Frequency of depression in patients with Bronchial Asthma

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AS conceived idea, ZI RU drafted the study, RU collected data, SU AS HN SN did statistical analysis & interpretation of data, HN AS ZI RU SN critical reviewed manuscript, All approved final version to be published

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The Authors declares that there is no conflict of interest.

Abstract

Background: Bronchial asthma is a common chronic illness that affects more than 300 million people worldwide and is considered the fourth commonest disease in adults in the United States.[1] Bronchial asthma is diagnosed on the basis of episodic symptoms of airflow obstruction and objective measurement of lung function. The prevalence of depression has been estimated to be up to 50% among the general population and even higher among bronchial asthmatics. The purpose of this study was to determine the frequency of depression in patients with bronchial asthma.

Methodology: This descriptive cross sectional study was conducted in the department of pulmonology ward Ayub Teaching Hospital, Abbottabad-Pakistan from November 2017 to April 2018. All patients of either gender, diagnosed with bronchial asthma, irrespective of duration of disease and 18 to 60 years of age were included in the study. Patients with substance abuse, prior history of psychiatric illness and co-morbidities like COPD, stroke, chronic renal failure and heart failure were excluded. Sample size was calculated by using WHO software assuming 32.5% frequency of Depression in Bronchial asthma2 with Confidence level 95% and 8% margin of error.

Results: Out of 132 patients, 62% patients were male while 38% patients female. Mean age was 42 years with SD ± 12.771. 40% of patients were found to be suffering from depression.

Conclusion: Our study concludes that depression is more prevalent in bronchial asthma patients.

Key words: Depression; Bronchial Asthma; Ayub Medical College

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Introduction

Bronchial asthma is a common chronic illness that affects more than 300 million people worldwide and is considered the fourth commonest disease in adults in the United States.[1] The concept of bronchial asthma control was clearly outlined in the most recent revision of the Global Initiative for bronchial asthma (GINA) guidelines. This concept consists of bronchial asthma severity, bronchial asthma education, and drug treatment based on a step-up or step-down approach.[3] Effective and in time treatment allows bronchial asthma to be well controlled in most patients. Bronchial asthma is

diagnosed on the basis of episodic symptoms of airflow obstruction and objective measurement of lung function.

The prevalence of depression has been estimated to be up to 50% among the general population and even higher among bronchial asthma tics.[4] Age, poverty and race are considered leading risk factors for bronchial asthma .There is increased risk of anxiety and other mood symptoms. There are heterogeneous depressive disorders which fluctuant in character and present with different grades of intensity and variegated influence on the patient's somatic status, also affecting his/her spiritual, psychical and emotional condition.[5] The notion that emotional stress can precipitate or exacerbate acute and chronic bronchial asthma has been recognized anecdotally for many years. Although the causal relationship between bronchial asthma and depression is not fully understood, depression affects the outcome of bronchial asthma management.[2] Studies show that depression can influence symptomatology of bronchial asthma in 40-80% of patients.[5] Emotions such as depression, anxiety, anger, happiness, excitement, satisfaction and neutral emotions have been shown to influence forced expiratory volume in 1 second (FEV1), peak expiratory flow rate and airways.[2,7] Diagnosis of depressive disorders may not be possible in a general medical visit. It is not practical to evaluate all patients by a psychiatrist, and therefore instruments such as the general health questionnaire (GHQ), which measures psychological distress related to general medical illness, are useful for screening patients in the physician's office.[2]

Krommydas et al reported that individuals with bronchial asthma and symptoms of depression (measured by the Personal Disturbance Scale (DSSI/sAD) had significantly lower FEV1% than individuals with bronchial asthma who showed no symptoms of depression. It is not clear from this study, however, whether the results are due to the depression or the depression is due to the reduced lung function.[2,8] The Beck depression inventory is used for diagnosis of depression in bronchial asthma patients. The original BDI, first published in 1961, consisted of twenty-one questions about how the subject has been feeling in the last week. Each question has a set of at least four possible answer choices, ranging in intensity.

When the test is scored, a value of 0 to 3 is assigned for each answer and then the total score is compared to a key to determine the depression's severity. The standard cut-offs are as follows:8

- 0–9: indicates minimal depression
- 10–18: indicates mild depression
- 19–29: indicates moderate depression
- 30–63: indicates severe depression.

Higher total scores indicate more severe depressive symptoms.

Depressive symptoms were associated with poorer bronchial asthma control and quality of life, as well as with lower rates of adherence to controller medications. Age, poverty and race are risk factors for developing bronchial asthma. Various studies have reported that the prevalence of depression in patients with bronchial asthma is 7.5%-41 %.[1,2,8] In a study done in Poland by trzeinska H et al prevalence of depression in bronchial asthma was 32.5%.

The rationale for my study is that it is easily conducted, cost effective, patient acceptable and there is no local study in this correlation. The result may provide to local physicians and Pulmonologists, an integrated treatment programs for assessing the effects of this treatment on variables such as the depression itself, compliance, self-management, pulmonary function, bronchial asthma symptom exacerbations, overall bronchial asthma severity, and bronchial asthma -related mortality in order to inhibit the development of depression and the negative psychological and physical health effects that may follow bronchial asthma.

Operational Definitions:

Bronchial asthma: Bronchial asthma was diagnosed by Spirometry in all patients showing

- FEV1 <80% predicted & FEV1/FVC ratio <70%.
- Post bronchodilator showing increase in FEV1 of >15% (and >200ml) or peak expiratory flow variability of >20% 15 mint after in-halation of standard dose of beta-2 agonist.

Depression: Depression was diagnosed by a questionnaire, Beck depression inventory.

Methodology

This Descriptive cross sectional study was carried out in the department of pulmonology ward Ayub teaching hospital Abbottabad from November 2017 to April 2018 after approval from hospital ethic board . 132 patients were included in the study using WHO software assuming 32.5% frequency of Depression in Bronchial asthma with Confidence level 95% and 8% margin of error through consecutive non-probability technique. All patients of either gender, diagnosed with bronchial asthma, irrespective of duration of

disease and 18 to 60 years of age were included in the study. Patients with substance abuse, prior history of psychiatric illness and co-morbidities like COPD, stroke, chronic renal failure and heart failure were excluded.

All patients meeting the criteria for asthma and depression were enrolled in the study. The purpose and benefit of study was explained to all the patients and written informed consent was taken. A complete history was obtained followed by examination. All the above mentioned information including name, age, gender and address were recorded in a predesigned Proforma. Strictly exclusion criteria were followed to control confounders and bias in the study result.

All statistical analyses were done in SPSS version 15. Mean and standard deviation was computed for numerical variables like age. Frequencies and percentages were computed for categorical variables like gender and Depression score. The depression score was stratified among age and gender to see the effect modification. All the results were presented in the form of table and charts.

Results

A total of 132 patients were observed to determine frequency of depression in patients with bronchial asthma.

Among 132 patients 82 (62%) patients were male while 50 (38%) patients were female. (Table 1). Age distribution among 132 patients was analyzed as 24 (18%) patients were in age range 18-30 years, 40 (30%) patients were in age range 31-40 years, 42 (32%) patients were in age range 41-50 years and 26 (20%) patients were in age range 51-60 years. Mean age was 42 years with SD ± 12.771 (Table 2).

Table 1: Gender distribution of study cases

Gender	Frequency	Percentage
Male	82	62 %
Female	50	38 %
Total	132	100 %

Table 2: Age Distribution of study cases

Age	Frequency	Percentage
18-30 Years	24	18%
31-40 years	40	30%
41-50 years	42	32%
51-60 years	26	20%
Total	132	100%

Means age was 42 years with SD ± 12.771

Table 3: Rate of Depression among study cases

Depression	Frequency	Percentage
No (HADS-D Score <11)	79	60 %
Yes (HADS-D Score <11)	53	40 %
Total	132	100 %

Out of 132 patients 53 (40%) patients were found to be suffering from depression (Table 3).

Table 4 and 5 shown stratification of depression with age and gender.

Discussion

Bronchial asthma is a common chronic illness that affects more than 300 million people worldwide and is considered the fourth commonest disease in adults in the United States.[1] The concept of bronchial asthma control was clearly outlined in the most recent revision of the Global Initiative for bronchial asthma (GINA) guidelines. This concept consists of bronchial asthma severity, bronchial asthma education, and drug treatment based on a step-up or step-down approach.[2] Effective and in time treatment allows bronchial asthma to be well controlled in most patients.[1,2] Bronchial asthma is diagnosed on episodic symptoms of airflow obstruction and objective measurement of lung function. The prevalence of depression has been estimated to be up to 50% among the general population and even higher among bronchial asthmatics.[3] Age, poverty and race are considered leading risk factors for bronchial asthma. There is increased risk of anxiety and other mood disorders.

Our study shows that mean age was 42 years with SD

Table 4: Stratification of depression with respect to age distribution of study cases

Age distribution (years)	No (HADS-D Score <11)	Yes (HAD-S Score = 11)
18-30	14	10
31-40	24	16
41-50	25	17
51-60	16	10
Total	79	53

Table 5: Stratification of depression with respect to gender distribution of study cases

Depression	No (HADS-D Score <11)	Yes (HAD-S Score = 11)
No (HADS-D Score < 11)	49	79
Yes (HADS-D Score < 11)	33	53
Total	82	132

± 12.771. Sixty two percent patients were male while 38% patients were female. Sixty percent patients didn't have depression while 40% patients had depression.

In another study Tafti et al. 4 reported mean age of Bronchial asthma tic as 48±17 years which are also comparable with mean age of our study. Anxiety and depression symptoms are relatively common among Bronchial asthma patients and emotions such as anxiety, anger, happiness, excitement, satisfaction and neutral emotions can influence respiratory parameters.[9-11]

In another study anxiety and depression was present in 75.5% and 63.3% Bronchial asthmatics. Tafti et al[12] reported depression in 65.4% patients which is in agreement with our study. Instead of HADS they used GHQ 28 (28-item general health questionnaire) to measure the depressive symptoms.[13,14]

Similar (66.7%) prevalence of depression in Bronchial asthmatics was reported by Asnaashari et al.[14] Espinosa Leal et al[15] reported frequency of anxiety and depression as 44.5%, 24.5% which is lower than that of our findings.

Another study by Espinosa Leal FB et al[15] concluded with our findings where HAD scale results showed that 40% of Bronchial asthma patients presented with anxiety and 38% presented with depression.

There are some controversies regarding the prevalence of anxiety and depression in BA Wang et al16 reported that 70% of Bronchial asthma patients have some degrees of anxiety and depression. Some other studies reported anxiety and depression six times more prevalent in Bronchial asthma patients as compare to general population.

In a Canadian survey with psychiatric interview, anxiety was more prevalent in Bronchial asthma patients than depression. High rates of anxiety and depression in our study may be due to lack of routine psychological counseling in pulmonary wards of hospitals. Gender of Bronchial asthmatics is another potential risk factor affecting patients' prognosis but different studies reported inconsistent results.[17]

In our study, anxiety and depression were equally prevalent in male and female patients. Similarly in study by Wilson et al,[18] asthmatic males and females had similar prevalence of anxiety and depression.

Conversely, in a study by Tafti et al[19] significantly more female patients had depressive symptoms as compare to male patients and Nowobilski et al[20] reported that asthmatic females experience higher degrees of somatic symptoms and anxiety than male patients.

Conclusion

Our study concludes that the incidence of depression was found to be 35% in the patients presenting with bronchial asthma. Higher rates of anxiety and depression among asthmatics were found in this study. The results of this study also revealed that both male and female asthmatics can equally be a victim of anxiety and depression. Rural residents and uneducated asthmatics had higher rate of anxiety and depression as compare to urban residents and educated Bronchial asthmatics.

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