Original Article

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The evaluation of asthma and COPD patients in emotional status: A cross-sectional study

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ABSTRACT

Background: Psychiatric comorbidities are prevalent in patients with chronic respiratory diseases. But, there is no clear evidence comparing asthma and COPD. The aim of the present study was to investigate and compare the emotional status of patients with asthma and COPD

Methods: The study included 132 consecutive patients who were diagnosed with asthma (n=78) and COPD (n=54) who did not receive therapy for pshiciatric disorders. Emotional status were evaluated using the Beck and Hamilton surveys.

Results: There was significant difference between patients asthma an COPD in terms of anxiety and depression level. The patients with COPD achieved significantly worse scores in emotional status. Anxiety and depression was significantly greater in patients with uncontrolled asthma. But, there was no significant correlation between GOLD stages and spirometric values and emotional disorders in COPD patients.

Conclusions: It was concluded that anxiety and depression are prevalent in patients with COPD and particularly uncontrolled asthma, and patients with such chronic diseases; psychosocial support may be helpful, alongside the treatment of existing disease.

Key words: asthma, COPD, emotional status, depression, anxiety.

INTRODUCTION

Psychiatric comorbidities are frequently observed in patients suffering from chronic somatic disorders. These psychiatric comorbidities have a significant negative impact on the quality of life of the patients (1). Asthma and chronic obstructive pulmonary disease (COPD) are a chronic health problem that encompasses the patient's entire lifetime, and causes significant mental and social problems in addition to physical symptoms. Emotional disorders, including anxiety and depression are more prevalent in COPD and asthma as compared to the general population (2,3,4). Based on review of the literature, the prevalence of anxiety and psychological disorders among bronchial asthma patients can be estimated at 30–52% (5,6,7). Similarly, high frequency of anxiety and depression has been demonstrated in COPD (8).

The aim of the present study, firstly was to assess and compare the emotional status of patients with asthma and COPD and secondly was to investigate the effects of severity of disease on emotional status.

MATERIALS AND METHODS

A cross-sectional survey study was setup to evaluate and compare the prevalence of the anxiety and depression in patients with COPD and asthma. The consecutive 132 patients, who were diagnosed with stable asthma (according to Global Initiative for Asthma (GINA) criteria) (1) and stable COPD (according to Global initiative for Chronic Obstructive Lung Disease (GOLD) criteria) (9) in Sakarya University Hospital (Turkey) in March-September 2015 period and who have not received at least last one year an antidepressant and any anxiolytic were included in the present study. The patients who were receiving a therapy for psychiatric disease or those with another chronic disorder (chronic heart disease, diabetes, coronary artery disease, malignancy) that could affect emotional status were excluded from the study.

A detailed medical history was obtained, and all patients underwent physical examinations. All pulmonary function tests were performed by the same technician on the SpiroAnalyser ST-300 instrument. The patients, who provided informed consent, were included in the study, and the questionnaire form evaluating the demographic characteristics, anthropometric measurements, and the features of the asthma and COPD were administered to all patients. All patients filled out the ACT (asthma control test), CAT (COPD Assessment Test), Beck and Hamilton surveys and the results were recorded on the questionnaire form. Informed consent was obtained from all participants, and the study was approved by the Ethics Committee of the Faculty of Medicine, Sakarya University.

Assessment of asthma control: The patients were administered a 5-item questionnaire assessing their asthma symptoms, use of rescue medications, and the impact of asthma on daily life.(10) In asthma control test, a score of 25 points indicated full control, 20-24 points indicated controlled disease, 16-19 points indicated partial control, and score below 15 indicated uncontrolled disease. In statistical analysis, patients achieving a score higher than 20 were assessed as a single group (control and full control), and patients achieving a score lower

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than 19 were assessed as a separate group (partial control and uncontrolled). The validity and reliability of this questionnaire has been previously shown in adult Turkish patients with asthma (11).

Assessment of COPD severity: The combined COPD assessment scaling was applied according to GOLD 2011 criteria including the airflow limitation, CAT and exacerbation risk. Patients were divided into four groups, GOLD A, B, C, and D (9).

Assessment of emotional status: For evaluation of emotional status, Beck Anxiete Inventory (BAI) and Beck Depression Inventory (BDI) were used. The BAI and BDI are a widely used, 21-item standardized self-administered questionnaire that measures various symptoms of anxiety-depression and describes the somatic and cognitive-affective symptoms on a four-point scale that ranges from 0 to 3. A higher score indicating more severe anxiety-depression and in this study cutoff point for BAI of ≥17 points and for BDI of ≥10 points (12,13).

The Hamilton Depression Rating Scale (HDRS) was used to evaluate depressive symptoms. This instrument consists on 17 questions that are quantitatively classified accordingly to the intensity of symptoms. Total score is a discrete variable; higher scores imply greater symptom severity and the cutoff point for remission of symptoms is ≤8 points (14). Anxious symptoms were evaluated using the Hamilton Anxiety Rating Scale (HARS). It comprises 14 items and each item is scored accordingly to intensity of occurrence; total score is the sum of the points assigned for all items and it ranges from 0 to 56. Higher total scores indicate more severe anxiety symptoms, and the cutoff point for remission of symptoms is ≤15 (14).

Statistical analysis

The SPSS for Windows 21.0 (IBM) software package was used in the statistical analysis of the study. In the present study, the continuous variables were expressed with mean value, standard deviation, maximum and minimum values. The Shapiro-Wilk test was used for the normality test of continuous variables. Normally distributed continuous variables were compared by means of variables were evaluated with samples t test, nonparametric variables between the two groups were made by Mann-Whitney U test. General linear analyses were used to determine the relation between emotional scales and asthma and COPD adjusting for age and sex.

RESULTS

Fifty five female and 77 male, a total of 132 patients were included in the study. The characteristics of the patients are presented in table 1.

Table 1: *Demographic characteristics of patients*

	Asthma n=78		COPD n=54	
	mean ± sd	min/max	mean ± sd	min/max
Age	49.0 ± 12.0	19/70	65.4+8.5	35/51
BMI (kg/m2)	29.1± 5.6	19.1/43.3	24.8+4.2	18.4/35.3
FVC (%)	84.8± 18.2	34/123	63.4+15.0	30/96
FEV1 (%)	76.8± 19.3	35/117	44.9+15.3	18/72
FEV1/FVC	76.9± 7.9	54/100	56.7+10.7	31/69
PEF (%)	79.1± 22.8	34/129	45.3+23.6	11/127
ACT	17.1± 5.0	10/25	na	na
GOLD stage A/B/C/D	na	na	4/10/20/20	na

BMI: Body Mass Index; FVC: Forced Expiratory Volume; FEV1: Forced Expiratory Volume in 1.second; PEF: Peak Expiratory Volume; ACT: Asthma Control Test score; GOLD: Global initiative for Chronic Obstructive Lung Disease

The prevalance of psychiatric disorders in asthma:

For Beck scales; the mean anxiety score was 11.6+8.2 and 21 patients (26.9%) had anxiety and the mean depression score was 6.90+4.8 and 22 patients (28.2%) had depression.

For Hamilton scales; the mean anxiety score was 9.0+6.7 and 17 patients (21.8%) had anxiety and the mean depression score was 6.00+4.8 and 24 patients (30.8%) had depression. (Table:2)

Table 2: *The comparison of asthma and COPD.*

Mean+SD	Asthma n:78	COPD n:54	p value	Adjusted p value*
Beck-Anxiety	11.6±8.2	14.3+7.0	0.047	
Hamilton- Anxiety	9.0±6.7	14.4+10.4	<0.001	
Beck-Depression	6.9±4.8	13,37+9.8	<0.001	0.012
Hamilton- Depression	6.0±4.8	9,5+6.3	<0.001	<0.001
				0.001
				0.002

*Adjusted for age and sex.

The relationship between asthma control status and emotional status:

When the cut-off for asthma control was taken as 20, 49 patients (62.8%) had uncontrolled asthma, and 29 patients (37.2%) had controlled asthma. The patients with uncontrolled asthma achieved significantly worse scores in anxiety and depression for both scales (Table 3).

Table 3: *The relationship between ACT score and anxiety and depression*

Mean+SD	Uncontrolled asthma (ACT<20) n:49	Controlled asthma (ACT≥20) n:29	p value	Adjusted p value*
Beck-Anxiety	13.0±8.7	9.1±6.8	0.042	
Hamilton- Anxiety	10.3±6.6	6.8±5.5	0.026	
Beck-Depression	7.7±4.9	5.5±4.3	0.045	0.042
Hamilton- Depression	7.0±4.4	4.4±3.8	0.022	0.026
				0.045
				0.022

*Adjusted for age and sex.

The prevalance of psychiatric disorders in COPD:

For Beck scales; the mean anxiety score was 14.3+7.0 and 18 patients (33.3%) had anxiety and the mean depression score was 13.4+9.8 and 32 patients (59.3%) had depression.

For Hamilton scales; the mean anxiety score was 14.4+10.4 and 20 patients (37%) had anxiety and the mean depression score was 9.5+6.3 and 30 patients (55.6%) had depression. (Table 2)

The relationship between COPD stages and emotional status:

There was no significant correlation between GOLD stages and spirometric values and emotional disorders in COPD patients.

Comparing asthma and COPD for emotional status:

There was significant difference between patients asthma an COPD in terms of anxiety and depression level (Table 2). The patients with COPD achieved significantly worse scores in emotional status.

The relationship between emotional status and general patient characteristics:

There was a positive correlation between age and emotional status except this BAI. There was no significant differences between sex and emotional status except this BDI. Results were given in Table 4.

Table 4: *The correlation between age, sex, and duration of disease and emotional status.*

	Beck-Anxiety		Hamilton-Anxiety		Beck-Depression		Hamilton-Depression	
	p	r	p	r	p	r	p	r
Age	0.404	0.073	0.001	0.283	0.016	0.210	0.011	0.220
Sex	0.502		0.269		0.020		0.207	
Duration of disease	0.057	0.166	<0.001	0.322	<0.001	0.384	0.001	0.278

DISCUSSION

The results from the current study indicate that patients with COPD have increased symptoms of anxiety-depression when compared with asthma. High rates of depression in patients with COPD has been shown in previous studies (3). Rates of anxiety symptoms are even higher, ranging from 13% to 51% (15), and are higher than in patients with heart failure, cancer, and other medical conditions (8). This situation can be explained by the fact that symptoms are continuous and progressive in COPD patients. Whereas asthma symptoms are intermittent; and this patients have an asymptomatic periods usually.

In COPD; dyspnea, related physical inactivity, and frequent exacerbation leads to social isolation which leads to more fear and depression. Panic-driven responses to dyspnea, a characteristic feature of COPD, have been associated with increased psychopathology in respiratory disorders (16). Fatigue, decreased interest, lack of energy, sleep disturbance, appetite change, poor concentration, and loss of sexual interest contributes on emotional disorders (3).

Increased psychiatric morbidity in asthma is consistently reported in previous studies (2-5). Newly-diagnosed asthma was associated with an approximately two-fold increased risk of developing anxiety disorder compared with a non-asthma matched comparison group (17). Cooper et al showed that, the prevalence of anxiety was 47.3%, depression was in 22.3% in asthmatic patients (18). Another study in Turkey, revealed that 33.3% had anxiety, and 47.7% had depression in asthmatic patients (19). Our study results are consistent with those findings.

The present study evaluated the effects of the disease severity on the level of anxiety and depression. When uncontrolled asthma were compared to under-controlled patients, a significant difference was found in terms of anxiety and depression scores, but there was no significant difference in terms of GOLD stage in COPD patients.

Previous studies examining the association between asthma severity and depression have suggested that positive association (19-21). In another study, anxiety and depression were more frequent among patients with "difficult" asthma (5). In the study by Trzcińska et al, the prevalence of depression and its severity were significantly correlated with the degree of asthma control (6). The results of Di Marco's study show a significant correlation between poor level of asthma control and both anxiety (OR: 3.76) and depression (OR: 2.45), which are frequent disorders in asthmatic subjects (22). The neuro-physiological mechanism of the relationship between depression and asthma has been evidenced in the previous studies (23).

Is the bad asthma control worse in those with a psychiatric disorder, or may it be that emotional status is worse in patients with uncontrolled asthma? There is not a straightforward answer to this question as the present study has not been designed as to address this casual relationship. Age, sex, BMI, and as the basic parameters of asthma FEV1, FVC, and PEF values were similar in patients with uncontrolled asthma and controlled asthma. In our opinion, anxiety and depression are more common in uncontrolled asthma group and the statistical significance of this relationship is stronger. Thus, it is more plausible to suggest that emotional disorders are the result of poor asthma control.

The present study has several limitations. It is cross-sectional; therefore, without a control group of healthy individuals, the diagnosis of anxiety and depression was not performed according to conventional criteria without consulting psychiatrists. In addition, we did not consider socioeconomic factors which could affect adherence and consequently contribute to anxiety and depression as well.

It was concluded that emotional impairment is prevalent in patients with uncontrolled asthma and COPD, and holistic treatment approach should include psychological support and patient education in addition to the provision of medical therapy.

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