Original Article

GERD& COPD

Gastroesophageal Reflux Disease in Patients with Chronic Obstructive Pulmonary Disease

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ABSTRACT

Objective: To evaluate the gastroesophageal reflux symptoms in Chronic Obstructive Pulmonary Disease (COPD) patients and Upper Gastrointestinal (GI) endoscopy findings in these patients.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at Dow University Hospital & Civil Hospital Karachi from January 2013 to December 2013.

Materials and Methods: 100 of COPD were selected and assessed for presence of gastro esophageal reflux (GERD) symptoms. Data was analyzed on SPSS version 13. Frequency and percentage were computed for categorical variable like gender, gastro-esophageal reflux symptoms and upper GI endoscopy finding in COPD patients with gastro esophageal reflux symptoms. Mean standard deviation was computed for quantitative variables like age, smoking (pack year), solid fuel and tea consumption (cup/day).

Results: In this study of 100 patients 95 were males and 5 were female. Cough was the commonest symptom that was found in 85% patients followed by sputum production in 71% patients, retrosternal burning (68%), acid reflux (54%) and dysphagia (11%). Gastro-esophageal reflux symptoms were observed in 54 patients. Out of these 54 patients who had GER symptoms, 33(61%) patients had erosive gastro-esophageal reflux disease while 21(39%) patients non-erosive gastro esophageal reflux disease on upper GI endoscopy.

Conclusion: Our study shows that higher proportion of Gastro esophageal reflux symptoms is present in COPD patients. Moreover, upper GI endoscopy can be normal in COPD patients with significant GERD symptoms.

Key Words: COPD, GERD, NEGERD

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INTRODUCTION

Gastro esophageal reflux disease (GERD) affects as much as 20-30% of Population, particularly elderly[1]. GERD is one of the most common cause of chronic cough[2] & a potential risk factor for exacerbation of COPD[3,4]. Gastro esophageal reflux (GER) is a normal Physiological phenomenon in which gastric contents escapes into esophagus.GERD occurs when amount of gastric juice that reflexes into esophagus exceeds normal limit. Different antireflux mechanisms have been developed normally to prevent GER[5]. The normal antireflux mechanisms consist of Lower esophageal sphincter (LES), esophageal motility and anatomical Configuration of gastro esophageal junction. GER occurs if LES pressure Decreases due to muscle weakness or inappropriate relaxation of LES Without physiological stimulus (Peristalsis)[6]. There are several mechanisms by which GERD can induce symptoms in patients with COPD[7].

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50 % of patients with proven acid reflux have visible esophageal mucosal Damage known as reflux esophagitis on upper Gastrointestinal Endoscopy (GI Endoscopy). It is characterized by single or multiple erosions or ulcers in distal esophagus. However, endoscopy is normal in up to 50% of patients with GERD, a condition sometimes referred to as Non-erosive Reflux Disease (NERD)[8].

Chronic Obstructive Pulmonary Disease (COPD) is a major cause of chronic Morbidity and mortality[9] throughout the world it is 4th leading cause of death worldwide[10]. About 25% of all medical admissions occur as a result of respiratory disorders and more than 50% of these are due to COPD[11]. COPD is a disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually both progressive and associated with an abnormal inflammatory response of lungs to noxious particles or gases[9,12].

The association between GERD & COPD has established. Prevalence of GERD in COPD patient observed in different studies& in different ethnic

groups ranging from 28% [13]in Korea, 32-37% in USA & 53.6% in Iran[14], [15]. With this we conducted this study in our setup & more overtheir UGI endoscopic findings. Upper GI endoscopy was performed in all patients of COPD having GER symptoms, to evaluate mucosal change at lower end of esophagus. Presence of erosions and ulcers was named as Erosive GERD and their absence was named as non-erosive GERD (NERD).

MATERIALS AND METHODS

The study was conducted at DUH& CHK from January 2013 to December 2013. All patients admitted either through emergency or Out Patient Department (OPD) in medical wards DUH& CHK with different presentations of COPDwas included in the study. Patients presenting with dyspnea and/or cough productive of mucopurulent sputum having history of 10 or more pack years of smoking and/or use of solid fuels like wood and animal dung for more than 10 year were considered for COPD. Among these who had forced expiration time more than 5 seconds and reduced peak expiratory flow rate (PEFR) that is not corrected after bronchodilator therapy, were diagnosed as COPD. All these patients were asked about presence or absence of GER symptoms & complications. GER symptoms were defined as heart burn (a burning feeling originating from stomach or lower part of chest up towards neck) & acidregurgitation (flow of sour or bitter fluid into mouth) and a complication dysphagia as difficulty in swallowing. Patients with ongoing treatment of peptic ulcer with antisecretory or anti helicobacter pylori therapy (Proton pump inhibitor, H2 blockers, prokinetics, antibiotics) were excluded. Patients with other respiratory or esophageal disorders were also excluded.

The data was entered and analyze into Statistical packages for social science (SPSS version 13.0). Frequency and percentage were computed for categorical variable like gender, gastro-esophageal reflux symptoms and upper GI endoscopy finding in COPD patients with gastro esophageal reflux symptoms. Mean standard deviation was computed for quantitative variables like age, smoking (pack year), solid fuel and tea consumption (cup/day).

RESULTS

The total number of study patients was 100.95 were male and 5 were female (male to female ratio 19:1).The average age of patients was 59.87+-10.5 years. All male patients were smokers with average pack years of smoking of 28.71±5.2. Female patients were using solid fuels, on average for 31.6±7.76 years. Average tea consumption in these patients was 5.34±0.98 cups/day (Table 1). Out of 100COPD patients retrosternal burning was present in 68, acid reflux in 54 and dysphagia in 11 patients (Table 2).GER symptoms were observed in 54 patients. These 54 patients underwent upper GI endoscopy 33(61%) patients were found to have erosive GERD while 21(39%) patients had NERD on upper GI endoscopy (Fig 1). The average age of COPD patients with GERD was 66.04±8.56 years.

Table No.1: 1descriptive Statistics of COPD Patients

Variables	N	Mean ± SD	95%CI	Median (IQR)
Age(years)	100	59.87±10.5	58.78 to 62.96	60(20)
Smoking (pack year) only male	95	28.71±5.21	27.64 to 29.77	29(5)
Solid Fuel (only female)	05	31.6±7.76	21.9 to 41.24	35(14)
Tea Consumption (Cup/day)	100	5.34±0.98	5.14 to 5.54	5(1)

Table No. 2: Symptoms of Patients with COPD

History	Count	Percentage
Cough	85	85%
Sputum	71	71%
Retrosternal Burning	68	68%
Acid reflux	54	54%
Dysphagia	11	11%

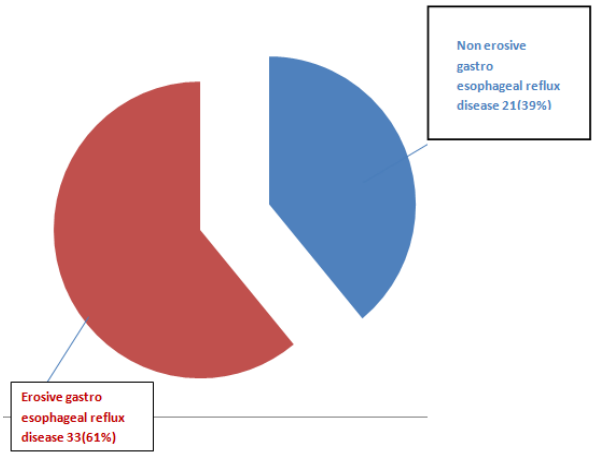

Figure No.1: upper GI endoscopy findings in COPD patients with gastroesophageal reflux symptomsn=54

DISCUSSION

GERD symptoms are very common in general population. Several small studies have been conducted to establish a relationship between COPD and GERD symptoms[16'17]. GERD is common in advanced COPD patients who often asymptomatic and have relatively high prevalence of isolated abnormal proximal reflux[9, 18].

In this study we were aimed to determine proportion of GERD symptoms in COPD patients. Upper GI endoscopy was also performed in those patients having GERD symptoms to determine the proportion of patients with GERD symptoms having reflux esophagitis. Recently published study showed that history of Gasroesophageal reflux or heart burn is associated with frequent exacerbation phenotype in COPD patients[13].

In our study male predominance was noted among COPD patients (male to female ratio of 19:1). This male predominance is evident from previous studies conducted on COPD[19].Slight increase in female proportion in our study could because of use of solid in our rural areas.

The most important finding of our study was that GERD symptoms are more prevalent in patients with COPD as compared to general population. Proportion of heartburn/acid regurgitation in our study population (patient with COPD) was 68% and 54% respectively. This was supported by a study conducted by Mohklessi et.al[20]. In another study conducted by Casanova C, supported same idea[21]. Another study by Adel Khatabet al[22] which showed that prevalence of GERD in COPD patient was 53.3% in moderate group and 73.3% in severe group. GERD severity increases as the degree of COPD increases. Thus it has also been suggested that increase in frequency of COPD exacerbation can be associated with the presence of GERD[23].

A study was conducted by Phulpoto MA et.al[6]. It was aimed to determine the proportion of GERD symptoms in COPD patients. It showed that proportion of heat burn and acid regurgitation in COPD patient is 70% & 56% respectively. In this study dysphasia was reported in 15% of patients while in our study this proportion was 11%.

We also observed that COPD patients with GERD symptoms were slightly older than whole study population(66.04-+8.56 vs59.87+-10.5), this also has supported by Kim et al[14]. We also performed upper GI endoscopy in all these patients with GERD symptoms. (n=54) to assess the presence or absence of reflux esophagitis of these 54 patients 33 (61%) had reflux esophagitis indicating that all those patients who have GERD symptoms do not necessarily have abnormal endoscopy. In other study by Adel Khatabet al[22] found 66.6% in moderate group 93.3% in severe group.

CONCLUSION

In conclusion, our study shows that a higher proportion of Gasroesophageal reflux symptoms are present in COPD patients. Moreover, upper GI endoscopy can be normal in COPD patients with significant GERD symptoms.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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