Original Article

Frequency Of Depression In Patients With Chronic Asthma

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Abstract

Objective: To determine frequency of depression in patients with bronchial asthma at Lady Reading Hospital Peshawar.

Study Design: Cross sectional descriptive study.

Place and Duration of Study: This study was conducted at Pulmonology department of Lady Reading Hospital Peshawar, from 22ndJanuary 2019 to 22nd July 2019.

Materials and Methods: A total of 356 patients, of either sex having age ranging from 18 – 60 years presenting with Bronchial Asthma for more than 6 months duration, were included in the study. Pre and Post bronchodilator spirometric parameters like FEV1, FVC & FEVI/FVC were obtained from every patient. All the patients were evaluated for their level of depression according to Beck depression score.Data was analyzed through SPSS version 22.

Result: Of the total 356 asthmatic patients evaluated for depression, 35% (N=125) were male and 65 % (N-231) were female, with mean age of 46.7±8.3 years.
According to Beck depression score, a total of 71% of asthmatic patients were found having depression. Proportion of depression was found high in females (65%) and in patients aged 41 – 50 years (34%). Similarly, the proportion depression was high in patients having asthma for more than one year (72%).

Conclusion: Proportion of depression in asthmatic patients is quite high (71%). Depression is found significantly high in chronic asthmatics (72%), in females (65%) and in age group between 41 – 50 years (72%)

Key Words: Bronchial Asthma, Depression, Beck score.

INTRODUCTION

Asthma is chronic inflammatory disease that affects more than 300 million people worldwide and is considered the fourth commonest disease in adults in the United States where it affects approximately 24 million persons[1]. It is

also the most common chronic disease in childhood, affecting an estimated 7 millionchildren[2].

The prevalence of asthma has increased significantly since the1960s[5]. In 1990, a total of 183 million people were suffering from asthma, globally[3, 4]. In 2015, about 358 million people had asthma and 397,100 died of it, mostly in the developing colountries[2, 3].

Asthma is a disease of antiquity and was recognized in Ancient Egypt[6].The word"asthma"is the Greek word ἅσθμα, which means"panting".[7]Itischaracterized by reversible air flow obstruction, and easily triggering bronchospasms[8]. Symptom include recurrent episodes of wheeze, cough, chest tightness, and shortness of breath, which may occur few times a week or daily according to severity[9].Depending on the person, they may become worse at night orwithexercise[10].

Asthma is thought to be caused by a combination of genetic and environmental factors, like air pollution and allergens[11].Otherpotentialtriggersinclude medications such as aspirin and beta blockers[2].Diagnosis is usually based on the pattern of symptoms, response to therapy overtime, and spirometry[12].Asthma is classified according to the frequency of symptoms, forced expiratory volume in one second(FEV1) and peak expiratory f low rate (PEFR)[13].The single best test for asthma is Spirometry, which is recommended to aid in diagnosis and management[14].

There is no radical cure for asthma. Symptoms can be prevented by avoiding triggers, such as allergens and irritants, and by the use of inhaled corticosteroids[15, 16]. Beta 2 agonists, Muscarinic antagonists, Leukotrien eantagonists, Xanthenes derivatives, Anti IgE antibodies, Oral steroids may be used in addition to inhaled corticosteroids, if asthma symptoms remain uncontrolled[17].

Bronchial Asthma is sometimes difficult to control because of the co-morbidities. Among co-morbidities, psychopathological ones are frequently observed in asthma patients, resulting in a significant negative impact on the quality of their life[18]. Emotional disorders, including anxiety and depression, are more prevalent in asthma compared to the general population. Particularly, prevalence of depression has been estimated to be up to 50% among the general population and even higher among asthmatics[19].

Age, poverty and race are considered leading risk factors for bronchial asthma[3]. There is increased risk of anxiety and other mood symptoms. There are heterogeneous depressive disorders which are fluctuant in character which present different grades of intensity and influence on the patient's somatic status, also affecting his/her spiritual, psychical and emotionalcondition[20].

Psychological stress may worsen symptoms of asthma, it is thought that stress alters the immune system and thus increases the airway inflammatory response to allergens and irritants[20].

The belief that emotional stress can precipitate bronchial asthma[1] has been recognized anecdotally for many years but the causal relationship between bronchial asthma and depression is not fully understood. Studies show that depression can influence symptomatology of bronchial asthma in 40-80% of patients.[21] Emotions such as depression, anxiety, anger, happiness, excitement, satisfaction and neutral emotions have been shown to influence forced expiratory volume in first second (FEV1), peakexpiratoryflowrateandairways[22].

Krommy dasetal reported that individuals with bronchial asthma and depression had significantly lower FEV1% than individuals with bronchial asthma having no symptoms of depression[20]. It is not clear from this study, however, whether the results are due to the depression or the depression is due to the reduced lungfunction.[23]

The Beck Depression Inventory (BDI) is used for diagnosis of depression in bronchial asthma. The original BDI, first published in 1961[12], 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, from 0 to 3[23].

Depressive symptoms were associated with poor bronchial asthma control and quality of life, as well as with lower rates of adherence to control lermedications[24].One study has shown that the prevalence of depression in patients with bronchial asthma is 63.3%.Research has shown that individuals with more severe depression are more likely to seek Asthma related ER visits, and that depression severity is linked with the need to continue receiving treatment[25].It is suggested that individuals may be predisposed to asthma and major depressive disorder if they have dysregulation of the hypothalamic pituitary adrenal axis or other biological processes that are sensitive to stress and mental health problems, such as the immune and autonomic nervous systems[26]. Individuals with allergic disease also have higher rates of MDD than non-atopic individuals.[27]The presence of a topic disease increases the risk of depression in both men and women.[27]

Other theories suggest that exposure to adversity, the stress of having a chronic illness, or the effect of medications used to treat asthma may increase the likelihood of an individual experiencing comorbid asthma and depression.[28] In addition, there may be a link between the genetic susceptibility of both asthma and depression, as is suggested by research showing that mothers of children with asthma are at greater risk of mental healthproblems[29] Environmental factors, such as exposure to prolonged air pollution, have been implicated in the onset of pulmonary diseases and may also be linked with depressive-like symptoms[30]None of these mechanisms were explored, and therefore, additional research will be needed to understand the contribution of these potential pathways.

Limitations of this study are lack of generalization, patient's compliance, socioeconomic status; health risk behaviors such as smoking, BMI, and physical activity were not controlled in this study. These factors are associated with depression, and may be considered in future research to examine possible biological and environmental factors that may cause comorbid depression and asthma.

MATERIALS AND METHODS:

This study was conducted in the Department of Pulmonology of Lady Reading Hospital Peshawar from 22 January 2019 to 22 July 2019 after approval of the hospital Ethical and Research committee. The purpose and benefit of study was explained to all the patients and written informed consent was taken.

It was a descriptive cross sectional study. The sample size was calculated using Open Epi software as 356 according to the study conducted by Gaureau et al in 2011[3].Confidence level was taken as 95% and marginoferror5%.Non probability convenient sampling technique was used for sample selection. All the patients of either sex, aged 18-60 years, diagnosed with Asthma according to Global Initiative for Asthma (GINA) guidelines. Patients with Asthma having duration of more than 6 month were included in study. Any patient with Co-morbidities like chronic obstructive pulmonary disease, presence of a severe psychological disorder or a chronic severe illness affecting quality of life and history of substance abuse were excluded from the study. Bronchial asthma was diagnosed by Spirometry in all patients showing-FEV1 <80% predicted & FEV1/FVC ratio<70% .Post bronchodilator increase in FEV1of>15%(PEFR>200ml) or peak expiratory flow variability of >20% 15minutes after inhalation of standard dose of beta-2agonist.Using Beck Depression Score, patients were labeled with depression as follows;

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

Data for evaluation of depression was collected on Beck Depression Inventory (BDI) and analyzed in SPSS version 22. Mean and standard deviation was computed for numerical variables like age, duration of disease, Beck depression score. Frequencies and percentages were computed for categorical variables.

RESULTS

In this study, a total of 356 patients were enrolled with mean age 46.7±8.3 years, consisting of 125(35%) male and 231 (65%) female.

Table-I: Age Wise Distribution of Patients with Asthma

Age in years	Frequency	Percentages
18-30	53	15
31-40	85	24
41-50	121	34
51-60	97	27
Total	356	100

Table-II: Gender wise Distribution of Patients with Asthma

Gender	Frequency	Percentage
Male	125	35
Female	231	65
Total	356	100

Table-III: Age-wise Distribution of Depression in Asthmatic Patients

DEPRESSION	18-30 years	31-40 years	41-50 years	51-60 years	Total	PERCENTAGE	Mean	P Value
Yes	38	61	86	68	253	71%	63.25	0.008
No	15	24	35	29	103	29%	25.75	
Total	**53**	**85**	**121**	**97**	**356**	**100%**	**100**	
PERCENTAGE	15%	24%	34%	27%	**100%**			

Out of 356 patients, depression was found in 253(71%) patients. Depression was found significantly high (34%) in asthmatic patients aged 41 – 50 years (p value 0.008).

Table-IV: Gender-wise Distribution of Depression in Asthmatic Patients

DEPRESSION	Male	Female	Total	Mean	Standard deviation	PValue
Yes	89	164	253	126.50	0.024 or 2.4%	

No	36	67	103	51.50	**0.024**	0.0005
Mean	62.50	115.50				
DEPRESSION PERCENTAGE	**35%**	**65%**				
Total	**125**	**231**	**356**			

Out of 253 asthmatics patients, depression was found significantly high in females (65%) with a p value of 0.0005 (using Chi square test, Chi = 12.17, df =1), which indicates statistically significant association between gender and depression in asthmatic patients. In other words, females are more likely to develop depression in asthmatic patients.

Table- V: Association of Depression with Duration of Bronchial Asthma

DEPRESSION	<1Year	>1Year	Total	Mean	S.D	PValue
Yes	71	182	253	126.50	0.024	
No	29	74	103	51.50	0.024	0.0005
Total	**100**	**256**	**356**			
Percentage of Depression	28%	72%	**100%**			

Depression was found significantly high (72%) in patients having bronchial asthma for more than one year (p value 0.0005, using chi square test), indicating statically significant association between depression and the duration of asthma.

DISCUSSION

Findings of this study show that out of 356 patients, 253 (71%) had developed depression. Findings of our study are consistent with that of study conducted by Moussas G et al[31, 32], in which moderate to severe depression was found in 49.2% of patients with women having 26.5% higher depression scores than men. Mean age of asthmatic patients reported by Tafti et al[33,34]was (43.8±16.6years).In another study Tafti et al reported the manage of asthmatics with depression as 48±17 years which is also comparable with mean age of our study(46.7±8.3). Depression symptoms are relatively common among asthma patients and emotions such as anxiety, anger, happiness, excitement, satisfaction and neutral emotions can influence respiratory parameters. In our study depression was found in 71% of asthmatics. Tafti et al[34]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. Similar (66.7%) prevalence of depression in asthmatics was reported by Tafti SF et al. Labor et al[35] reported frequency of anxiety and depression as 44.5%,.Another study by Zielinski TA et al[36] concluded in contrast with our findings where HAD scale results showed that 30% of asthmatics presented with anxiety and 8% presented with depression. There are some controversies regarding the prevalence of anxiety and depression in patients having bronchial asthma.[37]. Wang et al[38] reported that 70% of asthmatics have some degrees of anxiety and depression. Some other studies

reported anxiety and depression six times more prevalent in asthmatic patients compared to general population. In a Canadian survey with psychiatric interview, anxiety was more prevalent in asthmatic patients than depression.

Gender of asthmatic patients is another potential risk factor affecting their prognosis but different studies report inconsistent results. In study by Wilson et al[39] asthmatic males and asthmatic females had similar prevalence of anxiety and depression. Conversely, in a study by Tafti et al[34]significantly (P= 0.005) more female asthmatics had depressive symptoms as compared to male asthmatics (70.2%versus54.9%). Similarly, Nowobilski et al[40] reported that asthmatic females experience higher degree of somatic symptoms and anxiety than asthmatic males.

CONCLUSION

Based on findings in our study, it is concluded that the frequency of depression is 71% in patients with bronchial asthma. Female gender, age group 41-50 years, and chronicity of asthma are the potential risk factors for developing depression in asthmatic patients.

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Authors Contribution

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