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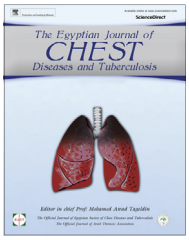

ORIGINAL ARTICLE

Assessment of depression and anxiety symptoms in chronic obstructive pulmonary disease patients: A case–control study

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KEYWORDS

Chronic obstructive pulmonary disease;
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Anxiety;
Pulmonary function tests;
PaO_2;
Substance abuse;
Psychological disorders

Abstract *Background:* COPD patients have to deal not only with the physical consequences of the disease, but they must also deal with the psychological consequences of COPD. Anxiety and depression are highly prevalent co morbidities in COPD.

Objective: To assess the symptoms of depression and anxiety in COPD patients and to correlate between the severity of the anxiety and depression with the severity of the COPD.

Subjects and methods: 80 COPD patients were assessed using SCID for establishing psychiatric diagnosis, Beck depression inventory for assessment of the severity of depressive symptoms, Hamilton anxiety scale for the severity of anxiety symptoms, Spirometry and arterial blood gases for assessing the severity of COPD; and were matched to 80 healthy controls.

Results: The patient group showed higher statistically significant difference in the presence of psychiatric illness (55%, $p = 0.001$), anxiety level (22.5%, $p = 0.06$), depression level (42.5%, $p = 0.0001$), and substance abuse (15%, $p = 0.035$). Anxiety and depressive scores were significantly associated with the severity of COPD ($p < 0.001$). Anxiety score correlated with age ($r = -0.267$), and PaO_2 ($r = 0.326$). Depression score correlated with FEV1 ($r = -0.262$).

Conclusion: This study proves the association between COPD and symptoms of anxiety and depression. The severity of anxiety and depression were correlated with the severity of COPD and the presence of lower PaO_2. Age, sex, duration of illness and previous ICU admission or mechanical ventilation did not correlate with depression or anxiety symptoms.

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Introduction

Chronic obstructive pulmonary disease (COPD) is a major cause of chronic morbidity and mortality throughout the world and it is the fourth leading cause of death worldwide [1]. Patients with COPD frequently find themselves in a vicious cycle of dyspnea, deteriorating exercise performance, restricted mobility and social isolation [2].

COPD patients have to deal not only with the physical consequences of the disease, but they must also deal with the psychological consequences of COPD [3].

Anxiety and depression are highly prevalent co morbidities in COPD [4]. Investigating anxiety and depression in COPD patients is challenging because of the subjective nature of the diagnostic process, the variability in presentation and the significant overlap of symptoms between COPD, anxiety and depression (i.e. dyspnea, chest tightness, palpitations, tremor, fatigue, disordered sleep and loss of appetite) [5,6].

Importantly, symptoms of anxiety and depression in COPD were shown to be associated with a worse course of disease, including reduced quality of life and increased symptoms burden, health-care use, and even mortality [7].

Depression has always received greater attention in these patients while, anxiety in COPD patients has received even less attention than depression, despite the fact that anxiety and depression usually occur together in these patients [4].

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 [8].

The aim of the present study was to assess the symptoms of depression and anxiety in COPD patients and to correlate between the severity of the anxiety and depression with the severity of the COPD.

Subjects and methods

This is a cross-sectional pilot study that was carried out in the outpatient clinic and inpatient ward of the chest department, Ain Shams University hospitals. One hundred sixty candidates participated in the study. They were 80 COPD patients (diagnosed according to GOLD 2013 [9]) and 80 matched healthy subjects as a control group.

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.
- Thorough clinical examination.
- Chest X-ray and CT chest if needed.
- Spirometric assessment (using Flowscreen Spirometer, Viasys) 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 [9]:
  - Mild COPD: FEV1 $> 80\%$ of predicted.
  - Moderate COPD: $50\% \leqslant$ FEV1 $\geqslant 80\%$ of predicted.
  - Severe COPD: $30\% \leqslant$ FEV1 $\geqslant 50\%$ 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 (PaO_2) into: patients with $PaO_2 > 80$ mmHg, patients with PaO_2 60–80 mmHg and patients with $PaO_2 < 60$ mmHg to ease the correlation between different levels of PaO_2 and other parameters.

Eighty healthy subjects with matched age, sex and socioeconomic conditions were recruited as a control group. They were selected from the employees and visitors of patients coming to the Ain Shams University hospitals in all departments.

All candidates were subjected to:

- Structured Clinical Interview for DSM IV axis I disorders (SCID-I-Clinician version) [10]: The SCID has 7 diagnostic modules, focused on different diagnostic groups: mood, psychotic, substance abuse, anxiety, somatoform, eating and adjustment disorders. Its use in this study was to ascertain the presence of a psychiatric diagnosis; the clinician version was used rather than the research version for its relatively easier administration and coverage of the diagnoses most commonly encountered in clinical settings.
- Hamilton anxiety scale (HAM-A) [11]: 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.
- Beck depression inventory (BDI) [12]: It measures the depth and behavioral manifestations of depression and consists of 21 items, each of which has four responses of increasing severity. Numerical values from 0–3 are assigned to each statement to indicate the degree of severity. A total score from 0–9 is considered normal, 10–16 reflects mild depression, 17–29 reflects moderate depression and 30 or above is considered severe depression. It is a widely used standardized instrument.

Patients with other chest diseases, past history of psychiatric disorders, past history of other chronic medical disorder as diabetes mellitus, hypertension...etc. were excluded from the study.

Statistical analysis

Continuous variables are expressed as mean and Standard Deviation. Categorical variables are expressed as frequencies and percents. 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 examine the relationship between Categorical variables. Pearson's correlation was used to assess the correlation between quantitative variables. Multivariate Linear regression was used to test and estimate the dependence of a quantitative variable based on its relationship with a set of independent variables a significance

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