STUDY ON PREVALENCE OF DEPRESSION IN CHRONIC RESPIRATORY DISEASE PATIENTS

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ABSTRACT

Chronic respiratory diseases (CRDs) is one of the few respiratory diseases which is associated with a number of comorbidities. Psychiatric disease like depression is a very important comorbidity of CRDs because it decreases the feeling of wellbeing in the patient and also interferes with the compliance with medication thereby increasing the risk of hospitalization in the CRDs patient. A cross-sectional study was done in the department of chest and TB medicine at Vinayaka Mission’s Medical college and hospital, India. A total of 42 patients were enrolled for the study after a clinical screening for the diagnosis confirmed on spirometry. After the confirmation of the diagnosis of CRD in these patients, they were screened for depression using the depression scale in our department.

Keywords - Chronic respiratory diseases, Bronchiectasis, depression

1. INTRODUCTION

Chronic respiratory diseases (CRDs) are diseases of the airways and other structures of the lung. Some of the most common are chronic obstructive pulmonary disease (COPD), asthma, occupational lung diseases and pulmonary hypertension. CRD impairs quality of life, by preventing people with the condition from socializing and enjoying their hobbies. It also makes many feel frustrated and angry about not being able to do the things they want to. Patients with chronic airway problems form an important population in primary care. CRD is associated with significant reductions in QOL, even among patients with mild airway obstruction. A poor QOL has been shown to be associated with high levels of dyspnea, physical impairment, depression, and anxiety, and a poor prognosis in terms of readmission to hospital and death. Chronic obstructive pulmonary disease (COPD) is a term for a group of chronic lung disorders, especially chronic obstructive bronchitis and emphysema, mostly characterized by a slowly progressive irreversible bronchial obstruction (expressed in a progressive limitation of the forced expiratory volume in one second (FEV1) and a fluctuating symptom complex of recurrent productive cough and dyspnea [1].

Owing to the long-lasting, progressive and irreversible airflow obstruction of the lung with increasing dyspnea and other respiratory symptoms, patients with COPD experience a reduced quality of life [2]. The costs of CRD are considerable, and arise from decrease and even loss of productivity, disability, increased care from families, the primary care system and the community. Direct costs of CRD derive mainly from secondary care, with hospitalizations accounting for half of the direct costs in developing countries like India, and other developed countries [3].

Depression is an affective illness characterized by symptoms such as disturbance in mood, cognition and behavior. It is the most common psychiatric disorder among the elderly which can manifest as major depression or as minor depression characterized by a collection of depressive symptoms [4]. Depression contributes to increased medical morbidity and mortality, diminished quality of life and increased healthcare costs

There is increasing evidence that depression and anxiety are important comorbidities in CRD and may influence various facets of CRD and may have bidirectional cause and effect relationship. There is a paucity of studies regarding both the burden as well as the association of these psychiatric comorbidities in CRD, especially in
developing countries where a lack of social support mechanism for the elderly may only aggravate the problem [5].

Activities of daily living may be severely impaired in patients with CRD owing to chronic psychological stress and somatic pain, frequent admission to the hospital, and dependence on medical and nursing personnel [6]. Depression and anxiety cause deterioration in social functioning and quality of life and are correlated with levels of subjective dyspnea and disease progression. Thus, detecting depression or anxiety in patients with CRD is of great importance. Although the close correlation between anxiety and depression is well known, few studies have examined their simultaneous occurrence in patients with CRD conditions. Moreover, studies assessing and comparing anxiety and depression levels among patients with different chronic airway lung diseases such as chronic obstructive pulmonary disease (COPD), bronchial asthma, and bronchiectasis have been scarce in South India.

METHODS FOLLOWED

All consecutive patients of CRD attending the Outpatient Department diagnosed by history and clinical examination, were screened for the study by chest X-ray, routine hematological, biochemical investigations. Spirometry to record forced expiratory volume in 1s (FEV1) was performed using turbine-based spirometer confirming to the American Thoracic Society (ATS) and European Respiratory Society guidelines to confirm the diagnosis and stage the patients. Patients >70 years of age were excluded from the study. Forty five patients were screened, and all patients consenting for the study were enrolled. Inclusion criteria was followed as patients with chronic respiratory disease such as COPD, Bronchiectasis, ILD, pulmonary Tuberculosis sequelae with fibrosis and Bronchial asthma. Forty two patients of various chronic respiratory diseases under medical treatment were taken for the study. Patients Pulmonary function test and six minute walk test were assessed at the beginning of the study. Patients were educated and psychiatric counselling was given with a questionnaire to detect depression. All patients were then screened by Hospital Anxiety and Depression Scale (HADS). A cutoff score of ≥8 out of 21 for both depression and anxiety individually was considered. Patients who had more than the cutoff score were referred for psychiatric evaluation whose diagnosis were then confirmed by a diagnostic interview using the International Classification of Diseases. The research was approved by the Institute's Ethical Committee [7, 8].

Beck depression inventory

The BDI contains 21 items. Each item can be answered on a 4-pointscale between 0 and 3 according to the intensity of the item within the last week. The total score is obtained from the sum scores of the 21items. The highest score possible is thus 63. A sum score of 0 - 10 is a normal result, 11-17 mild to moderate depressive symptoms and18’a clinically relevant depression. The cognitive-affective subscale is constructed from the first 13 items, the somatic-performance subscale from items 14-21. A detailed manual for the Indian version is provided by Hautzinger et al. Within this trial, the questionnaire was completed by a trained assessor during an interview with the patient and results were checked by a professional [9].

Statistical methods

Categorical data were presented as numbers (percentage) while continuous variables were presented as mean (± standard deviation). Data were analyzed with the Statistical Package for Social Sciences (SPSS, Chicago, IL). Descriptive statistics were used to show frequency rates of variables. Numerical variables with normal distribution were expressed as mean ± standard deviation (SD). The 2 test was used for comparing non parametric variables, while we used the Student’s t-test for comparing the parametric variables. We used the Pearson correlation to assess the correlation of BDI score and age. Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA). A p value below 0.05 was considered to be significant [10].

II. RESULTS AND DISCUSSION

Under-recognized and untreated depression and anxiety symptoms have deleterious effects on physical functioning and social interaction increasing fatigue and healthcare utilization in patients with CRD. Depression and anxiety are challenging to identify and treat because their symptoms often overlap with those of CRD. The cause(s) of depression and anxiety symptoms are multifactorial and include behavioral, social and biological factors. Less than one-third of COPD patients with comorbid depression or anxiety symptoms are receiving appropriate treatment. Factors that contribute to the lack of provision of treatment are varied, they include patient
perceived barriers, for example lack of knowledge and reluctance to receive antidepressant drug therapy; poor treatment compliance and lack of a standardized diagnostic approach; and scarcity of adequate resources for mental health treatment.

Out of these 42 patients, 19 (45.23 %) were 50 years old and above. Out of these elderly residents, all agreed to participate in the study giving a response rate of 99.9%. Most of the respondents either had no formal education or only primary education (74.8%). Most had a family income of less than 5000 INR per month (55.8%). Our cut off point for family income of less than 5000 per month was calculated from the median of family income of the respondents.

A total of 42 of the respondents were diagnosed to have some chronic illness or respiratory disease such as COPD, Bronchiectasis, Interstitial lung diseases, Post pulmonary Tuberculosis sequalae fibrosis, bronchial asthma. Some of them had a combination of two or three illnesses. Those with chronic illness were on regular follow-up and treatment. Any acute (less than 3 weeks) and sub-acute (3-8 weeks) respiratory illnesses patients were excluded from the study [11].

The overall Grade of Depression scale (GDS) ranged from 0 to 40. The mean score was 12.825 ± 2.76. The median was 10.00. Based on the GDS scores, 18 (42.85 %) of respondents were found to have depression. Patients with COPD have a higher prevalence of depression and anxiety than the general and COPD patients have relative risk of 1.69 of developing depression. The rates of both anxiety and depression may even be more prevalent among COPD sufferers compared with other chronic diseases. For patients with stable COPD in primary care settings or respiratory clinics, the prevalence of depression varies widely from 10% to 57%, and for anxiety, prevalence ranges from 7% to 50% [12].

The aetiology of the association between depression and COPD is not fully understood; however the relationship is complex and interactive. The most important risk factor for COPD is smoking. Smoking and depression have a bidirectional interaction. Depressed individuals are more likely to smoke, display higher risk to commence smoking, and find smoking cessation more difficult. Conversely, smokers are more likely to be depressed, which could be caused by activation of nicotinic acetylcholine receptors, or direct inflammatory effects of smoking. In the present study, the prevalence of depression (assessed using the BDI) in patients with severe or very severe COPD was 56% compared with 36% in patients with mild or moderate COPD. This difference was rather large; it successful to reach significance. Previously, Van Manen et al. also found that patients with severe airways obstruction were at an increased risk of depression (25 versus 20%), although the difference between these groups was much less. These authors also failed to find a significant difference in prevalence rates. This variation in prevalence rates might have been caused by the use of different measures for depression [13].

Table 1- Baseline characteristics of the study population

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
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<tbody>
<tr>
<td>Gender</td>
<td>Men 75 % (n = 30), Women 25 % (n = 10)</td>
</tr>
<tr>
<td>Mean age</td>
<td>64.3</td>
</tr>
<tr>
<td>BMI</td>
<td>27.14</td>
</tr>
<tr>
<td>SPO2</td>
<td>94.13</td>
</tr>
<tr>
<td>FEV1/FCV</td>
<td>84.97</td>
</tr>
<tr>
<td>Mean number of medical co-morbidities (SD)</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Values are expressed as the mean ± SD, median (range), or number (%).

FVC, forced vital capacity; FEV1, forced expiratory volume one second.
$p < 0.05$ compared to controls.

**Table 2** – Chronic airway lung diseases with comorbidities and number of patient’s convoluted

<table>
<thead>
<tr>
<th>COPD</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Pulmonary tuberculosis sequelae with fibrosis</td>
<td>5</td>
</tr>
<tr>
<td>Bronchial Asthma</td>
<td>8</td>
</tr>
<tr>
<td>Interstitial lung disease</td>
<td>4</td>
</tr>
<tr>
<td>Bronchiectesis</td>
<td>4</td>
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</tbody>
</table>

**Table 3** Health and Psychological status in different Grade of depression

<table>
<thead>
<tr>
<th>Variables</th>
<th>COPD (n=21)</th>
<th>Post Pulmonary tuberculosis sequelae with fibrosis (n=5)</th>
<th>Bronchial Asthma (n=8)</th>
<th>Interstitial lung disease (n=4)</th>
<th>Bronchiectasis(n=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-10</td>
<td>10</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11-16</td>
<td>4</td>
<td>--</td>
<td>3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>17-20</td>
<td>2</td>
<td>--</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>21-30</td>
<td>6</td>
<td>3</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>31-40</td>
<td>4</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>&gt;40</td>
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</tbody>
</table>

- 1-10 - These ups and downs are considered,
- 11-16 - Mild mood disturbance
- 17-20 - Borderline clinical depression
- 21-30 - Moderate depression
- 31-40 - Severe depression
- >40 - Extreme depression

**III. CONCLUSION**

Depression is common in patients with COPD, and its presence has a significant impact on the QOL of such patients and may be associated with a higher mortality rate. It also negatively affects compliance and smoking cessation. In daily practice, it is often assumed that the physical illness itself contributes to the occurrence and severity of mental disorders. It was, therefore, assessed whether the level of psychological distress is associated with the severity of the pulmonary diseases. Significant increase in psychological complaints was found in patients with severe or very severe COPD compared to patients with mild or moderate COPD. There seem to be a
significant or clinically relevant difference in psychological distress between patients with severe or very severe COPD and patients with mild or moderate COPD. Previous studies have reported susceptibility to depression in patients with other chronic respiratory conditions. To be sure, bronchiectasis also manifests as a chronic and progressive disease with multiple exacerbations resulting in altered lung functioning, including irreversible airflow obstruction, progressive dyspnea, and greatly reduced quality of life. In conclusion, patients with chronic respiratory diseases are at increased risk for depression. Our findings show that the importance of screening for depression is underscored in patients with chronic airway lung diseases, particularly those with a high airflow limitation or history of smoking, to provide adequate patient care. Further studies are needed to elucidate the effectiveness of treating psychiatric distress in these patients as well as the efficacy of screening to identify those who might benefit from specific therapy. Since number of COPD patients were more in the current study, depression seems to be higher. Further studies need to correlate the conclusion with the equal number of sample size for all the clinical conditions.

REFERENCES