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### Clinical Profile of patients with GERD attending Tertiary care hospital

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#### Abstract

The general consensus is those individuals who suffer from chronic GERD are most susceptible to BE and would therefore benefit from upper GI endoscopy. However factors involved in progression of BE to dysplasia and subsequent adenocarcinoma remain unclear and hence value of endoscopic surveillance remains point of discussion. Although screening for BE relies largely on established endoscopic techniques, it remains an area of contention for several reasons. 200 patients satisfying one inclusion criteria attending the OPD Hospital underwent treatment with PPI for 4 weeks and then were subjected to Endoscopy and Biopsy using a PENTAX EPK-700 Endoscope. The Gastroesophageal junction was first identified (in cm) by taking the upper incisor teeth as a reference point. According to our study GERD most commonly affects 30-45 year old male patients who smokes and alcohol intake. Regurgitation and Heart burns are most common presenting symptoms.

**Keywords:** GERD, Gastroesophageal Junction, Endoscopic Techniques

#### Introduction

GERD manifest as spectrum of disorders mainly caused by retrograde flow of gastric contents into esophagus causing symptoms and/or esophageal damage. Heartburns and acid regurgitation are more typical symptoms of GERD and have been shown to be related to regurgitation of gastric contents into esophagus. They are often associated with impaired health related quality of life. GERD associated with complications like esophageal erosion's, ulcers, strictures, Barrett's esophagus and adenocarcinoma. Barrett's esophagus name is coined in 1950 by a British surgeon Dr. Norman Barrett. Barrett's esophagus is metaplasia of esophageal squamous epithelium to columnar epithelium is a complication of severe reflux esophagitis, and it is a risk factor for esophageal adenocarcinoma. Metaplastic columnar epithelium develops during healing of erosive esophagitis with continued acid reflux because columnar epithelium is more resistant to acid-pepsin damage than is squamous epithelium. The Metaplastic epithelium is a mosaic of different epithelial types, including goblet cells and columnar cells, which have features of both secretory and absorptive cells. Finding intestinal metaplasia with goblet cells in the esophagus is diagnostic of Barrett's esophagus; this type of mucosa is thought to be at risk of cancer <sup>[1]</sup>.

The prevalence of Barrett's esophagus in the general population undergoing endoscopy is approximately 1.5%; for those with reflux symptoms, the presence of Barrett's esophagus is 2.3% and in those without reflux symptoms it is 1.2% <sup>[2]</sup>. An incompetent LES with or without a hiatal hernia plays an important role in the development of GERD and Barrett's esophagus. Factors that have been implicated in the pathophysiology of the LES are age, obesity, stress, caffeinated products, alcohol, tobacco, and a number of foods, including spicy, Fatty, and acidic foods <sup>[3]</sup>. Barrett's esophagus is arbitrarily divided into long-segment (>2-3 cm) and short-segment (<2-3 cm) groups; long-segment disease is diagnosed in about 1.5% and short-segment disease in 10-15% of the GERD population <sup>[4]</sup>.

Diagnosis of BE requires Endoscopic demonstration of metaplasia. The appearance at endoscopy of reddish, salmon-colored columnar epithelium extending about the Gastroesophageal junction contrasts with the pale, pink-colored normal squamous epithelium of the esophagus.

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To document the findings of columnar epithelium in the distal esophagus, the endoscopist must identify both squamo-columnar (Z line) and Gastroesophageal junction. Often Gastroesophageal junction coincides but when the Z line occurs proximal to Gastroesophageal junction then columnar metaplasia has occurred. But frequently adults have unrecognized columnar epithelium in endoscopy at the Gastroesophageal junction. The low prevalence of BE in general population makes screening with upper GI endoscopy less viable on both a financial and logistic level. The general consensus is those individuals who suffer from chronic GERD are most susceptible to BE and would therefore benefit from upper GI endoscopy. However factors involved in progression of BE to dysplasia and subsequent adenocarcinoma remain unclear and hence value of endoscopic surveillance remains point of discussion. Although screening for BE relies largely on established endoscopic techniques, it remains an area of contention for several reasons. These include low prevalence and invasiveness of endoscopy, as well as lack of an easily identifiable demographic group. Alternative methods include the use of capsule endoscopy which offers acceptability of screening, is less invasive and carries increased uptake rate in comparison. Capsule endoscopy offers benefits in patient tolerance and morbidity as well as cost as the capsule can be swallowed in an office, potentially under nursing supervision. Drawbacks are views are no longer under operator control and anatomical landmarks are more difficult and potentially impossible to identify. Esophageal transit time has been demonstrated to be short as 1 second and biopsy is not possible regardless of this greatly limits the use of capsule endoscopy in BE surveillance which relies on biopsy. Alternatives include Narrow band imaging, which involves scanning large areas of mucosa for possible neoplasia and Autofluorescence imaging in which dysplastic lesions are visualized by differences in color. Methylene blue causes cellular DNA damage (it is carcinogenic). Chromo-endoscopy refers to topical application of chemical stains or pigments to improve characterization and localization of mucosal abnormalities during endoscopy. Indigo Carmine is derived from blue plant (Indigo) and a red coloring agent (Carmine). This deep blue stain is not absorbed by gastrointestinal epithelium. It pools in the crevices between epithelial cells and highlights irregularity in mucosal architecture in high magnification endoscopy. It typically show rigged / villous, circular, irregular/distorted pattern.

The most common symptoms of gastroesophageal reflux disease (GERD) are heartburn (pyrosis), regurgitation, and dysphagia. A variety of extraesophageal manifestations have been described including bronchospasm, laryngitis, and chronic cough. Complications from GERD can arise even in patients who lack typical symptoms<sup>[5]</sup>.

Heartburn is typically described as a burning sensation in the retrosternal area, most commonly experienced in the postprandial period. Regurgitation is defined as the perception of flow of refluxed gastric content into the mouth or hypopharynx<sup>[6]</sup> Patients typically regurgitate acidic material mixed with small amounts of undigested food. Dysphagia is common in the setting of longstanding heartburn commonly attributable to reflux esophagitis but potentially indicative of a stricture<sup>6</sup>. Other symptoms of GERD include chest pain, water brash, Globus sensation, odynophagia, and nausea. GERD related chest pain may mimic angina pectoris, and is typically described as squeezing or burning, located substernally and radiating to the back, neck, jaw, or arms, lasting anywhere from minutes to hours, and resolving either spontaneously or with antacids. It

usually occurs after meals, awakens patients from sleep, and may be exacerbated by emotional stress. Patients with reflux-induced chest pain may also have typical reflux symptoms. However, heartburn is a poor predictor of whether patients with chest pain have evidence of GERD by objective testing. Water brash or hyper-salivation is a relatively unusual symptom in which patients can foam at the mouth, secreting as much as 10 ml of saliva per minute in response to reflux. Globus sensation is the almost constant perception of a lump in the throat (irrespective of swallowing), which has been related to GERD in some studies. However, the role of esophageal reflux in this disorder is uncertain. One study suggested that Globus was associated with a hypertensive upper esophageal sphincter rather than with reflux<sup>[7]</sup>. Odynophagia is an unusual symptom of GERD but, when present, usually indicates an esophageal ulcer. Nausea is infrequently reported with GERD, but a diagnosis of GERD should be considered in patients with otherwise unexplained nausea<sup>[8]</sup>.

### Methodology

200 patients satisfying one inclusion criteria attending the OPD Hospital, underwent treatment with PPI for 4 weeks and then were subjected to Endoscopy and Biopsy using a PENTAX EPK-700 Endoscope. The Gastroesophageal junction was first identified (in cm) by taking the upper incisor teeth as a reference point. The presence of endoscopic evidence such as redness, ulcers, lax lower esophageal sphincter, poor esophageal clearance, delayed gastric emptying, bile reflux, columnar epithelium were noted. From this endoscopically diagnosed GERD patients Four quadrant biopsies were taken 2 cm from the GE junction and not more than 2 cm apart from each other. Then Chromoendoscopy was performed by spraying 0.4% solution of the indigo carmine through a catheter and the patterns formed was documented through a higher resolution endoscope as a rigged/villous circular, irregular/distorted pattern and biopsies were taken from these places. Biopsies were transported in 10% formalin solution and was subjected to HPE for evidences of BE by a single expert pathologist. The presence of HPE evidence of columnar epithelium, intestinal metaplasia, dysplasia and its grading was documented.

### Inclusion Criteria

Patient with Age 15 to 70 with GERD symptoms

1. Regurgitation for more than 3 months.
2. Heart burns.
3. Dysphagia.
4. Water brash.
5. Globus sensation.
6. Bloating abdomen.
7. Belching

### Exclusion Criteria

1. Age less than 15 years.
2. Patients diagnosed ca esophagus.
3. Patients unwilling for endoscopy.
4. Conditions where endoscopic biopsy contraindicated (bleeding disease).
5. *H. pylori* eradication therapy positive.
6. PUD

## Results

**Table 1:** Age distribution of study population

Age in years	Number of study population	Percentage
15-30 years	58	29%
30-45 years	88	44%
45-60 years	54	27%
Total	200=N	100%

**Table 2:** Sex distribution of study subjects

SEX	Frequency	Percentage
Male	148	74%
Female	52	24%
Total	200	100%

**Table 3:** Study population with Addictive habits

Habbits	Frequency	Percentage (%)
Smoking	90	45%
Alcohol intake	56	26%

**Table 4:** Distribution of symptomatology

Symptoms	Number of Patients	Percentage
Regurgitation	116	58
Heart burn	92	46
Dysphagia	80	40
Water brash	50	25
Global sensation	70	35
Bloating	76	38
Belching	88	44

**Table 5:** Distribution of BMI in study population

BMI	Frequency	Percentage (%)
<25	160	80
>25	40	40

**Table 6:** Upper GI endoscopic findings

UGI Endoscopy finding	No	Percentage
Lesion present	84	42
Lesion absent	116	58
Total	200	100

**Table 7:** Associated findings in Endoscopy

Associated Findings	Frequency	Percentage
Hiatus Hernia	6	3
Esophageal Candidiasis	4	2
Gastritis	3	1.5
Gastric Ulcer	1	0.5
Duodenitis	4	2
Cancer esophagus	1	0.5

## Discussion

This is a Descriptive study, Patients with GERD symptoms presenting in KR Hospital OPD are evaluated for fitting in our inclusion and exclusion criteria. Valid consent taken from these fit patients and subjected for endoscopy and look for GERD features. If GERD features present then four quadrant biopsy taken from GE junction using normal endoscope and later chromoendoscopy method. Collected data compared and observed. According to our study GERD most commonly affects 30-45 year old male patients who smokes and alcohol intake. Regurgitation and Heart burns are most common presenting symptoms. Good correlation exist between Regurgitation, Heart burns, Water brash, Belching and endoscopy. Incidence of

Barrett's Esophagus in endoscopic biopsy and chromoendoscopy biopsy are 6.5% and 14% respectively.

At present, endoscopy with biopsy is the gold standard for the diagnosis of Barrett's esophagus. Hence a standard four quadrant biopsy is taken for the diagnosis of the same. In our study GERD most commonly seen in Male sex with smokers and alcoholics aged between 30-45 years, most common presenting symptoms of GERD is Regurgitation (58%) > Heart Burns (46%) > Belching (44%), most common associated finding in UGI Endoscopy for GERD patients is Hiatus Hernia (3%). Regurgitation, Heart Burns, Water brash, Belching are significantly correlated to GERD. Retrosternal Chest pain, Global sensation, Bloating Abdomen is poorly associated with GERD. Incidence of Barrett's Esophagus in endoscopic biopsy and chromoendoscopy biopsy are 6.5% and 14% respectively. This study shows that the yield of chromoendoscopy (indigo carmine) and its directed biopsy was far superior to the conventional endoscopy and four quadrant biopsy.

Other studies like Multivariate analyses showed that independent risk factors for endoscopy positive GERD were male sex, GERD symptoms, dysphagia, and living in a high referral area. Independent risk factors for BE were male sex and GERD symptoms, whereas the only independent risk factor for esophageal neoplasm was dysphagia.

Khan O, Rasheed A in the study, frequency of Barrett's in patients with symptoms of GERD found 14% of the sample population to have Barrett's esophagus and also associated complications were studied. Their study recommended early upper GI endoscopy and biopsy in patients with GERD<sup>9</sup>.

Devault K, Castell D. in their article updated guidelines for diagnosis and treatment of GERD which was based on reviewing appropriate studies with weight age to Randomized control trials recommend endoscopy as the technique of choice to identify to suspect Barrett's esophagus and diagnose the complications of GERD<sup>[10]</sup>.

Ansari AL, Sadiq S. In their study found 32% of the study population (GERD) had Barrett's and 68% showed low and high grade changes of Gastroesophageal reflux and they recommended routine endoscopy and biopsy in patient with chronic GERD symptoms<sup>11</sup>.

Multivariate analyses showed that independent risk factors for endoscopy positive GERD were male sex, GERD symptoms, dysphagia, and living in a high referral area. Independent risk factors for BE were male sex and GERD symptoms, whereas the only independent risk factor for esophageal neoplasm was dysphagia.

Studies from Ewha Womans University, Seoul, Korea by Hyun Joo Song *et al.* shows that heartburn of moderate to severe degree was a universal complaint and frequency of regurgitation was noticed to be more than thrice a week to daily intermittent in all the patients. Hiatus hernia was seen in 26/146 (17.8%). Out of 89 (60%) endoscopic positive GERD patients 82% had Grade A or B esophagitis lesions while only 2 patients had grade D lesions. H. pylori by RUT on gastric biopsies was found in 64% patients. The symptom scores did not correlate with the severity of esophagitis. HP positive and negative patients had similar symptoms and endoscopy profile<sup>[12]</sup>.

## Conclusion

- GERD most commonly affects male patients between 30-45 years old.
- Most common presenting symptoms of GERD is Regurgitation (58%) > Heart Burns (46%) > Belching (44%).
- Regurgitation, Heart Burns, Water brash, Belching are

significantly correlated to GERD.

- Dysphagia, Global sensation, Bloating Abdomen is poorly associated with GERD.

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