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Original Article

Interrelationship of Severity of the Anxiety with the Severity of the Chronic Obstructive Pulmonary Disease (COPD): A Cross-Sectional Study

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ABSTRACT

Introduction: The most common co-morbidity in COPD are anxiety and depression. Prevalence rates of elevated anxiety symptoms may exceed 90%. Anxiety disorders occur more frequently in COPD patients than in the general public. The aim of the present study was to assess the correlation between the severities of the anxiety with the severity of the COPD.

Materials and Methods: This is a cross-sectional study that was carried out in the outpatient clinic and inpatient ward of department of pulmonary medicine of Smt. Kashibai Navale Medical College, Narhe, Pune, Maharashtra, India. One hundred Fifty candidates participated in the study in which 75 were included in patients group and 75 were control group. IBM SPSS Statistics 21 manufactured by IBM USA was used for entire calculations.

Results: In patients group the PaO_2 level was 62.46 mmHg, the percent of predicted FEV1 was 53.29. 21 patients in patients group were admitted in ICU previously. The PaO_2 level found >80mmHg in 24% subjects, 60-80 mmHg found in 30.7 % cases and < 60 mmHg found in 45.3% cases.

Conclusion: There was highly statistical significant difference found between COPD and control groups as regards the presence of psychiatric disorder, anxiety score, and severity of anxiety level.

KEYWORDS: COPD, Anxiety, Co-Morbidity, PaO_2.

INTRODUCTION

Dyspnea, especially on exertion, coughing, the production of sputum, and often irreversible impairment in lung functioning are the characteristic symptoms of Chronic Obstructive Pulmonary Disease (COPD). The morbidity associated with these symptoms is substantial as patients often report a significant degree of disability and restriction in daily activities, decreased quality of life, and psychological distress.[1]

The most common co-morbidity in COPD are anxiety and depression.[2] Prevalence rates of elevated depressive symptoms have been reported to be as high as 80%[3-5] and rates of elevated anxiety symptoms may exceed 90%.[6] Anxiety disorders occur more frequently in COPD patients than in the general public. The presence of anxiety in COPD is also associated with increased COPD exacerbations, COPD-related hospitalizations, and mortality. Despite their negative influence on quality of life and medical outcomes, anxiety often go undetected in clinical practice due to variations in the frequency and type of diagnostic assessment, variability in clinical presentation, and the significant overlap between co-morbid pulmonary symptoms.[6] Anxiety in persons with COPD has important implications for physical health, and has been found to be related to poorer health outcomes and a higher risk of disease worsening over time.[7] There is strong evidence that persons with COPD who have comorbid anxiety or depression are at risk for worse health outcomes, greater functional impairment, and greater risk of disease exacerbation than those who do not.[7,8]

Psychiatric conditions are not regularly diagnosed in these patients and are not treated in a timely fashion.[9] Awareness of the presence and severity of psychiatric disorders in patients with chronic pulmonary conditions encourages them to take the necessary measures for treatment. Psychiatric symptoms negatively influence disease severity and quality of life of the patients. Therefore, timely diagnosis and treatment are very

important and delaying the treatment can delay recovery from the pulmonary symptoms and may cause complication.[10] The mental disorders themselves can be further aggravated by patients' disabilities and, in turn, they can exaggerate patients' COPD symptoms. When recognized, they are, however, treatable and should be treated since health is regarded as a state of complete physical, social and mental wellbeing.[11]

Research has demonstrated that the perceived receipt of social support is associated with better mental health in other chronic illness such as rheumatic disease.[12] In persons with COPD, receiving positive social support is associated with reduced hospitalizations and fewer acute disease exacerbations,[13] better health status,[14] and better health promotion and disease management behaviors such as smoking cessation[15] and engaging in physical exercise.[16] Pharmacological interventions, in particular antidepressants and benzodiazepines, are commonly used to treat anxiety in patients with COPD. A recent systematic review shows a non-significant but clinically relevant benefit (minimum improvement of 1.5 points in Hospital Anxiety and Depression scale score or a change from baseline of 20% in patients with COPD[17]) with the use of SSRI to control anxiety symptoms in patients with COPD.[18,19] Case reports have also reported an improvement in anxiety symptoms among patients treated with sertraline. [20]However, little or no difference has been evident from trials for other classes of medications such as tricyclic antidepressants and azapirone.[21] It is interesting to note that although benzodiazepines have been commonly used in clinical practice for control of anxiety in patients with COPD, no randomized controlled trails are available to assess the efficacy of benzodiazepines in this population. The mental disorders themselves can be further aggravated by patients' disabilities and, in turn, they can exaggerate patients' COPD symptoms. When recognized, they are, however, treatable and should be treated since health is regarded as a state of complete physical, social and mental wellbeing.[11]

The aim of the present study was to assess the correlation between the severities of the anxiety with the severity of the COPD.

MATERIALS AND METHODS

This is a cross-sectional study that was carried out in the outpatient clinic and inpatient ward of the department of Pulmonary Medicine of Smt. Kashibai Navale Medical College, Narhe, Pune, Maharashtra, India. One hundred Fifty candidates participated in the study. They were 75 COPD patients (diagnosed according to GOLD 2013)[22] and 75 matched healthy subjects as a control group. Patients with other chest diseases, past history of psychiatric disorders, past history of other chronic medical disorder as diabetes mellitus, hypertension were excluded from the study. Written consent was taken from all the participants included in this study. The ethical clearance for the study was also taken from the institutional ethical committee.

All patients were subjected to: Full history taking with concern to duration of the illness, prior admission to intensive care, oxygen therapy or mechanical ventilation as added stressors that may contribute to different psychological outcomes. Chest X-ray and CT chest if needed. Spirometric assessment was done after administration of adequate dose of short-acting inhaled bronchodilator to minimize variability. Classification of severity of airflow limitation in COPD (patients with FEV1/FVC < 0.7) was done based on post bronchodilator FEV1, according to GOLD 2013:[22] Mild COPD: FEV1 >80% of predicted. Moderate COPD: 50% 6 FEV1 P 80% of predicted. Severe COPD: 30% 6 FEV1 P50% of predicted. Very severe COPD: FEV1 < 30% of predicted. Arterial blood gases (ABG) was done (using Radiometer ABL 800 flex) and patients were classified according to partial pressure of arterial oxygen tension (PaO2) into: patients with PaO2 > 80 mmHg, patients with PaO2 60–80 mmHg and patients with PaO2 < 60 mmHg to ease the correlation between different levels of PaO2 and other parameters. Seventy five healthy subjects in control group with matched age, sex and socioeconomic conditions were recruited. They were selected from the workers and visitors of patients coming to the hospitals.

Hamilton anxiety scale (HAM-A):[23] The HAM-A was developed to measure the severity of anxiety symptoms, and is still widely used today in both clinical and research settings. The scale consists of 14 items, each defined by a series of symptoms, and measures both psychological anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety).A total score of 0–17 is considered to be mild, 18–25 moderate, and 26–30 severe. Totals above 30 indicate very severe anxiety.

Statistical analysis

A p-value < 0.05 was considered statistically significant. IBM SPSS Statistics 21 manufactured by IBM USA was used for entire calculations. Student t test and ANOVA test was used to assess the statistical significance of the difference between two and more than two study groups means respectively. Chi Square and Fisher's exact test were used to determine the relationship between variables. Pearson's correlation was used to assess the correlation between quantitative variables. A p-value < 0.05 was considered statistically significant.

RESULTS

The present study was conducted on 75 COPD patients. Seventy five healthy subjects in control group were also included in the study. The descriptive data of both patient and control groups are shown in Table 1.

Table 1: Elaboration of personal and clinical data in both COPD patients and the control group.

Description	Patient Group	Control Group
	Mean ±SD	Mean ±SD
Age	52.4±7.3	58.43±9.6
Duration of smoking (Year)	34.26±11.29	20.31±7.34
Gender		
Male	63 (84%)	67 (89.3%)
Female	12 (16%)	8 (10.6%)
Status of Smoking		
Smoker	43 (57.3%)	26 (34.6%)
Non-smoker	32 (42.6%)	49 (65%)
Marital status		
Married	40 (53.3%)	48 (64%)
Unmarried	35 (46.6%)	27 (36%)
Duration of illness	14.2±7.21	
PaO_2 (mmHg)	62.46±14.80	94.34±11.56
FEV1 (% of predicted)	53.29±16.27	84.65±12.23
Previous ICU admission		
Yes	21 (28%)	09(12%)
No	54 (72%)	66(88%)
PaO_2 level		
>80 mmHg	18 (24%)	69(92%)
60-80 mmHg	23 (30.7%)	4(5.3%)
<60 mmHg	34 (45.3%)	2(2.6%)

Table 2: Description of psychiatric characteristics and comparison between cases and controls as regards psychiatric characteristics.

	Patient Group	Control Group	*P value*
	Mean ±SD	Mean ±SD	
Anxiety score	12.63±3.9	9.5±2.31	.05
Present psychiatric disorder			
Yes	41 (54.7%)	8 (10.7%)	.002
No	34 (45%)	67 (89.3%)	
Anxiety level			
Normal	50 (66.7%)	71 (94.7%)	.004
Mild	8 (10.7%)	3 (4%)	
Moderate	17 (22.7%)	1 (1.3%)	

By using Student-t test and Chi-Square test in comparing between COPD patients and control groups as regards personal data (age, gender, smoking habits, occupation, marital state and residence), statistical significant difference found between both groups. Psychiatric characteristics in the form of presence or absence of psychiatric disorder, anxiety and levels of severity of them were detailed in the COPD patients group and control group in Table 2. There were highly statistical significant difference found between COPD and control groups as regards the presence of psychiatric disorder, anxiety score, and severity of anxiety level.

In Description of personal and clinical data in both COPD patients and the control group the mean age was 52.4±7.3 in patient group and 58.43±9.6. Male were 84% and female were 16 % in patients group and in control group the male were 89.3% and female were 10.6%. Regarding the status of smoking 57.3% were

smoker and 42.6% were non-smoker in patient group, and in control group 34.6% were smoker and 65.4% were nonsmoker subjects. In patients group the PaO_2 level was 62.46 mmHg, the percent of predicted FEV1 was 53.29. 21 patients in patients group were admitted in ICU previously. The PaO_2 level found >80mmHg in 24% subjects, 60-80 mmHg found in 30.7 % cases and < 60 mmHg found in 45.3% cases.

DISCUSSION

In present study there were highly statistical significant difference found between COPD and control groups as regards the presence of psychiatric disorder, anxiety score, and severity of anxiety level.

In a study on psychiatric disorder among COPD patients, 118 hospitalized patients with COPD were recruited from 500 randomized samples of the general population and 500 psychiatric patients from the clinics who were assessed psychologically. It was shown that there was a significantly higher prevalence of psychiatric disorders, and particularly anxiety, in COPD patients compared to the general population, but this prevalence was less than what was observed in the psychiatric clinic patients. In this study, no correlation was found between the severity of COPD and anxiety.[24]

In another study, COPD patients with severe anxiety or depression symptoms or both were compared with patients without such symptoms. A total of 202 COPD patients were evaluated for severity of anxiety, depression, pain and quality of life by completing the questionnaires. A sample of 114 patients was also elected as a control group for gender and health comparisons. The prevalence of anxiety and depression in COPD patients was 18.8% and 28.2%, respectively compared to 3.5% and 6.1% among controls. Female patients with COPD had higher severity of anxiety and depression and had poor quality of life. Illness influences health and quality of life which is dependent of various factors such as patients' physical condition, expectations, coping skills and psychiatric well-being. Some studies have shown that psychiatric symptoms, particularly anxiety. May influence the patient's health more than the severity of illness, other underlying medical conditions and demographic factors.[25]

In present study regarding the status of smoking 57.3% were smoker and 42.6% were non-smoker in patient group, and in control group 34.6% were smoker and 65.4% were nonsmoker subjects. In patients group the PaO_2 level was 62.46 mmHg, the percent of predicted FEV1 was 53.29. 21 patients in patients group were admitted in ICU previously. The PaO_2 level found >80mmHg in 24% subjects, 60-80 mmHg found in 30.7 % cases and < 60 mmHg found in 45.3% cases. This coincides with Regvat et al.[11] who investigated the prevalence of anxiety and depression in 50 chronic obstructive pulmonary disease (COPD) patients and found that 50% of patients entering the rehabilitation program showed anxiety and/or depression. It also coincides with other investigators[26] who studied the prevalence of anxiety and depression in 701 COPD patients and found that about 41.8% of patients had anxiety and/or depression symptoms. Another study[27] agreed with our results and stated that 43% of COPD patients were diagnosed with depression and 29% of them were diagnosed with anxiety. It also agrees with other studies [28] who stated that scores of depression and anxiety were higher in the COPD patient in comparison with the control group.

CONCLUSION

The present study was shown strong association between COPD and symptoms of anxiety. The severity of anxiety was correlated with the severity of COPD. There were highly statistical significant difference found between COPD and control groups as regards the presence of psychiatric disorder, anxiety score, and severity of anxiety level.

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