ORIGINAL ARTICLE

GASTRO OESOPHAGEAL REFLUX DISEASES IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS

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Background: There is an association of Gastroesophageal reflux disease (GERD) with chronic obstructive pulmonary disease (COPD). This study was designed to determine the frequency of GERD in COPD patients. **Methods:** This descriptive, cross-sectional study was conducted in the Pulmonology Unit Ayub Teaching Hospital Abbottabad. Patients more than 40 years of age of both genders presenting with features of COPD such as cough and breathlessness for more than 6 months and confirmed by spirometry were included in the study. A total of 118 consecutive patients were included in the study. Patients who had spirometry showing FEV1 <70% predicted & FEV1/FVC ratio <70% were included. Patients of asthma, with known oesophageal disease such as cancer, stricture, achalasia or active peptic ulcer disease, Pregnancy (precipitates GERD) and those patients who had used proton pump inhibitors (PPI) in the last 15 days were excluded. **Results:** The mean age of COPD patients was 65.25 years. Among COPD patients 89 (75.4%) were males. Fifty-five (46.6%) patients had moderate COPD (FEV1:50–69%). Frequency of smokers was 68.6% with mean duration of 12.5years and mean number of cigarettes smoke per day were 13.4. Thirty-five (29.75%) had GERD; 27% in males and 30% in females. **Conclusion:** Our study shows that a higher proportion of gastro oesophageal reflux (GERD) symptoms are present in COPD patients and it also shows that GERD is more common in severe COPD patients.

Keywords: Gastroesophageal reflux disease, GERD; Chronic obstructive pulmonary disease; COPD; Spirometry; Proton Pump Inhibitors

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) represents a complex respiratory disorder characterized by chronic airflow limitation and an increased inflammatory response of the airways. COPD is associated with high mortality and morbidity rates and a high economic and social burden worldwide.[1] According to World Health Organization (WHO), 210 million people are living with COPD, which will become the third leading cause of death worldwide by 2030.[2,3] In adults over the age of 40 years, COPD has the prevalence of about 10%.[4] Data from recent long-term trials have shown that starting maintenance pharmacological treatment at initial stages of the disease may change the clinical course of COPD and can be more effective than at stages of disease when COPD is much advance.[5]

Gastro oesophageal reflux disease (GERD) is associated with COPD and other respiratory diseases by causing bronchospasm that result in cough and wheezing.[6] GERD is usually diagnosed by endoscopic examination or 24 hours oesophageal pH monitoring but it is difficult to do these tests in large number of people that are undergoing screening. As a result, different GERD questionnaires for alternate diagnosis were made; one of them is the Frequency Scale for Symptoms of Gastro oesophageal reflux disease (FSSG).[7]

Prevalence of GERD in COPD is different in different studies usually because of demographic variations. In a study in India by Kamble *et al*, prevalence of GERD in COPD was 78%.[8] In another study conducted in Egypt by Gade *et al*, prevalence of upper gastrointestinal symptoms was 55% in COPD patients.[9] Prevalence of GERD in COPD was 17% in a study done in Turkey by Bor *et al*.[10] Using FSSG, the prevalence of GERD in COPD was 26.7%[11] in Japan and prevalence of GERD in COPD was 32.5% .[12]

The aim of this study is to find out the frequency of GERD in patients presenting with COPD in our population. Much work was done on the prevalence of GERD in COPD patients in western countries and also in Japan but in Pakistan there is very limited data regarding this major problem. Gastro oesophageal reflux disease is also associated with exacerbation of COPD.[13] By treating Gastro oesophageal reflux diseases at its earliest stage will result in the prevention of exacerbation of COPD and in this way, we will endeavour to reduce the burden of COPD both at national level and globally.

MATERIAL AND METHODS

It was a descriptive cross-sectional study conducted in the Pulmonology Unit Ayub Teaching Hospital Abbottabad in six months. A sample size of 118 patients was calculated by using the WHO software of sample size determination with the assumption of expected frequency of GERD among patient with COPD of 55%[13], confidence level of 95% and absolute precision of 9%. Patients were selected using consecutive non-probability sampling technique. Patients of both genders and age more than 40 years having COPD were included in the study. Patients with asthma, those with known oesophageal disease such as cancer, stricture, achalasia or active peptic ulcer disease, pregnancy (precipitates GERD) and those using proton pump inhibitors(PPI) in the last 15 days.

Approval from hospital ethical committee was taken before the start of study. All new cases with COPD (as per operational definitions above) admitted in Pulmonology unit were enrolled in the study. The purpose and benefits of the study were explained to the patients and informed written consent was taken from patients. Detailed history and clinical examination followed by relevant investigation were done.

Patients were assessed by using the frequency scale for symptoms of Gastro oesophageal reflux disease (FSSG). Data was entered into SPSS version 10.0 for analysis. Quantitative variables like age were described as mean±standard deviation. Categorical variables like gender, spirometry and GERD Score were described as frequencies and percentages. Data was presented in the form of tables and charts.

RESULTS

Among 118 patients of COPD 89 (75.4%) were males. The mean age of the COPD patients was 65.25 years. Out of total, 55 (46.6%) had moderate COPD (FEV1:50–69%), 34 (28.8%) had severe COPD (FEV1:30–49%) and 29 (24.5%) had very severe COPD (FEV1 <30%). In total patients 35 (29.75%) had GERD. GERD was found in 16%, 35% and 40% in moderate, severe and very severe COPD respectively. With respect to smoking, 81 (68.6%) were smokers and 37 (31.4%) were non-smokers. Among smokers the minimum duration of smoking was 2 years to 30 years. Minimum number of cigarettes per day was 3 and maximum no of cigarettes per day was 35 per day. Among female COPD patients 27% had GERD and among male COPD patients 30% had GERD.

DISCUSSION

In our study the mean age of COPD patients was 65.25 years. It means that COPD is more common in older age group. International studies also show that COPD is more common in older people. Because of the increase in life expectancy in developed countries, the proportion of older subjects with COPD also increases.[4,15]

In our study we found that 75.6% were male and 24.4% were female. International studies[13] shows that COPD is more common in male patients, it is because COPD is more in smokers and percentage of male smokers is more than female smokers throughout the world. In developing world exposure to biomass fuels causes an increase prevalence of COPD in females. In Pakistan smoking is common in male that's why in our study more males were COPD patients.

Smoking has been identified as a common culprit in both the pathogenesis of COPD and GERD. In our study we have seen that smoking was significantly related to COPD patients (68.6% were smokers and 31.4% were non-smokers) that is a well- known fact and also proved in number of international studies.[15,16] There is a strong dose-response relationship (for amount and duration) between tobacco smoking and COPD. Our study also shows that severity of COPD directly relates to duration and smoking per day. International studies also show the same relationship between COPD severity and duration and number of cigarettes smoking.

In our study COPD patients in whom GERD was present were 29.75% and it was 16%, 35% and 40% in moderate, severe and very severe COPD respectively. It means that GERD is more common in severe and very severe COPD patients. In international studies the prevalence of GERD in COPD was different in different studies. In a study done in Turkey by Bor *et al*[10] prevalence of GERD in COPD was 17%. In a study conducted in Japan using FSSG, the prevalence of GERD in COPD was 26.7%.[11] Another study that was done in Japan by Shimizu *et al* using FSSG questionnaires; the prevalence of GERD in COPD was 32.5%. As we have also used FSSG questionnaires for diagnosis for the GERD, the prevalence of GERD in COPD patients was nearly equal to the studies that have also used FSSG questionnaires. The variations between races and genotypes may be the possible reasons to the stronger association observed.

Limitations of the study are that we used FSSG questionnaire to diagnose GERD in COPD patients. FSSG questionnaire is not a very good modality to diagnose GERD. Therefore, we had a very few patients who were diagnosed as having GERD.

CONCLUSION

Our study shows that a higher proportion of GERD symptoms are present in COPD patients and it also shows that GERD is more common in severe COPD patients. Timely treating the GERD symptoms will decrease a significant portion of severe COPD relating to GERD. Smoking secession is one of the most important behaviour modifications decreasing GERD, COPD and its severity.

AUTHORS CONTRIBUTIONS

AS: Abstract writing, concept of study, study design, data collection, writing results, discussion, data analysis. HNK: Writing introduction, discussion, references writing, data collection. RU: Abstract writing, data analysis, writing conclusion, discussion, final review. AA: Wring conclusion, data collection, and discussion. SN: Discussion, data analysis, writing conclusion

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