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ORIGINAL ARTICLE

Prevalence of Gastroesophageal Reflux Disease in Asthma and Chronic Obstructive Pulmonary Disease

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ABSTRACT

Background: The esophagus exposure to stomach reflexes contents (or gastric content) causes an inflammatory sensation, bitter fluid movement from the abdomen to mouth and other troublesome symptoms are generally referred to as Gastro esophageal reflux disease (GERD).

Aims: The present study aimed to evaluate the prevalence of gestroesophageal reflux disease in asthma and chronic obstructive pulmonary disease.

Materials and Methods: This multi-center cross-sectional study was carried out on 150 chronic obstructive pulmonary disease patients admitted at Medicine ward and OPD at Divisional Headquarters Teaching hospital Mirpur and KMU IMS, Kohat for six months duration from October 2020 to March 2021. All the patients of either gender having an age range between 16-70 years and met the inclusive criteria were enrolled. The demographic details such as age, gender, duration, and severity of chronic obstructive pulmonary disease, and Gastroesophageal reflux disease prevalence were recorded in proforma after obtaining informed consent in written form. Patients with a ratio of forced expiratory volume to forced vital capacity (<70%) in one second and had no forced expiratory volume improvement after nebulization. SPSS version 20 was used for data analysis.

Results: Of the total 150 chronic obstructive pulmonary disease patients, 93 (62%) were male while females were 57 (38%). The overall mean age ±SD was 54.37±16.06 years. Chronic obstructive pulmonary disease mean duration was 8.93±5.3 years. Out of 150 COPD patients, about 74 (49.3%) had Gastroesophageal reflux disease while 76 (51.7%) had no Gastroesophageal reflux disease. The GERD overall prevalence in COPD was 49.3%. Based on Gastroesophageal reflux disease symptoms, very severe, severe, moderate, and mild were 26 (17.6%), 23 (15.4%), 14 (9%), and 11 (7.3%) respectively. As per COPD severity, the prevalence of GERD was statistically insignificant (p-0.532).

Conclusion: The present study concluded a significant association between chronic obstructive pulmonary diseases with gastro esophageal reflux disease. The prevalence of gastro esophageal reflux disease was reported at 49.3% among chronic obstructive pulmonary diseases patients.

Keywords: Gastroesophageal reflux, chronic obstructive pulmonary disease, Asthma

INTRODUCTION

Gastroesophageal reflux is a common disease of the gastrointestinal system causing troublesome symptoms by stomach reflux contents [1]. It is the most ignored chronic disease until complications appear [2]. The Gastroesophageal reflux-sensitive symptoms are heartburn and regurgitation. The symptom's sensitivity and specificity of Gastroesophageal reflux is about 92% and 19% respectively compared to endoscopic monitoring (24 hours pH). Acquiring the history of the patient could be the easiest and fastest diagnostic technique for Gastroesophageal reflux disease. Gestro-oesophageal severity and therapy response can be evaluated by frequency scale symptoms (FSSG) [3]. The asthmatic and pulmonary symptoms caused by Gastro-oesophageal reflux could be resolved with aggressive anti-reflux therapy. Gestro-oesophageal reflux intensified the pulmonary disorders (COPD). The upper respiratory symptoms higher prevalence is due to GERD [4, 5]. COPD is caused by GERD besides bronchogenic carcinoma, pulmonary embolism, pneumonia, and sleep dysfunction [6]. Exacerbation marks the COPD's natural history, which speeds up the worsening of lung function leading to reduced exercise (physical activities) capacity and increases the risk of mortality [7].

The prevalence of Gastroesophageal reflux is higher in chronic obstructive pulmonary disorder compared to non-COPD patients. Most common reason of chronic cough is Gastroesophageal reflux [8]. Gastasophagealrefflux disease (GERD) can be diagnosed with gold standard esophageal monitoring (pH) of 24 hours and Esophagogastroduodenoscopy which visualized the esophageal muscles split [9]. GERD also affects the seriousness of the pulmonary disease. Additionally, exacerbation of acute COPD can be significantly predicted by GERD [10]. Therefore, COPD patient's early detection and treatment are critical. In COPD patients, GERD prevalence was reported between 17%-78% based on diagnosis and clinical approach [11]. Another study found about 62% prevalence of GERD among COPD patients

[12]. Regardless of the COPD stage, about26.7% prevalence of GERD was reported among COPD patients [13]. The prevalence of GERD varies based on population differences. Very few studies were conducted on GERD prevalence among COPD patients in Pakistan. The current study was carried out with the aim to evaluate the prevalence of GRED among COPD patients.

METHODS

This single-center cross-sectional study was carried out on 150 chronic obstructive pulmonary disease patients admitted at Medicine ward and OPD at Divisional Headquarters Teaching hospital, Mirpur and KMU IMS, Kohat for six months duration from October 2020 to March 2021. All the patients of either gender having an age range between 16-70 years and met the inclusive criteria were enrolled. The demographic details such as age, gender, duration, and severity of chronic obstructive pulmonary disease, and Gastroesophageal reflux disease prevalence were recorded in proforma after obtaining informed consent written form. Patients with a ratio of forced expiratory volume to forced vital capacity (<70%) in one second and had no forced expiratory volume improvement after nebulizer. All the individual refused to consent form were excluded. The COPD stages were defined as very severe, severe, moderate, and mild with their respective limits ≥ 80%, 50-80%, 30-50%, and ≤30%. Ethical approval was taken from the institution's ethical board. A specially designed proforma was used for GERD prevalence data collection. The enrolled patients underwent upper gastrointestinal endoscopy with an empty stomach. Certain substances such as coffee and chocolate were prohibited for the patients on the procedure day before spirometry. Bronchoconstriction is caused by exercise and smoking hence avoided before the procedure. SPSS version 20 was used for data analysis. Tabulation form was followed for frequency and percentage calculation. GERD and COPD severity association was examined with chi-square test. P-value <0.05 was considered statistically significant.

RESULTS

Of the total 150 chronic obstructive pulmonary disease patients, 93 (62%) were male while females were 57 (38%). The overall mean age ±SD was 54.37±16.06 years. Chronic obstructive pulmonary disease mean duration was 8.93±5.3 years. Out of 150 COPD patients, about 74 (49.3%) had Gastroesophageal reflux disease while 76 (51.7%) had no Gastroesophageal reflux disease as shown in Figure 1.

The GERD overall prevalence in COPD was 49.3%. Based on Gastroesophageal reflux disease symptoms, very severe, severe, moderate, and mild were 26 (17.6%), 23 (15.4%), 14 (9%), and 11 (7.3%) respectively. As per COPD severity, the prevalence of GERD was statistically insignificant (p-0.532). Figure 2 demonstrate the prevalence of male and females among total 150 patients. The prevalence of very severe, severe, moderate and mild COPD severity symptoms are shown in Table 1/Figure-3.

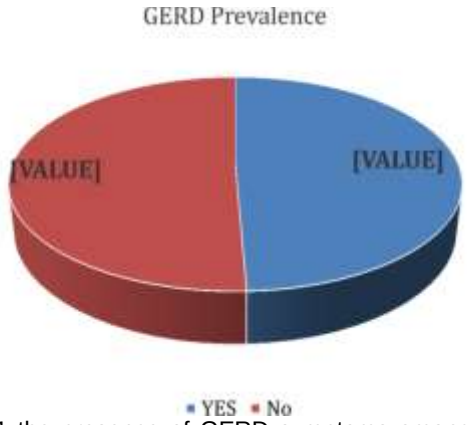

Figure-1 the presence of GERD symptoms among COPD patients (n=150)

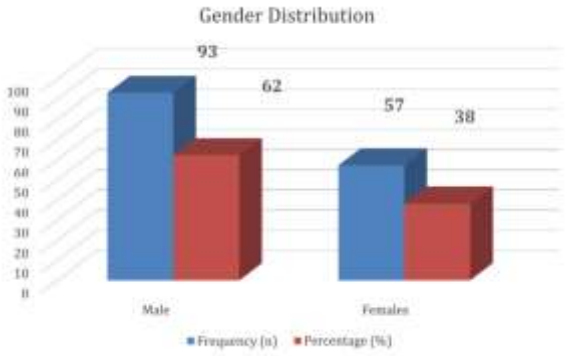

Figure-2. Gender distribution

Table-1 the COPD severity patients

GERD Symptoms	Frequency (n)	Percentage (%)
Mild	11	7.3
Moderate	14	9
Severe	23	15.4
Very Severe	26	17.6
Total	74	49.3

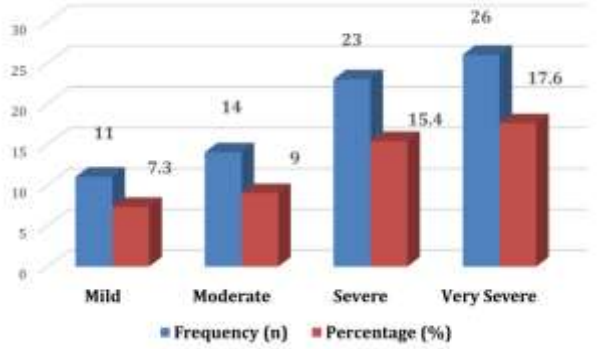

Figure-3 the COPD severity patients (n=150)

DISCUSSION

Gastroesophageal reflux disorder is a COPD comorbidity and prevalent gastrointestinal disorder. The present study reported an overall prevalence of 49.3% among COPD patients. Another study reported about 53.3% [14] while

others found 33% and between 19%-78% among COPD patients [15, 16]. Compared to our study population and GERD prevalence (49.3%). An author reported a higher prevalence of 53.6% among COPD patients [17]. However, the sample size differences were due to population variation, sample size, and age range. In our findings, the very severe, severe, moderate, and mild GERD symptoms were 17.6%, 15.4%, 9%, and 7.3%respectively. Similarly, another study's findings matched our results [17]. They reported mild COPD, moderate COPD, severe COPD, and very severe COPD was 16 (7.4%), 98 (45.2%), 90 (41.5%) and 13(6.0%) respectively. Reflux frequency and duration affects the GERD severity besides the gastro esophageal refluxate location. Smoking has been a GERD risk factor as reported while it also contributes to COPD as a major factor which indicates the GERD among COPD patients caused by nicotine and smoking [18].

Another study found that mild, Moderate, severe, and very severe GERD were 3%, 7%, 11%, and 12% respectively, while asymptomatic GERD was about 67%. In the current study, the frequency and percentage of very severe COPD cases were high 26 (17.6%) compared to the mild COPD 11 (7.3%). In our study, the prevalence of male was 93 (62%) compared to the females 57 (38%) COPD patients with overall mean age was 54.37±16.06 years. Another study reported patient's mean age 49.34+34.12 years with male prevalence 82.2% [19]. Similarly. The average age in another study was 68.0±8.4 years which studied older age patients compared to our research [20]. On other hand, COPD patients' mean age was 48.54±16.34 years reported in their study [21]. The GERD developed due to COPD along with hernia and esophageal motility alteration in elderly age. Upper intestinal endoscopy was utilized for analysis of the hernia patients in their old age [22].

It is reported that pulmonary function affected by gastric contents (acid) through micro aspiration and vagal stimulation caused by bronchospasm were considered as GERD. Previous studies associated the etiology of pulmonary fibrosis, asthma, pneumonia and chronic bronchitis with GERD while a common pulmonary condition known as COPD exacts the economic cost, morbidity and mortality as a tremendous toll [22]. The current study reported GERD among COPD patients and their effects on asthma, COPD exacerbation and pulmonary function. Another study reported that esophageal acid reflux and proximal airway aspiration caused the asthma symptoms. Number of studies proved the increased airway resistance demonstrated in acidified trachea supported by another researcher's hypothesis which stated that respiratory symptoms and GOR in some patients are due to the aspiration scintigraphic demonstration of airway radiolabeled isotopes. Others showed esophageal reflux causing tracheal acidification [23].

CONCLUSION

The present study concluded a significant association between chronic obstructive pulmonary diseases with gastro esophageal reflux disease. The prevalence of gastro esophageal reflux disease was reported at 49.3% among chronic obstructive pulmonary diseases patients.

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