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The Effect of Personality Disorders on Asthma Severity and Quality of Life

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ABSTRACT

Assesment of health related quality of life (HRQL) is increasingly recognized as an important part of the patient care in asthma. We aimed to evaluate the effect of personality disorders (PDs) on HRQL and the severity of disease in asthmatic patients.

Ninety seven consecutive patients with asthma and ninety healthy controls were included. All patients completed a Short Form-36 health survey (SF-36) and Structured Clinical Interview Form for DSM-III-R Axis-II Disorders (SCID-II).

All SF-36 questionnaire scores of asthmatic patients were significantly lower than the controls. There were statistical differences between the asthma severity and the mean scores of vitality and emotional role difficulties of HRQL's subdomains ($p=0.03$, $p=0.014$, respectively). There was a weak but statistically significant correlation between the scores of pain and emotional role difficulties, and forced expiratory volume in 1 second (FEV₁) ($r=0.27$, $p=0.007$; $r=0.24$, $p=0.01$, respectively). When compared to healthy controls, patients with asthma had higher prevalence of PDs ($p=0.0001$). The most common PDs found in asthmatic patients were obsessive-compulsive and avoidant PDs. HRQL values of asthma patients with PDs were significantly lower than patients without PDs except for the physical functioning subscores on HRQL.

We conclude that patients with asthma have higher prevalence of PDs, which is associated with their poor quality of life. A psychiatric evaluation may be beneficial in patients with asthma if a concomitant PD is suspected.

Keywords: Asthma; Asthma severity; Personality disorders; Quality of life; SCID-II; SF-36

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INTRODUCTION

Asthma is a multifactorial lung disease that is associated not only with significant medical morbidity,

but also it has important personal, social and economic impacts.¹ Asthma not only affects the physical function of the individual, but also has a negative impact on the emotional and social functions leading to a poor quality of life (QoL) in these individuals.²⁻⁵ The importance of these restrictions on social life may be greater in severe asthma or when symptoms are inadequately controlled.² Therefore, the assessment of health related quality of life (HRQL) is an important part of management in asthma.^{6,7} HRQL refers to a sense of well-being and satisfaction experienced by people under their current life conditions.⁸ It can be defined as "the functional effect of illness and its consequent therapy upon a patient" and this definition emphasizes the subjective nature of an illness in which cognitive, emotional, and social factors, expectations, and coping style modulate the personal burden of health.⁹

In addition to the effects of asthma on QoL, several psychosocial variables including personality have been implicated as potential factors that may contribute to asthma severity.¹⁰ Dyspnea perception in asthma patients depends not only on functional status of the respiratory system but also on the function of psychopathology and the background personality of the individual.¹¹ Furthermore, personality disorders (PDs) may also affect the QoL of patients.¹²⁻¹⁴ PDs are characterized by enduring deviating patterns of perceiving, relating, and thinking about the environment that are exhibited in a wide range of social and personal contexts. Such patterns lead to "clinically significant distress or impairment in social, occupational, or other important functions".¹⁵ Frankenburg and Zanarini demonstrated an association between DSM-III-R borderline PDs and chronic physical illness in a clinic study.¹⁶ Cramer et al. reported that, PDs appear to be more important predictors of QoL than somatic health and Axis I disorders.¹⁴ Personality and psychotic disorders are both characterized by a chronic course and thus may be expected to have an impact on patients' QoL.¹⁷ Previous studies showed that asthma patients appear to have a high prevalence of anxiety disorders.¹⁸⁻²⁰ It is known that the feeling of anxiety lies behind the PDs.²¹ We hypothesized that PDs are more often in patients with asthma and can further worsen their QoL.

MATERIALS AND METHODS

Study Design and Patient Population

This study is in accordance with the Declaration of Helsinki. A written informed consent was obtained from every subject enrolled into the study after they were told about the design, aim and details of the study. We designed a cross-sectional analytic study. We enrolled a convenience sample of 97 patients with chronic, stable asthma [F/M: 74/23 (76.3%, 23.7%)] applied by the outpatient chest diseases clinic of our university hospital between May, 2006 and March, 2010. Ninety healthy control group members [F/M: 63/27 (70.0%, 30.0%)] were enrolled as the control group. Controls were chosen from the hospital or university staff and healthy patient's relatives. They didn't have asthma or any respiratory complaints. The mean ages were comparable in both groups [asthma group: 42.7 ± 11.7 yrs and healthy control group: 44.1 ± 12.1 yrs, $p=0.43$]. The diagnosis of asthma was based on the criteria defined by the Global Initiative for Asthma guidelines (GINA).²² The exclusion criteria for the asthma patients and healthy controls were: acute asthma attacks, other pulmonary diseases history, cardiovascular or any other systemic disease like diabetes mellitus, thyroid and renal disorders, chronic inflammatory diseases, uncontrolled hypertension, pregnancy, puerperal women using of any medication for a psychiatric disorder, and the presence of any organic disorders that might affect the psychiatric assessment. To prevent any bias and side effects of medication, we excluded asthma patients hospitalized or discharged from the hospital in the last 6-month. Generally, inhaled steroids and long-acting β_2 -agonists were used as medication. No patients took intravenous, nebulized, or oral β_2 -agonist, or intravenous aminophylline, or systemic corticosteroids, or immunosuppressive therapy during the 6-month period. Patients also had to be exacerbation-free during this period. The patients who used psychiatric medicine were excluded from the study. Only patients and controls that voluntarily filled in the questionnaire and fulfilled all the questions were included. Subjects who had PDs were referred to psychiatry outpatient clinic for getting detailed information about their disorders and when the patients accepted to be helped, they were followed up by a psychiatrist.

The demographic features, disease duration, clinical

symptoms, and physical findings were all recorded. Pulmonary function tests were performed for each person by the same technician. All people completed a Short Form-36 health survey (SF-36) to determine the HRQL and Structured Clinical Interview Form for DSM-III-R Axis-II Disorders (SCID-II) to determine PDs.

The Assessment of Asthma Diagnosis and its Severity

Diagnosis of asthma was based on clinical history, reversibility of the forced expiratory volume in 1 second (FEV₁), or peak expiratory flow >15% and diurnal variations of peak expiratory flow rate >20% according to GINA criteria. Patients were classified into four groups according to the GINA guidelines including mild intermittent, mild persistent, moderate persistent and severe persistent.²²

Pulmonary Function Testing

Pulmonary function tests were performed using a calibrated flow sensor spirometer (Model D-97204 Jaeger, APS-Pro; Hoechberg, Germany) according to European Respiratory Society Standardization.²³ The best of three reproducible maximal flow-volume loops were selected. The principal endpoint was the estimated value of the FEV₁ in addition to forced vital capacity (FVC) and ratio of FEV₁/FVC were recorded.

Assessment of Quality of Life

To evaluate the effect of asthma on QoL, we used the SF-36 Health Survey, which is based on 36 items to represent 8 health domains; social functioning, physical functioning, emotional role difficulties, physical role difficulties, bodily pain, vitality, mental health and general health. The score in each category may be from 0 to 100 points (mean value calculated on the basis of individual items included within a given category), which results in a linear dependence. The higher the scores indicate the higher the evaluation of a given QoL category. SF-36 is a standard diagnostic tool evaluating various health-related aspects of QoL over the previous 4-week period.^{24,25} The validity, sensitivity, reliability, internal consistency and stability as well as test-retest reliability have been confirmed and documented by approximately 4000 publications.^{25,26} Work on the validity and reliability of the scale in our country was conducted by Pinar in 1995.²⁷

Personality Disorders

The SCID-II is a structured method of an interview developed according to the DSM-III-R classification, which provides help in diagnosing axis II PDs.²⁸ The translation of assesment into Turkish and administration of the SCID-II have been performed previously by Sorias et al.²⁹ The Turkish version of this section has a reliability of 0.95 (kappa).³⁰

Statistical Analysis

Statistical pocket for Social Sciences (SPSS) 18.0 package program has been used to perform the statistical analysis. Numeric values have been expressed as arithmetic mean \pm SEM whereas nominal values were given as *n* (%). For SF-36 scores t-test for independent samples was applied. A *p* value less than 0.05 was considered as statistically significant.

RESULTS

The majority of the study population consisted of patients with mild persistent asthma (*n*=60, 61.85%). There were no differences in age, gender, smoking history, education and occupation status between the asthma patients and controls (*p*>0.05). Demographic data were shown in Table 1.

The mean scores on the eight dimensions of QoL in asthma patients were significantly lower than the controls (*p*=0.0001 for all) (Table 2).

A weak but statistically significant negative correlation was found between the scores of physical function level, physical role difficulties, pain and age of the asthma patients of our study group (*r*=-0.25, *p*=0.001; *r*=-0.14, *p*=0.046; *r*=-0.14, *p*=0.044, respectively). Similarly, there was a negative correlation between the scores of physical function level and physical role difficulties and disease duration (*r*=-0.22, *p*=0.028; *r*=-0.22, *p*=0.026, respectively) (Table 3). No differences were found between all scores of QoL and smoking history and gender (*p*>0.05). There were statistical differences between the severity of asthma and mean scores of subdomains of vitality and emotional role difficulties of HRQL (*p*=0.03, *p*=0.01, respectively). The other subdomains of SF-36 were not significantly changed by the disease severity (*p*>0.05). There was a weak but statistically significant positive correlation between the scores of pain, emotional role difficulties and FEV₁ (*r*=0.27, *p*=0.007; *r*=0.24, *p*=0.016, respectively) (Table 3).

Table 1. The sociodemographic data in asthma patients and control group.

Variables	Asthma patients (n= 97)	Control group (n=90)	χ^2	t	p
Age (yrs)	42.7 ± 11.7	44.1 ± 12.1	0.779		0.437
Sex					
Female	74 (76.3%)	63 (70.0%)	0.943		0.332
Male	23 (23.7%)	27 (30.0%)			
Education					
Illiterate or elementary education	4 (4.1%)	4 (4.4%)	0.595		0.743
Secondary education	80 (82.5%)	70 (77.8%)			
Higher education	13 (13.4%)	16 (17.8%)			
Occupation status					
Working	29 (29.9%)	37 (41.1%)	2.661		0.103
Out-of-work	68 (70.1%)	53 (58.9%)			
Smoking history					
Nonsmoker/ exsmoker	85 (87.6%)	74 (82.2%)	1.072		0.301
Active smoker	12 (12.4%)	16 (17.8%)			
Disease (duration(yrs))	10.60 ± 10.45				

All *p* values are higher than 0.05.

Table 2. The mean scores of Short Form-36 Health Survey in asthma patients and control group.

Topics	Asthma patients (n=97)	Control group (n=90)	<i>p</i>
Physical Functioning	70.93 ± 22.64	85.94 ± 16.41	0.0001*
Physical role difficulties	54.12 ± 45.31	86.24 ± 22.65	0.0001*
Pain	59.60 ± 25.06	73.03 ± 21.48	0.0001*
General Health	47.24 ± 21.95	70.31 ± 16.99	0.0001*
Energy (Vitality)	57.57 ± 21.59	69.35 ± 16.51	0.0001*
Social Functioning	68.81 ± 25.13	86.24 ± 18.17	0.0001*
Emotional role difficulties	53.68 ± 45.41	82.52 ± 27.51	0.0001*
Mental health	60.56 ± 21.83	74.04 ± 14.73	0.0001*

**p*<0.05=significant

Values are M ± standard deviation (SD)

Table 3. Statistical data of distribution of quality of life according to sociodemographic and respiratory function tests for asthma patients.

Pearson correlation analysis	Physical Functioning		Physical role difficulties		Pain		Emotional role difficulties	
	r	p	r	p	r	p	r	p
Age	-0.25	0.001*	-0.14	0.046*	-0.14	0.044*	-0.08	NS
Duration of asthma	-0.22	0.028*	-0.22	0.026*	NS		NS	
FEV ₁		NS		NS	0.27	0.007*	0.24	0.016*
FEV ₁ /FVC		NS		NS	0.19	NS		NS
Severity of disease		NS		NS	NS			NS

There was no statistically significant difference between these items and the scores of the other 4 domains of SF-36 questionnaire except from these mean scores.

**p*<0.05= significant (S)

p>0.05= no significant (NS)

r = correlation coefficient

Personality Disorders and Quality of Life in Asthma

Table 4. Prevalance of personality disorders by SCID-II in asthma patients and control group.

	Asthma patients (n=97)	Control groups (n=90)	χ^2	p	Odds ratio	95% CI
PDs	41/97 (42.3%)	15/90 (16.7%)	14.58	0.0001*	3.58	1.76-7.81

* $p < 0.05$: significant

PDs: personality disorders

CI: 95% confidence intervals

SCID-II: Structured Clinical Interview Form for DSM-III-R Axis-II Disorders

Table 5. Distribution of DSM-III-R diagnostic categories in asthma patients and control group with PDs.

	Asthma patients with PDs (n=41)	Control group with PDs (n=15)
Avoidant	14 (34.1%)	4 (26.7%)
Dependent	-	1 (6.7%)
Obsessive-compulsive	11 (26.8%)	6 (40.0%)
Paranoid disorder	5 (12.2%)	-
Narcissistic disorder	-	1 (6.7%)
Borderline disorder	8 (19.5%)	2 (13.3%)
Antisocial disorder	2 (4.9%)	1 (6.7%)
Passive-aggressive	1 (2.4%)	-
All personality disorders	41/97 (42.3%) * [†]	15/90 (16.7%) * [†]

* p : 0.0001 [†] χ^2 : 14.58

PDs: Personality disorders

There were no dependent, histrionic, schizoid and schizotypal personality disorders in patients participate in this study.

No significant correlation has been found between the other scores and airway obstruction parameters (FEV₁, FEV₁/FVC and stage of disease).

We found PDs in 42.3% of the asthmatic patients (n=41) and 16.7% of the healthy controls (n=15) ($p=0.0001$) (Table 4). The most frequent PDs were avoidant and obsessive-compulsive disorders among asthmatic patients (34.1% and 26.8%, respectively) (Table 5). The arithmetic mean scores of SF-36 of asthma patients with PDs were significantly lower compared to patients without PDs ($p=0.033$ for

physical health difficulties, $p=0.037$ for pain, $p=0.001$ for general health, $p=0.005$ for vitality, $p=0.011$ for social function level, $p=0.037$ for emotional role difficulties, and $p=0.008$ for mental health), except from physical function level, ($p=0.21$) (Table 6). The scores of SF-36 were not different in healthy controls with and without PDs respectively, ($p=0.503$ for physical function level, $p=0.588$ for physical health difficulties, $p=0.246$ for pain, $p=0.361$ for general health, $p=0.110$ for vitality, $p=0.097$ for social function level, $p=0.455$ for emotional role difficulties,

Table 6. The mean scores of quality of life in asthma patients with and without PDs.

Topics	Asthma patients without PDs (n=56)	Asthma patients with PDs (n=41)	p-Value
Physical Functioning	73.39 ± 22.05	67.58 ± 23.28	0.214
Physical role difficulties	62.50 ± 45.47	42.68 ± 43.02	0.033*
Pain	64.14 ± 24.63	53.41 ± 24.60	0.037*
General Health	53.60 ± 21.93	38.56 ± 19.00	0.001*
Energy (Vitality)	62.76 ± 22.96	50.48 ± 17.45	0.005*
Social Functioning	74.33 ± 24.81	61.28 ± 23.84	0.011*
Emotional role difficulties	61.87 ± 44.68	42.49 ± 44.51	0.037*
Mental health	65.55 ± 23.30	53.75 ± 17.73	0.008*

Values are M ± standard deviation (SD)

PDs: Personality disorders

* $p < 0.05$ =significant

and $p=0.153$ for mental health). Gender did not affect the distribution of PDs. There were also no statistical differences in age, gender, disease duration, smoking history, FEV₁, FEV₁/FVC and the severity of disease between asthmatic patients with and without PDs ($p>0.05$). Besides, there was no relation between smoking and the presence of PDs ($\chi^2=0.335$, $p=0.562$).

DISCUSSION

We showed that the patients with asthma had more PDs compared with the healthy controls in our study. Avoidant and obsessive-compulsive PDs were the most common PDs in these patients. We found that the presence of PD in patients with asthma was associated with poorer QoL.

Concomitant occurrence of psychiatric disturbances and asthma has been reported in some studies.³¹⁻³³ This especially refers to anxiety and depressive syndromes.³³ Compared to Axis I psychiatric disorders (e.g., major depression, anxiety and somatoform disorders) or symptoms, the effects of PDs or features on QoL in patients with medical illnesses have been less frequently examined.

A comprehensive literature search identified a few articles about the PDs in asthmatic patients.^{10,34} In one of them, Bauer et al. did not observe an increase in PDs in a small number of asthmatic patients ($n=59$).¹⁰ In another study, the patients who had character disorders were defined as “difficult” asthma patients.³⁵ Recently in a study by Lev-Tzion and co-workers, current active asthma was associated with an increased likelihood of any mental disorder, and specifically with mood and anxiety disorders, introvert PDs (including avoidant, dependent, obsessive-compulsive and schizoid and adjustment disorder) in male army recruits and soldiers.³⁶

Ley has suggested that explanations have been proposed for the association between asthma and mental disorders. Non-pathological pulmonary obstructive component may induce dyspnea and dyspneic fear. So, a chronic stressful and potentially life-threatening disease's presence, like asthma, may increase worry and anxiety.³⁷ It is known that the feeling of anxiety lies behind the PDs.²¹

Some investigators have studied how PDs are associated with impaired functioning. Andreoli et al. found that patients with PDs had poorer work and

interpersonal relationships.³⁸ Individuals with PDs during adolescence reported significantly more adverse environmental context, low social support, and relationship problems. Patients with PDs may also be characterized by failures of social integration as a result of an inability to maintain social relationships.¹⁷

Skodol et al. reported that PDs are significant contributors to impairment in social and emotional functioning and reduced healthcare in patients with major depressive disorder.³⁹ Chen et al.'s findings strongly suggest that PDs during adolescence may account for more subsequent QoL impairment than do the adolescent Axis I disorders.¹³ Cramer et al.'s study demonstrated in a relatively unselected population that having PDs implies poor QoL and impairment in functioning.¹⁴ We have found that PDs were common in asthmatic patients when compared to the healthy controls and the presence of PDs was associated with worse QoL. These results reinforce the results of previous studies in patients with other medical conditions suggesting an adverse impact of PDs on QoL in these patients.

Previous studies have shown that patients with asthma have impaired QoL.³⁻⁵ Adams et al. and Ware et al. showed that QoL was more impaired in asthma patients than in those who did not have the disease.^{3,4} Hooi et al. also reported that asthmatic patients with moderate or severe disease had significantly lower scores in all domains of SF-36 questionnaire.⁵ Our results are similar to previous studies as we also found that asthmatic patients had significantly lower QoL scores than the controls.

In addition, we also investigated association between FEV₁, FEV₁/FVC and stage of disease and HRQL. We showed that as %FEV₁ decreased, the mean scores of bodily pain and emotional role difficulties significantly decreased. We also found differences between the severity of asthma and the scores of vitality and emotional role difficulties in our study. The score of vitality was better in mild and moderate persistent group compared to the severe persistent group and the score of emotional role difficulties was better in mild intermittent and persistent asthma groups when compared to severe persistent group. However, no significant correlation was found between the other scores of HRQL and airway obstruction parameters (FEV₁, FEV₁/FVC). Hooi, Lobo and Moy reported that there was a good correlation between FEV₁ or stage of

disease and HRQL scores.^{5,40,41} In addition, we didn't find any statistical differences between the asthma patients with PDs and severity of disease.

Our study had several limitations. The relatively small sample size was the limitation of the study. But this was due to strict inclusion and exclusion criteria to exclude other chronic medical illnesses for eliminating the confounding effect of other comorbid diseases on QoL to focus especially on asthma. We tried to take all suitable patients and control subjects consecutively to minimize bias. There is a kind of overlap between some of Axis-I psychiatric disorders and Axis-II, and it was better that all the participants were evaluated by a psychiatrist for presence or absence of Axis-I disorders, as a result it could be considered as another limitations.

We showed that asthma patients of our study group had more PDs compared to the healthy controls, avoidant and obsessive-compulsive PDs being as the most common. We also showed that the asthma patients with PDs had poorer QoL. Results of our study suggested that PDs were associated with decrements in QoL of asthmatic patients. This study has several potentially prominent clinical implications. Our findings also underline the importance of clinicians to take PDs into account in their psychiatry consultations. So appropriate treatment of unfavorable PDs in these patients may help to improve their QoL. Moreover, further studies in larger samples are needed to explain these relationships.

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