressure in 19(31.6%) and both was observed in 12 patients (20%), Among 13 patients with ineffective esophageal peristalsis 8 (62%) had grade-C LA classification. Among 19 patients with low LES pressure 7(37%) had grade-B and C each. **Conclusions:** Hypotensive LES was found to be higher than Ineffective esophageal motility in patients with GERD and has been associated with refractory GERD

KEYWORDS

Refractory GERD, High Resolution Manometry, Hypotensive sphincter, Ineffective peristalsis.

INTRODUCTION

Globally Gastro Esophageal Reflux Disease (GERD) remains a highly prevalent disease with considerable geographic variation; estimated prevalence rate was found to be 18.1-27.8% in US and 8.8-25.9% in Europe, and less than 10% in Asian countries¹. GERD causes significant pain and discomfort which compromise patients' quality of living. It is considered as major risk factor for the occurrence of Barrett's oesophagus and oesophageal adenocarcinoma.^{2,3}

Among multiple causes which constitute the pathogenesis of GERD abnormal esophageal motility plays a crucial role and also associated with disease progression and severity.⁴ Delayed clearance of the refluxate leads to prolonged mucosal exposure to refluxed gastro duodenal contents which in turn promotes esophagitis and its complications. Prevalence of ineffective esophageal peristalsis was found to be 40-50% among GERD patients.⁵

Moreover, pattern of esophageal motility was found to be different in various sub classes of GERD patients. Abnormal motility pattern and low LES pressure observed in GERD patients are more likely to be related to endoscopic esophagitis. Esophageal High-Resolution Manometry (HRM) an advanced technique which gives a picture of change in intraluminal pressure from upper esophageal sphincter to lower one as well as motor activity of the esophagus while swallowing.⁶

Further studies are warranted to elucidate the role of dysmotility in patients with reflux disease. Hence, we proposed this study to find out the association of ineffective esophageal motility and low basal Lower Esophageal Sphincter (LES) pressure with their endoscopic findings in patients with GERD using High Resolution Manometry, which is the gold standard investigation to diagnose and evaluate esophageal motility disorders using new Chicago classification.

METHODS

This prospective cross sectional study was conducted among 60 patients of both sexes after obtaining ethical clearance from institutional human ethical committee. Study was conducted during the March 2021- October 2021 for duration of eight months. Study participants belonged to the age group ranging from 20-65 years.

Patients presented with symptoms of refractory GERD (heart burn or acid regurgitation partial or no response to 6 weeks of PPI therapy) were included in the study after obtaining their informed consent. Patients with achalasia, esophageal or fundic varices, previous gastric or esophageal surgery, esophageal cancer, collagen diseases or previous ingestion of corrosive agents, acute cardiovascular,

respiratory, digestive tract or metabolic diseases were excluded from the study.

Patients were asked to discontinue drugs such as nitrates and calcium-channel blockers which affect esophageal motor function 48 hours before the manometry. Patients on proton pump inhibitors also were to ask with hold the drug for three weeks. Based on their endoscopic findings patients were categorized into two groups with erosive reflux disease and non-erosive reflux disease. After general and systemic clinical examination manometry was performed 2 hours after endoscopy. Manometry was performed with a 16-channel water perfused catheter which has 8 channels placed 1 cm apart at the lower end and the remaining 8 channels were placed 3 cm apart (Manufactured by RMH, Victoria, Australia. The data were analyzed using Trace 1.2.3a V software (Geoff Hebbard, Royal Melbourne Hospital, Victoria, Australia).

Manometry procedure

The manometry catheter was introduced by transnasal route. Basal LES pressure was recorded for 1 minute, which is followed by ten 5 ml wet swallows at an interval of 30 seconds. 10 wet swallow frames show upper and lower esophageal sphincter relaxation and contraction of esophageal body is represented as isobaric colour contour plot. Spatial and temporal analysis of esophageal motor events was made. Tests swallows are characterized based on HRM data using recently evolved Chicago classification.⁷ According to Chicago classification it is considered as ineffective esophageal motility, when $>50\%$ of swallows are ineffective, that is either failed (DCI* <100 mmHg.cm.sec) or weak (DCI 100-450 mmHg.cm.sec).⁸

Statistical Analysis

Data was entered in excel sheet and analyzed using SPSS software version 19. Data was expressed as mean (SD) values for quantitative variables and percentages for continuous variables. Chi square test was used to analyze categorical variables and independent 't' test was used for continuous variables.

RESULTS:

A total of 60 patients with Refractory GERD symptoms were subjected to endoscopy and esophageal manometry. Out of these 60 patients 28 were males and 32 were females with their mean age 39.64 ± 8.54 . Their clinical presentations were heart burn in 40(66.6%) patients, acid regurgitation in 20(33.3%) patients. Among 60 patients presented with Refractory GERD symptoms 13(21.6%) patients were found to have ineffective esophageal motility and 19(31.6%) patients had low LES pressure. 12 patients (20%) with GERD had both low LES pressure and ineffective esophageal motility (Table-1).

Among 13 patients with ineffective esophageal peristalsis, 4 in grade-B, 8 in grade-C, 1 in grade-D. 1 (7.6%) patient (grade-D) had failed peristalsis and 18(92.3%) patients (grade-B, C) had weak peristalsis. Among 19 patients with Low LES pressure, 7 in grade-B, 7 in grade-C, 4 in grade-A, 1 in grade-D. (Fig-1, 2)

Table:1 Patient characteristics

	Grade-A	Grade-B	Grade-C	Grade-D
Age	39.64		46.75	40
Gender(M/F)	17/19	7/7	3/5	0/1
Heartburn	17	14	8	1
Acid Regurgitation	19	1	0	0
LES pressure	4	7	7	1
Ineffective Esophageal motility	0	4	8	1

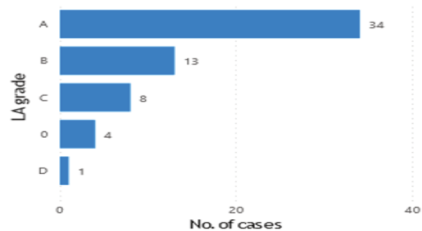


Fig:1

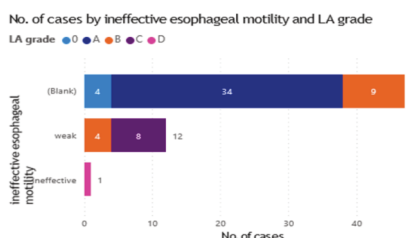


Fig:2

Table:2

	Erosive Reflux disease	p-value
Low LES pressure	19	0.685
Ineffective motility of esophagus	13	0.750

DISCUSSION:

Low basal pressure of LES along with ineffective peristaltic waves in the distal esophagus was found to be a more common finding in patients with GERD⁹. In our present study low basal LES pressure was found to be higher when compared to ineffective esophageal motility. Kruse-Anderson et al had observed increased fewer and low amplitude propagative peristalsis among patients with esophagitis when compared to controls¹⁰.

Abnormal Esophago Gastric Junction (EGJ), Transient Lower Esophageal Sphincter Relaxations (TLESRs), hypotensive Lower Esophageal Sphincter (LES), anatomic distortion of EGJ and ineffective esophageal peristalsis are found to be the major contributing factors for reflux of gastric contents into the esophagus.

We found that low esophageal pressure was found to be the more significant abnormality found among GERD patients than ineffective esophageal motility. Savarino et al also stated that abnormally low LES pressure, IEM, and hiatus hernia were found to be more prevalent in GERD patients than patients with functional heart burn and healthy controls¹¹.

Several studies had reported that GERD and its complications are more commonly observed in scleroderma patients, with failed or absent peristalsis which proved the role of esophageal clearance in the development of GERD^{12,13}.

It was reported in recent studies that there occurs impairment of esophageal function such as reflux or dysphagia was found to be more prevalent among older individuals which starts from 40 years onwards¹⁴. In our study we observed increased incidence of ineffective esophageal motility in older patients with GERD. Gutschow et al in his study conducted among patients with reflux symptoms with and

without GERD reported that there was significant decrease in peristaltic function in older patients with GERD than in younger patients¹⁵.

Frazzoni et al in a comparative study conducted among GERD patients had observed lower mean LES pressure in patients with erosive and non-erosive reflux disease compared to controls¹⁶. Both LES pressure and peristaltic abnormality was found to be affected in reflux esophagitis. Somani et al also in this study described that severity of endoscopic esophagitis is inversely related with amplitudes of contraction in the distal esophagus¹⁷.

Simren et al, also suggested that IEM had little influence on esophageal clearance during upright acid reflux and only severe esophageal motility disturbances, were associated with prolonged esophageal clearance in those with supine reflux¹⁸.

CONCLUSION:

Low basal LES pressure was found to be higher than Ineffective esophageal motility in patients with GERD. There was no significant association observed between IEM and low LES pressure in patients with endoscopic esophagitis. Hypotensive sphincter and Ineffective esophageal motility may be the cause for GERD and may not always associated with esophagitis

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