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Comparative study of the pattern of psychiatric comorbidities in COPD patients attending at IRD, SMS Medical College, Jaipur.

[1]Qureshi Mohammed Javed, Associate Professor, Department of Respiratory Medicine, Sawai Man Singh Medical College, Jaipur.

[2]Ram Batoee, Senior Resident, Senior Resident, Department of Respiratory Medicine, Sawai Man Singh Medical College, Jaipur.

[3]Bhandari Chand, Senior Professor, Department of Respiratory Medicine, Sawai Man Singh Medical College, Jaipur.

[4]Rajendra Gaurav, Associate Professor, Department of Psychiatry, Sawai Man Singh Medical College, Jaipur.

[5]Saini Manoj, Assistant Professor, Department of Respiratory Medicine, Sawai Man Singh Medical College, Jaipur.

Corresponding Author: Ram Batoee, Senior Resident, Senior Resident, Department of Respiratory Medicine, Sawai Man Singh Medical College, Jaipur.

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Abstract

Background: Chronic obstructive pulmonary disease (COPD) is the third most common cause of mortality and morbidity in coming decades and the fifth most common cause of disability in the world by 2020.

Psychiatric comorbidities are most commonly reported in patients with chronic obstructive pulmonary disease (COPD), the coexistence of these Psychiatric com orbidities in COPD patients are associated with increased hospital stay and decreased quality of life, contributes to the mortality in such patients, therefore, essential to increase the awareness, proper diagnosis and exact treatment, proper focus on controlling and improve the quality of life, as well as improve the functional status, for these comorbidities in COPD patients.

Materials and Methods: A hospital-based observational comparative analytical study was conducted in COPD patients at the institute of respiratory diseases (IRD) S.M.S. Medical College Jaipur where 60 cases with COPD and 60 control where included from MAY 2020 to OCT.2021. Psychiatric comorbidities were measured by recent MINI international neuropsychiatric questionnaire.

Results: A total of 120 individuals participated in the study,60 with COPD and 60 from the general population. Our study showed the high percentage (75% = 45 out of 60 stable COPD patients) of psychiatric comorbidities in stable COPD patients, which explained that due to in our study the most of patients were in COPD stage 4, old age, limited sample size as well as study done at tertiary care Centre. Our study was found major depressive episode (35% vs 8.33%), generalised anxiety disorder (31.67% vs 13.33%), panic disorder (3.33% vs 3.33%), substance abuse disorder (3.33% vs 1.67%), no psychiatric comor

biddities (25% vs 73.33%) respectively in both COPD patients and control group.

Conclusions: Overall prevalence of psychiatric comor bidities, were more common in COPD patients compared to the general population.

Keywords: Chronic Obstructive Pulmonary Disease, Psychiatric Comorbidities, Major Depressive Disorder, Anxiety, Substance Abuse Disorder

Introduction

Chronic obstructive pulmonary disease (COPD) is a major cause of mortality and morbidity, the prevalence of COPD is expected to increase and is predicted to become the third most common cause of mortality and morbidity in coming decades and the fifth most common cause of disability in the world by 2020.[1]

COPD coexist with various comor bidities like-psy chiatric condition, neuro logical, lung cancer, cardiovascular, cerebro vascular disease, meta bolic, haema to logical, Musculo skeletal, gastro esophageal disease (GERD), peri pheral vascular disease, chronic kidney diseases, allergic.[2]

Psychiatric comorbidities are most commonly reported in patients with chronic obstructive pulmonary disease (COPD), the coexistence of these Psychiatric com orbidities in COPD patients are associated with increased hospital stay and decreased quality of life.

contributes to the mortality in such patients, therefore, essential to increase the awareness, proper diagnosis and exact treatment, proper focus on controlling and improve the quality of life, as well as improve the functional status, for these comorbidities in COPD patients. [3,4]

Material and method

A Hospital based descriptive cross-sectional study was conducted over one year of period in Institute of espiratory Diseases, SMS Medical College, Jaipur, Rajasthan.

This study was approved by Ethical Committee (No: 185/ MC/ EC/ 2020, 21 DECEMBER 2O2O.) and Research Review Board of SMS Medical College, Jaipur. After giving full explanation regarding the study, written consent was obtained from all enrolled patients.

60 diagnosed stable COPD patients and 60 healthy controls were included in the study.

Detailed history (including demographic variables) was taken, physical examination, routine blood investigation, ECG, chest X ray was done.

Spirometry parameters were assessed and psychiatric assessment was done by Recent Mini International Neuro psychiatric Interview (MINI).

Sample size calculated at the study population of 80% and alpha error of 0.05assuming mean score of anxiety in COPD patients is 23.76+/-9.57 for control 8.01+/-6.83 and for depression in COPD patients is 27.72+/-9.37for control 11.60+/-8.42as per seed article**,** For the minimum detectable allowable mean of 5, the required sample size is 60in both groups (diagnosed COPD patients and healthy control).

The presentation of the categorical variables was done in the form of number and percentage (%). On the other hand, the quantitative data were presented as the means ± SD and as median with 25th and 75th percentiles (interquartile range).

The comparison of the variables which were quantitative in nature were analysed using independent t test.

The comparison of the variables which were qualitative in nature were analysed using Chi-Square test.

If any cell had an expected value of less than 5 then Fisher's exact test was used.

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Results and Observation

Table 1: Association of age(years) with psychiatric co-morbidities

Age(years)	No psychiatric comorbidities(n =15)	Dysthymia(n=1)	Generalised anxiety disorder(n=19)	Major depressive episode(n=21)	Panic disorder(n=2)	Substance abuse disorder(n=2)	Total	P value
41 to 50	2 (22.22%)	0 (0%)	3 (33.33%)	2 (22.22%)	2 (22.22%)	0 (0%)	9 (100%)	0.112†
51 to 60	4 (33.33%)	1 (8.33%)	2 (16.67%)	5 (41.67%)	0 (0%)	0 (0%)	12 (100%)	
61 to 70	9 (32.14%)	0 (0%)	10 (35.71%)	8 (28.57%)	0 (0%)	1 (3.57%)	28 (100%)	
>70	0 (0%)	0 (0%)	4 (36.36%)	6 (54.55%)	0 (0%)	1 (9.09%)	11 (100%)	
Mean ± SD	60.73 ± 8.92	57 ± 0	64.79 ± 10.2	64.43 ± 9.54	45.5 ± 4.95	70 ± 7.07	63.05 ± 9.92	0.086§
Median (25th-75th percentile)	62 (56-68.5)	57 (57-57)	68 (61.5-69.5)	65 (60-71)	45.5 (43.75-47.25)	70 (67.5-72.5)	65 (57-69)	
Range	42-70	57-57	41-80	50-88	42-49	65-75	41-88	

† **Fisher's exact test,** § **ANOVA**

Mean ± SD of age(years) in patients without psychiatric comorbidities was 60.73 ± 8.92, dysthymia was 57 ± 0, generalised anxiety disorder was 64.79 ± 10.2, major depressive episode was 64.43 ± 9.54, panic disorder was 45.5 ± 4.95 and substance abuse disorder was 70 ± 7.07 with no significant association between them. (p value = 0.086 It is shown in table 1.

Table 2: Association of gender with psychiatric co-morbidities.

Gender	No psychiatric comorbidities(n=15)	Dysthymia(n=1)	Generalised anxiety disorder(n=19)	Major depressive episode(n=21)	Panic disorder(n=2)	Substance abuse disorder(n=2)	Total	P value
Female	3 (30%)	0 (0%)	6 (60%)	1 (10%)	0 (0%)	0 (0%)	10 (100%)	0.278†
Male	12 (24%)	1 (2%)	13 (26%)	20 (40%)	2 (4%)	2 (4%)	50 (100%)	
Total	15 (25%)	1 (1.67%)	19 (31.67%)	21 (35%)	2 (3.33%)	2 (3.33%)	60 (100%)	

† **Fisher's exact test**

Distribution of psychiatric co - morbidities was com parable with gender. (No psychiatric comorbidities:-(Female (30%) vs Male (24%)), Dysthymia:-(Female (0%) vs Male (2%)), Generalised anxiety disorder:-(Female (60%) vs Male (26%)), Major depressive episode :-(Female (10%) vs Male (40%)), panic disorder:- (Female (0%) vs Male (4%)), Substance abuse disorder:- (Female (0%) vs Male (4%))). (p value=0.278) It is shown in table 2

Table 3: Comparison of psychiatric co-morbidities between cases and controls.

Psychiatric co-morbidities	Cases(n=60)	Controls(n=60)	Total	P value
No psychiatric comorbidities	15 (25%)	44 (73.33%)	59 (49.17%)	<.0001†
Dysthymia	1 (1.67%)	0 (0%)	1 (0.83%)	

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Generalised anxiety disorder	19 (31.67%)	8 (13.33%)	27 (22.50%)	
Major depressive episode	21 (35%)	5 (8.33%)	26 (21.67%)	
Panic disorder	2 (3.33%)	2 (3.33%)	4 (3.33%)	
Substance abuse disorder	2 (3.33%)	1 (1.67%)	3 (2.50%)	
Total	60 (100%)	60 (100%)	120 (100%)	

† **Fisher's exact test**

Proportion of patients with psychiatric co-morbidities: - generalized anxiety disorder, major depressive episode was significantly higher in cases as compared to controls. (Generalized anxiety disorder: - 31.67% vs 13.33% respectively, Major depressive episode: - 35% vs 8.33% respectively). Proportion of patients without psychiatric co-morbidities was significantly lower in cases as compared to controls. (No psychiatric comorbidities: - 25% vs 73.33% respectively). (p value <0.0001) It is shown in table3

Table 4: Overall proportion of psychiatric comorbidities among COPD patient.

COPD stage	No. of COPD patients	Psychiatric comorbidities found	No. psychiatric comorbidities	Proportion
1	17	4	13	23.53%
2	6	5	1	83.33%
3	13	13	0	100%
4	24	23	1	95.84%
5	Total 60	Total 45	Total 15	

Table 4 represent that Patients with COPD attending at institute of respiratory diseases, S.M.S. Medical college Jaipur,45 COPD patients were found with psychiatric comorbidities out of total 60 COPD patients, COPD stage 1= 4 (23.53%), COPD stage 2 = 5 (83.33%), COPD stage 3 = 12 (92.31%), COPD stage 4 = 23 (95.84%).

Discussion

This study was a hospital-based observational comparative analytical study which carried out over a period of 1 year. A total 120 individuals participated in this study; 60 with stable COPD and 60 from the general population as control.

In comparison to demographic variables our study showed proportion of patients with age (years)in cases was 63.05 ± 9.92 which was significantly higher as com pared to controls (53.4 ± 5.48). (p value <.0001), table no. 1

In our study the mean ± SD of age(years) in patients without psychiatric comorbidities was 60.73 ± 8.92, dysthymia was 57 ± 0, generalised anxiety disorder was 64.79 ± 10.2, major depressive episode was 64.43 ± 9.54, panic disorder was 45.5 ± 4.95 and substance abuse disorder was 70 ± 7.07 with no significant association between them. (p value = 0.086). Niresh Thapaet al. [5] showed that more respondents with age more than 60 years had more psychiatric comorbidities than those with age less than 60 years.

Our study showed proportion of male was significantly higher in cases as compared to Discussion 64 controls. (Male: - 83.33% vs 61.67% respectively). Proportion of female was significantly lower in cases as compared to controls. (Female: - 16.67% vs 38.33% respectively). (p value=0.008)

Our study results showed in between psychiatric comor bidities Generalised anxiety disorder was higher in female (Female (60%) vs Male (26%) but other psychiatric comorbidities were more common in males.

Shyam Chand Chaudhary et al. [6] showed the frequency of anxiety disorders was present in About 17.64% of females had anxiety disorders compared to 7.01% of males. Pesce let al. [7] in which the prevalence of anxiety

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disorders was 1.5 times more common in women as compared to men in cases8.Albert pr etal.[8] reported that female gender had a high prevalence of anxiety and depression. Dar SA et al. [9] showed that rates of psy chiatric disorders were found to be higher in women with COPD than in men.

Our study showed the high percentage (75% = 45 out of 60 stable COPD patients) of psychiatric comorbidities in stable COPD patients, which explained that due to in our study the most of patients were in COPD stage 4, old age, limited sample size as well as study done at tertiary care Centre.

Studies done by Fumagalli Get al. [10] and Halbert RJ et al. [11] in which the overall prevalence of psychiatric comorbidities in COPD patients, ranging between 65-81 %.

A Study done by Shabir Ahmad Dar et al. [12] this study showed cases had psychiatric comorbidity of 47% as compared to 12% in controls (P = 0.005). Study done Bharat Bhushan Sharma et al. [13] showed the preva lence of psychiatric comorbidity in cases was found to be around 44.8%.

Ranjith Ravella et al. [14] this study showed 38 % of patients with COPD had psychiatric comorbidities compared to 4% of control group.

Conclusion

The frequency of psychiatric comor bidities is signifi cantly increased in COPD patients as compared to controls and negatively impact treatment compliance, make it difficult to control COPD, lead to increased morbidity and mortality, its increases with the severity of COPD.

so future studies should be focus on evaluating the effectiveness of multimodal approaches to manage ment of psychiatric comorbidities in COPD.

Strength

- Our study utilized a structured analytical tool for the estimation of frequency of psychiatric comorbidities in COPD patients.
- In our study, only stable COPD patients were enrolled as we know in COPD patients, many of the symptoms are shared with those of anxiety disorders, particularly exaggerated during an exacerbation. Hence, the decision to enrolled only stable COPD patients for our study.

Limitations

- It was a hospital-based study, and its results cannot be generalized for the community.
- The number of subjects enrolled in our study was not estimated by any statistical tool.
- The study was conducted in a single centre.
- The number of subjects enrolled in our study was small.

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