

Evaluation of Anxiety Symptoms in Patients with Chronic Obstructive Pulmonary Disease

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ABSTRACT

Introduction: Mood disorders are frequently seen in the patients with chronic obstructive pulmonary disease (COPD). The literature lacks the frequency and effects of the anxiety disorder, which affects daily life and success of the treatment. In the present study, we evaluated the anxiety levels of patients with COPD.

Methods: The relatives diagnosed with COPD of the patients who applied for psychiatric examination as out-patients to our clinic were included in the study between January 2018 and December 2021. Eighty patients were randomly selected for the COPD group. The forty-eight volunteer relatives of the patients were included in the control group. The two Spielberger State and Trait Anxiety Inventory subscores-state (STAI-S) and trait (STAI-T)- were used to examine anxiety levels of the patients with COPD and control groups.

Results: There were 48 (60%) men and 32 (40%) women in the COPD group and 24 (50%) men, 24 (50%) women in the control group. The mean scores of Spielberger State Anxiety Inventory and Trait Anxiety Inventory were significantly higher in the COPD group when compared control group [STAI-S COPD group (n=80), mean score: 43.384, standard deviation (SD): 8.68 versus control group (n=48), mean score: 36,232, SD: 7.64; p<0.05] [STAI-T COPD group (n=80), mean score: 44,128, SD: 6.168 versus control group (n=48), mean score: 36,344, SD: 8.188; p<0.05, respectively].

Conclusion: The anxiety symptoms in the patients with COPD should be considered by physicians and should be appropriately assessed when diagnosed with COPD for not only the effects on treatment compliance but also on mortality, disability and quality of life. We believe that psychiatric aid is important in patients with COPD, particularly in handling anxiety, so that the anxiety-dyspnea vicious cycle will be easier to break with insensitive behavior therapies.

Keywords: Chronic obstructive pulmonary disease, anxiety, mood disorder

Introduction

Chronic obstructive pulmonary disease (COPD), manifested by coughing, shortness of breath, sputum production, wheezing, and reduced physical performance. COPD is one of the most frequently diagnosed and also most fatal lung diseases, approximately 400 million people suffering from this disorder (1). However, some symptoms are indirectly related to respiratory disorders in patients with COPD. The number of cases is systematically growing, and the World Health Organization predicts that by 2030 COPD may become the third leading cause of death worldwide.

COPD, as a chronic disease, it is common to worsen patients' quality of life, to interfere with the perception of other symptoms even it may be a cause of mortality (2-4). Women population has a higher number of deaths than men from COPD in the United States since 2000 (1). Between 1999 and 2014, age-adjusted mortality rates of men because of COPD has decreased; however, it was stable in women (1).

Patients with COPD show symptoms of depression and anxiety more frequently than the general population (2,3). The prevalence of anxiety

and depression in patients with COPD is high. It is estimated that one in four people with COPD has symptoms of depression and anxiety. Depression and anxiety are frequent co-morbidities in patients with COPD, with an estimated prevalence of 8-80% and 2-96%, respectively (5,6). Many patients with COPD suffer from anxiety that affects daily life and it worsens the relationships with family members and working life. Besides the anxiety about dyspnea may affect sexual life. Anxiety, itself, causes hyperventilation, increases the feeling of dyspnea and as a result, it creates a vicious circle (7). Physical activity is reduced, the frequency of exacerbations increases and so does the use of health resources and causes high levels of psycho-social distress. Clinical anxiety has also been recognized as a significant problem in COPD, with an estimated prevalence of up to 40% (8,9).

Shortness of breath and fear of death in patients with COPD can lead to acute catastrophic anxiety that forces all the mental strength of the patient. Various behavioral changes such as anxiety, depression, discomfort and psychological defenses such as denial and avoidance, can be seen in these patients (10). It was suggested that symptoms of



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dyspnea often lead to anxiety. Various risk factors have been identified for developing anxiety and depression. In addition to depression is associated with chronic stress, which leads to sustained activation of the sympathetic nervous system and an increase in the systemic inflammatory response. The most common psychological pathology in patients with COPD is anxiety and depression disorder (11). The patients avoid even the slightest physical activity because of fear of developing shortness of breath (10).

In the present study, it was aimed to evaluate the anxiety levels of patients suffering from COPD.

Methods

This study approval by the University of Health Sciences Turkey, İstanbul Training and Research Hospital Ethics Committee (approval number: 167, date: 20.05.2022). Informed consent was obtained.

The relatives of patients who applied for psychiatric examination diagnosed with COPD of the patients by the lung disease clinics who as out-patients to our clinic were included in our study. The study was conducted between January 2018 and December 2021. Ninety patients were selected by random sampling and the study was completed with 80 patients. The forty-eight volunteer relatives of the patients were included in the control group. The subtypes of COPD were not considered in our study.

The study was based on a questionnaire examination. Anxiety is a common mental health problem and is associated with physical and psychological discomfort. All the anxiety disorders share common symptoms, such as fear, anxiety, and avoidance. Other anxiety-related symptoms include fatigue, restlessness, irritability, sleep disturbances, reduced concentration and memory, and muscle tension. Among the anxiety disorders, the most common are specific or social phobias and generalized anxiety disorder. The participants completed the proprietary State-Trait Anxiety Inventory (STAI) which was designed to diagnose anxiety symptoms questionnaire.

Evaluation of Anxiety

The two STAI subscores- state (STAI-S) and trait (STAI-T)- were designed to diagnose generalized anxiety symptoms. Likert type answers are rated on a fourpoint scale of how well they describe the patient's current or typical mood, from "not at all" to "very much."

The STAI consists of two 20-item scales that measure "state" (current) and "trait" anxiety (general). The STAI tests diagnose the level of anxiety and distinguish it from depressive syndromes. The two STAI sub-scores ranged from 20 to 80, with higher scores indicating more severe symptoms and greater anxiety.

The Spielberger State and Trait Anxiety Inventory was used to examine anxiety levels in both the COPD patient group and control group. We accepted STAI scores <40 to indicate no or minimal symptoms and ≥40 to indicate moderate or severe symptoms. A range of demographic and clinical factors were collected as potential determinants of outcome.

Statistical Analysis

Statistical analysis was performed using the statistical software SPSS 20.0 for Windows (SPSS Inc., Chicago, IL). Data are expressed as mean standard deviation for continuous variables and as numbers with percentage. The evaluation of non-parametric data (discrete variables) was compared using the χ^2 test, and the evaluation of parametric data (continuous variables) were compared using a two-tailed t-test. A p-value of 0.05 or less was accepted to be significant.

Results

There were 48 (60%) men and 32 (40%) women in the COPD group and 24 (50%) men, 24 (50%) women in the control group. While 67 (84%) patients were smokers in the COPD group, it was 26 (53%) in the control group.

When the Spielberger State Anxiety Inventory was compared between COPD and control group; the mean score was found to be significantly higher in the COPD group [COPD group (n=80), mean score: 43.384, standard deviation (SD): 8.68; control group (n=48), mean score: 36.232, SD: 7.64; p<0.05] (Table 1).

When the Spielberger Trait Anxiety Inventory was compared between COPD and control groups; there was found a statistically significant difference between the mean scores of the two groups [COPD group (n=80), mean score: 44.128, SD: 6.168; control group (n=48), mean score: 36.344, SD: 8.188; p<0.05] (Table 1).

Table 1. Comparison of individuals with the COPD group and control group in terms of Spielberger State and Trait Anxiety Inventory scores

	COPD group (80 pts) (n, %)	Control group (48 pts) (n, %)	p
Age			
Mean (year)	52.3±8.3	57.4±6.1	ns
Gender			
Male	48 (60%)	24 (50%)	ns
Female	32 (40%)	24 (50%)	ns
Education level			
Mean (years)	8.125±2.2	7.850±2.9	ns
Primary school and lower	16 (20%)	9 (18.75%)	ns
Secondary school	40 (50%)	25 (52.08%)	ns
High school	16 (20%)	9 (18.75%)	ns
University and higher	8 (10%)	5 (10.42%)	ns
Smoking history			
Smoker	67 (84%)	26 (53%)	p<0.05
Anxiety (STAI)			
STAI-S	43.384±8.680	36.232±7.640	p<0.05
STAI-T	44.128±6.168	36.344±8.188	p<0.05

COPD: Chronic obstructive pulmonary disease, STAI: State-Trait Anxiety Inventory, STAI-S: State-Trait Anxiety Inventory "state" (current), STAI-T: State-Trait Anxiety Inventory "trait" (chronic)

Discussion

The anxiety in many patients with COPD is reported to have a negative impact on the patient's family and professional life, increasing the dyspnea as a vicious cycle (2). It is emphasized that most commonly anxiety disorders are seen in patients with COPD, and that the most important factor is the dyspnea itself and the fear of suffocation and death, and that fear of shortness of breath causes the patient to avoid social, professional and physical activities, thus affecting the patient's recovery negative (7,10).

The incidence of anxiety, depression and panic are more common in patients with COPD than in the normal population. These disorders may increase the mortality rate of patients and the risk of acute exacerbation worsen the quality of life and prognosis of patients (12).

In a study by Yohannes et al. (13), the efficacy of pulmonary rehabilitation and behavioral therapy used in patients with COPD and other co-modality activities were examined. Pulmonary rehabilitation and cognitive behavioral therapy have been reported to reduce both anxiety and dyspnea symptoms in patients with COPD (13). Janson et al. (14) reports that there was no statistical difference between patients with respiratory systems in terms of depression and anxiety, but there are often significant psychiatric problems in respiratory patients. Yellowlees (15) reported that the patients with ongoing airway blockages had psychiatric problems with 58% rate, and panic disorders and other anxiety disorders were the most common pathologies. In a review by Volpato et al. (16), depression is common in patients with COPD and has a negative effect on treatment. The review has focused on the relationship between anxiety, depression, and compliance in patients with COPD (16). Patients with COPD are ten times more likely to experience panic disorder or panic attacks compared with general population samples (17). Moreover, depression and anxiety interfere with other risk factors, such as tobacco use, and, in general, they impair patients' quality of life (18,19). Patients with COPD need support for managing symptoms and medication also identifying anxiety and depression. Comorbid depression and anxiety in COPD are associated with a disproportionate increase in functional disability, work absence, healthcare usage rates and costs (20). These co-morbidities complicate the therapeutic approach and increases hospitalizations and health expenditures. The literature lacks about the frequency and effect of the anxiety on the patients with COPD.

In our study, we found both state and trait anxiety levels to be statistically higher in patients with COPD compared to the control group. The increased level of anxiety in these patients may cause psychophysiological function changes and cause the patient to experience their existing complaints more severely, while also causing complaints related to other systems. The hormonal system may be more affected, especially due to increased anxiety levels. Additionally, increased anxiety level may lead to depression secondary to anxiety after a while in these patients.

The potential impact of psychological problems in compliance with COPD treatment should be considered by physicians and should be appropriately assessed when diagnosed with COPD for not only the

effects on treatment compliance but also on mortality, disability and quality of life. We also investigated the influence of psychological factors on cardiac surgical outcomes and to evaluated the hypothesis that symptoms of anxiety are associated with adverse clinical outcomes who undergoing elective open heart surgery (21,22).

We believe that psychiatric aid is important in the monitoring of patients with COPD, especially in handling anxiety, and that it is beneficial to confront the patient in a specific program with fear and dyspnea and to apply insensitive behavior therapies, so that the anxiety-dyspnea vicious cycle will be easier to break and the patient may be more motivated to treatment.

Conclusion

The patients with COPD are recommended to evaluate the anxiety symptoms using STAI scores clinically. More patients are needed to evaluate more precisely the long-term effects of anxiety in COPD.

Ethics Committee Approval: This study approval by the University of Health Sciences Turkey, Istanbul Training and Research Hospital Ethics Committee (approval number: 167, date: 20.05.2022).

Informed Consent: Informed consent was obtained.

Peer-review: Externally peer-reviewed.

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