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PREVALENCE OF BRONCHIECTASIS IN COPD PATIENTS OF ASSAM

Pulmonary Medicine

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ABSTRACT

Background – Chronic Obstructive Pulmonary Disease is a common preventable and treatable disease characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases. Bronchiectasis is characterized by cough and sputum production with abnormal thickening and dilation of bronchial wall that is visible on lung imaging. Bronchiectasis and COPD share many characteristics, from pathophysiologic, clinical and functional viewpoints. The identification of bronchiectasis in COPD presents as a different clinical COPD phenotype with greater symptomatic severity, more frequent chronic respiratory infection and exacerbations, and poor prognosis. **Methods –**Seventy one COPD patients were enrolled in the study. Detailed clinical history was taken from the subjects and lung function tests were performed. Sputum samples were provided for microbiologic analysis. High-resolution CT scans of chest were used to diagnose bronchiectasis. **Results –** Out of 71 COPD patients included in the study, 28 (39.43 %) had severe COPD and 22(30.98%) had moderate COPD. Bronchiectasis was present in 37 patients (52.11%) of which 29.72% patients had moderate COPD, while 40.54% had severe COPD. Patients with COPD and Bronchiectasis had more symptoms, had more prior history of hospital admission and more exacerbations. **Conclusion –** Patients with severe COPD have greater prevalence of Bronchiectasis. Also the patients with Bronchiectasis and COPD had significant association with dyspnoea, more hospitalisations and more exacerbations in previous year.

KEYWORDS

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) has been declared as a global health challenge by the World Health Organization[1]. COPD is a heterogeneous lung condition characterized by chronic respiratory symptoms (dyspnea, cough, sputum production, exacerbations) due to abnormalities of the airways and / or alveoli that cause persistent, often progressive airflow obstruction. Patients with chronic obstructive pulmonary disease (COPD) are prone to exacerbation, which account for significant morbidity and mortality and are a key determinant of health related quality of life[2].

Bronchiectasis is a chronic respiratory disease characterised by a clinical syndrome of cough, sputum production and bronchial infection, and radiologically by abnormal and permanent dilatation of the bronchi[3].Coexistence of both COPD and bronchiectasis define an emerging phenotype with a worse prognosis. Radiographic bronchiectasis was recognised as one of the comorbidities of COPD for the first time in the Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2014. Bronchiectasis and chronic obstructive pulmonary disease overlap syndrome (BCOS) was recognized by the BRONCH-UK Consortium in 2015 as requiringfurther investigation. Recurrent exacerbations in COPD lead to an inflammatory cascade that when unchecked leads to progressive airway damage and bronchiectasis. In some COPD phenotypes, there is an imbalance in protease/antiprotease, such as alpha-1 antitrypsin deficiency. Uncontrolled neutrophil elastase action (and probably other proteases) leads to airway wall remodeling and bronchiectasis. COPD and bronchiectasis frequently overlap, and evidence suggests there is a distinct clinical phenotype with high-volume sputum production, frequent exacerbations, infection with bacteria, and increased mortality in patients with this “overlap syndrome.” Recognition of patients with true features of both disorders identifies a population of patients with poorer outcomes who may benefit from intensified therapy. The aim of this study to find out the prevalence of bronchiectasis in COPD patients and to evaluate the impact of bronchiectasis on functional status of COPD patients.

MATERIALS AND METHOD

Study was conducted in Gauhati Medical Medical College and Hospital (GMCH), Guwahati, Assam, India for a period of 6 months from February 2022 to July 2022. It was a hospital based observational study. We evaluated 71 patients diagnosed as COPD attending the OPD and IPD of Department of Pulmonary Medicine. Clearance from ethics committee of GMCH was taken prior to the study and written informed consent was taken. Detailed history, physical examination and Spirometry were performed. Patients were diagnosed as COPD based on Spirometry. Post bronchodilator Spirometry FEV1/FVC less than 0.70 was taken as diagnostic criteria. Sputum examination was done for microbiological analysis. HRCT Thorax were used to diagnose Bronchiectasis. Data were entered in a preformed and predesigned proforma. Patients not giving consent were excluded from the study. Statistical analysis were done in all cases.

RESULTS AND OBSERVATION

In this study out of 71 COPD cases, 37 cases (52.11%) had COPD with Bronchiectasis and 34 cases (47.88%) had COPD without Bronchiectasis.

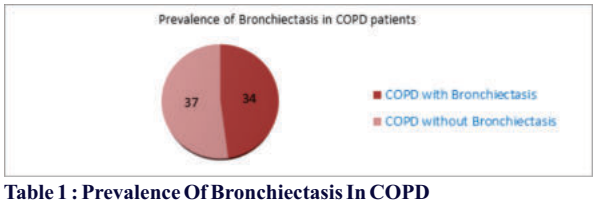

Table 1 : Prevalence Of Bronchiectasis In COPD

Analysing the sex distribution, majority of the cases 43 (60.56%) were Males and 28 (39.43%) cases Females. Out of the 33 Males, 19 cases had COPD with Bronchiectasis. And out of 28 Females, 15 cases had COPD with Bronchiectasis.

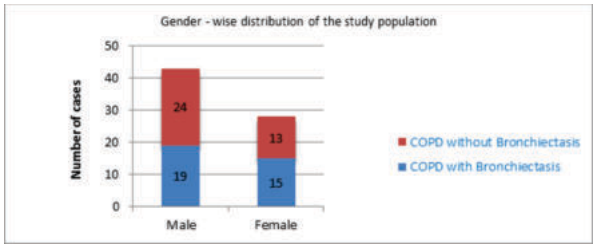

Table 2 : Gender Wise Distribution Of The Study Population

On evaluating the symptoms, Cough was the most common symptom, seen in 69 cases (97.18%) followed by dyspnea in 62 cases (87.32%), Chest pain in 41cases (57.77%) , pedal edema in 22 cases (30.98%) and fever in 13 cases (18.30%). Fever, cheat pain, dyspnea and padal oedema is more in patients with COPD with bronchiectasis than patients with COPD without bronchiectasis.

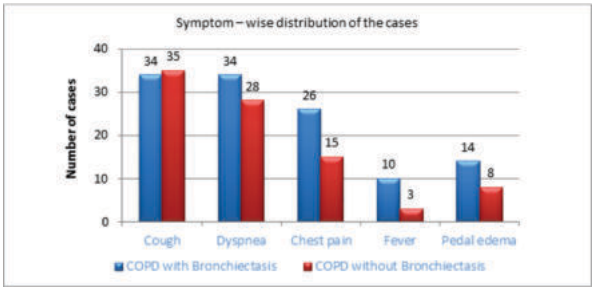

Table 3 : Symptom Wise Distribution Of The Cases

In this study out of the 71 COPD patients, 38(53.52%) patients were smokers and 33 (46.48%) patients are non smoker. Out of the 38 smokers COPD patients, 25 (65.8%) had Bronchiectasis.

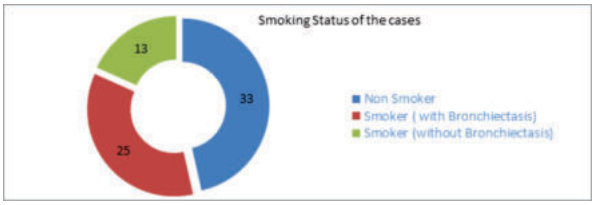

Table 4 : Smoking Status Of The Cases

Evaluating the distribution of GOLD category, majority of the cases 38(39.43 %) belong to GOLD-III, followed by GOLD-II 22(30.98%) and GOLD-IV 14(21.12%) .In GOLD-III category, majority of the cases had COPD with Bronchiectasis.

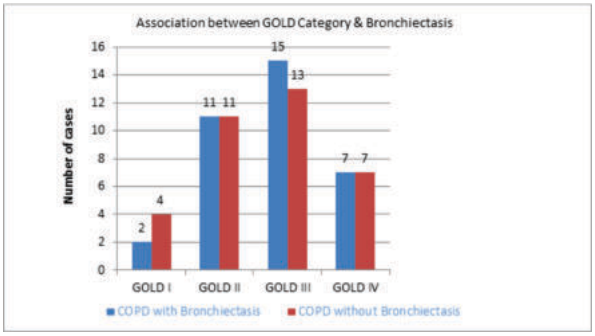

Table 5 : Association Between Gold Category &bronchiectasis

Out of 71 patients positive sputum culture was obtained in 44 patients. Of this, 26 cases (59.09%) had COPD with Bronciectasis.

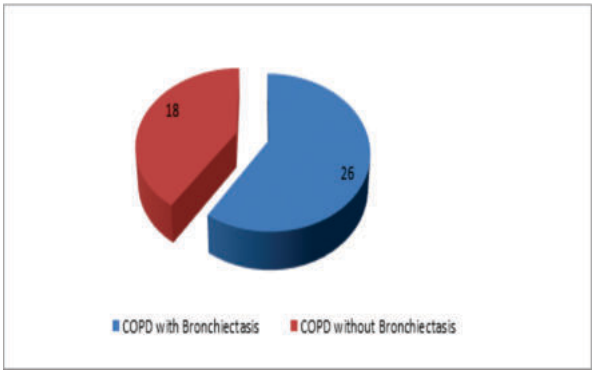

Table 6 : Association Between Prevalence Of Bronchiectasis And Positive Sputum Culture

Out of the 71 COPD cases, 48 (67.6%) patients had ≥ 1 history of hospitalisation in previous year and of these 48 patients , 34 (70,8%) patients had associated Bronchiectasis.

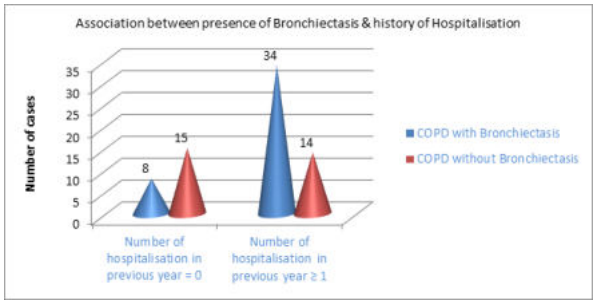

Table 7 : Association between presence of Bronchiectasis & history of hospitalisation

In this study out of 71 patients 46(64.8%) patients had ≤ 1 exacerbation in previous year and 25 (32.2%)patients had ≥ 2 exacerbations in previous year. In COPD patients with ≥ 2 exacerbations in previous year, 11 patients had COPD with Bronchiectasis. In patients with ≤ 1 exacerbation in previous year, 28 patients had COPD with Bronchiectasis.

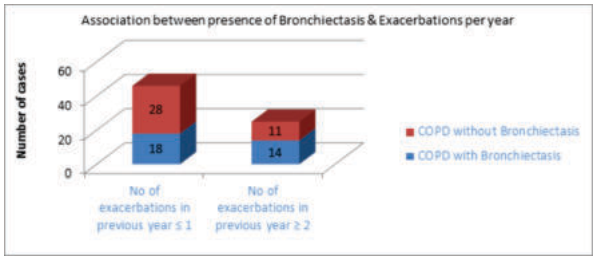

Table 8 : Association Between Presence Of Bronchiectasis & Exacerbations Per Year

DISCUSSION

In our study, out of 71 COPD cases, 37 cases (52.11%) had COPD with Bronchiectasis and 34 cases (47.88%) had COPD without Bronchiectasis. Martínez-Garcíaet al[4] 2011 observed Bronchiectasis in 57.6% cases. Patel et al[7] in their reported Bronchiectasis in 50% cases of COPD.

In our study, majority of the cases 33 (46.47%) were Males and 28 (39.43%) cases Females. Out of the 33 Males, 19 cases had COPD with Bronchiectasis. And out of 28 Females, 15 cases had COPD with Bronchiectasis. Martínez-García et al[4] 2011 reported 92 Males and 15 females in his study of which 57% males had Bronchiectasis.

On evaluating the symptoms, cough was the most common symptom, seen in 69 cases (97.18%) followed by dyspnea in 62 cases (87.32%), chest pain in 41cases (57.77%) , pedal edema in 22 cases (30.98%) and fever in 13 cases (18.30%). Mao B et al[5] reported Cough in 84% cases, followed by dyspnea in 70% cases.

Out of the 71 COPD cases, 38 cases were Smokers. Of the 38 smokers, 25 (65.8)COPD cases had Bronchiectasis. Smid DE et al[6] observed in his study that 86% COPD cases were Smokers and among them 65% cases had Bronchiectasis.

Evaluating the distribution of GOLD category, majority of the cases (39.43 %) belong to GOLD-III followed by GOLD-II (30.98%) and GOLD 4 (21.12%) . In GOLD-III category, majority of the cases had COPD with Bronchiectasis. DuQ, Jin J et al[7] reported 35% cases in GOLD II, 45% cases in GOLD III & 19% cases in GOLD IV had bronchiectasis.

Positive sputum culture was obtained in 44 cases. Of this, 26 cases (59.09%) had COPD with Bronciectasis. Patel et al[8] observed in his study that cases with moderate to severe COPD cases with Bronchiectasis had greater Bronchial colonization.

Out of the 71 COPD cases, 48(67.6%) cases had ≥ 1 history of hospitalisation in previous year and of these 48 cases, majority (70.8%) had Bronchiectasis. DuQ, Jin J et al[7]&Martínez-García et al[4] reported similar findings with greater hospital admission in cases of COPD with Bronchiectasis.

In our study 46(64.8%) cases had ≤ 1 exacerbation in previous year and

25(32,2%) cases had ≥ 2 exacerbations in previous year. In COPD cases with ≥ 2 exacerbations in previous year, 11 cases had COPD with Bronchiectasis. In patients with ≤ 1 exacerbation in previous year, 28 cases had COPD with Bronchiectasis. Eman O Arram[9] observed that more exacerbations were associated with Bronchiectasis.

CONCLUSION

Patients with severe COPD have greater prevalence of Bronchiectasis. Patients with Bronchiectasis and COPD are associated with more symptoms, more hospitalisations and more exacerbations.

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