Journal of Gerontology & Geriatric Research

Research Article | **Open Access**

Prevalence of Anxiety and Depression and their Relationship with Clinical Characteristics in Patients with Interstitial Lung Disease

Fernandez M[1], Rodriguez-Barreto O[2], Buendia-Roldan I[2*], Alberti M[1], Caro F[1], Ipuche F[1], Miranda A[1] and Paulin F[1]

[1]Department of Life Sciences, Rehabilitation Hospital, Maria Ferrer Respiratory Clinic, Buenos Aires, Argentina
[2]Department of Personalized Medicine, National Institute of Respiratory Diseases, Ismael Cosío Villegas, Mexico City, Mexico

Abstract

Interstitial Lung Diseases (ILD) is a group of diseases characterized by poor prognosis and high mortality. Patient's symptoms are dyspnea and cough, which directly affect Health-Related Quality of Life (HRQoL). Information about incidence, prevalence and mortality in ILD is scarce in Latin America, so it is difficult to estimate the magnitude of the problem. In ILD the decrease in HRQoL frequently is originate by emotional distress, anxiety and depression as two of the most common problems associated. Our aim was to assess the frequency of anxiety and depression in ILD patients from two specialized centers in Latin American. Additionally, we analyze the relationship between mood alterations and clinical variables with HRQoL. We developed a cross-sectional study, with 149 patients; we used Hospital Anxiety and Depression Scale (HADS). Of all patients 27% had anxiety and depression, argentine cohort with higher means (anxiety 6 ± 3 *vs.* 2 ± 2 and depression 5 ± 4 *vs.* 2 ± 2, $p > 0.0001$). We found difference only in the forced vital capacity, which was lower in Mexican subgroup. Our findings indicate that ILD are associated with anxiety/depression problems and they have a direct impact in terms of quality of life in this cohort.

Keywords: Anxiety; Depression; Interstitial lung disease; Emotional distress; Health related quality of life

Introduction

Interstitial Lung Diseases (ILD) is a group of diseases that affect pulmonary interstitium, characterized by poor prognosis and high mortality. For example, in Idiopathic Pulmonary Fibrosis (IPF), the average expected of survival is 3 to 5 years without treatment, the most frequent symptoms are dyspnea and cough, which directly affect Health-Related Quality of Life (HRQoL) ILD are usually associated with different chronic comorbidities [1]. In Mexican population several comorbidities have been reported: 52% diabetes mellitus, 40% systemic arterial hypertension, 35% COPD, 27% pulmonary hypertension, 5% obstructive sleep apnea syndrome and 3% gastroesophageal reflux disease [2]. Absence of data about incidence, prevalence and mortality in ILD in Latin America, makes difficult to estimate the magnitude of the problem; however, ILD are considered pulmonary Chronic-Degenerative Disease (CDD) [3]. In CDD, progressive decrease in terms of quality of life, loss of motor skills, physical and esthetical deterioration frequently originate emotional distress; we understand anxiety and depression as two of the most common and stressful problems.

Depression is characterized by the presence of feelings like sadness, loss of interest or pleasure in daily activities, low energy and loss of concentration [4]. Its prevalence and the relationship with other chronic diseases such as cancer, AIDS, diabetes among others have been studied [5]. Worldwide prevalence of depression is 4.4%. In Latin America, the country with the highest levels of depression is Brazil with 5.8% of its total population, while Argentina presents 4.7% and Mexico only 4.2% [6]. Reported studies that measure the impact on mental health in respiratory diseases have been performed mainly in COPD, asthma and lung cancer. There are few studies in patients with ILD. Some authors such as Youth, Glaspole and Jin Lee have reported between 15% and 30% of this population presents symptoms of anxiety or depression, most of them underdiagnosed [7-10].

ILD's have a direct impact on HRQoL, oxygen desaturation impacts even at basic activities such as talking or self-care. On the other hand, these diseases imply a high economic burden given that the patient's work activities are affected or impeded, and the treatments are expensive and necessaries. The aim of our study was to assess the frequency of anxiety and depression in patients with ILD from two specialized centers in Latin American countries. Additionally, we analyze the relationship between scales that evaluate mood alterations and clinical variables, functional tests and HRQoL.

Materials and Methods

We developed a cross-sectional study in 2 centers specialized in ILD: The National Institute of Respiratory Diseases "Ismael Cosío Villegas" in Mexico City and the Respiratory Rehabilitation Hospital "María Ferrer" in the city of Buenos Aires, Argentina between August 2017 to December 2018. Patients were prospectively enrolled in a consecutive manner from the external consultation of the 2 centers specialized in interstitial diseases by the psychologists of the multidisciplinary team, who explained the objective of the study and obtained informed consent. Only one patient was excluded for not signing the informed consent. After signing informed consent (approved by the respective research bioethics committee of both institutions), respiratory function test we performed during regular follow-up visits of patients. For spirometry and diffusion of carbon monoxide we use EASY ONE PRO® and CPFS/D MEDGRAPHICS® equipment, according to the ATS/ERS guidelines [11]. 6-minute walk was conducted according to the ATS guidelines [12]. Later, Hospital Anxiety and Depression Scale (HADS) was applied by the psychologists using the criteria described by Galindo [13].

HADS instrument was interpreted as normal with score of 0-7, moderate 8-10, and severe >11, either in anxiety or in depression. A

mixed group was separated as those who presented scores equal to or greater than 8 in both anxiety and depression. In Argentina´s cohort, St. George Specific Questionnaire for Idiopathic Pulmonary Fibrosis (SGRQ-I) was also performed for its analysis [14]. This questionnaire was applied to a total of 57 patients, and the results were compared with the patient´s performance in HADS questionnaire. Statistical analysis: We used frequency measurements in the categorical variables, and mean, along with standard or mediated deviation, along with inter-quartile range in the continuous ones. Groups were compared using the t-Student and X^2 tests. We made a correlation analysis with Spearman or Pearson method and we informed the "r" coefficient with its "p" value. Microsoft Excel Mac 16.13.1 program was used for database and STATA IC 13.0 program for statistical analysis.

Results

We analyzed 149 patients, 92 (62%) from Mexico and 57 (38%) from Argentina. We found a female predominance 102 (68%) versus 47 (32%) male patients (p=0.0002). Regarding the diagnosis, 42 (28%) had Idiopathic Pulmonary Fibrosis (IPF), 54 (36%) Hypersensitivity Pneumonitis (HP) and 63 (36%) were ILD secondary to autoimmune disease. Diagnoses were corroborated by a multidisciplinary session in the center to which they belonged. Characteristics of the entire sample and comparison between both cohorts are presented in Table 1 regarding the differences between both cohorts; we observed more frequently female gender, HP diagnosis and lower values of FVC% in Mexican patients. The percentage of FVC in Argentine cohort was 64 ± 15% *vs.* 56 ± 17% in the Mexican cohort (p=0.007). We did not observe differences in other lung function tests. When applying HADS scale, we obtained difference in means for both depression and anxiety, being both higher in the Argentine cohort (HADS anxiety 6 ± 3 *vs.* 2 ± 2 p<0.0001 and HADS depression 5 ± 4 *vs.* 2 ± 2 p<0.0001). No differences were found between both cohorts in other variables.

When studying the overall performance of patients in HADS questionnaire, we found 20% of patients with some disorder (score greater than 7) in the area of anxiety and 18% in the area of depression (Table 2). We analyze the groups separating them into anxiety, depression and mixed, they presented similar values regarding respiratory function tests, except in the FVC in which the depressive patients present a lower average than the rest of the groups (Table 3). Regarding gender, female predominance in emotional discomforts in each of the groups was observed. This fact is in coincidence with previously reported data. The presence of emotional distress was also associated with the diagnosis of autoimmune disease (52% in patients with any mood disorder *vs* 30% in patients without mood disorder, p=0.06) although the difference did not reach statistical significance. Also, patients with any emotional distress had a trend to less month since diagnosis [mean 7 (± 24) months *vs* 10 (± 36) months; p=0.05], showing a possible relationship between the duration of the disease and presence of emotional disturbance. In the Argentine cohort, the SGRQ-I (total scores and subscales) correlated positively with the emotional disorder obtained by the HADS scale. When correlating the emotional disturbance by HADS with the respiratory function tests we observed a negative correlation between DLCO, and meters walked with the depression disorder (Table 4).

Variables	Total (n=149)	Mexico (n=92)	Argentina (n=57)	p-value
Female Gender (%)	102 (68)	73 (79)	29 (51)	0.0002
Age (SD)	62 ± 13	62 ± 11	64 ± 11	0.2
Months since diagnosis (SD)	20 ± 18	18 ± 17	22 ± 18	0.1
Diagnosis				
IPF (%)	42 (28)	22 (24)	20 (35)	0.8
Hypersensitivity Pneumonitis (%)	54 (36)	42 (46)	12 (21)	0.002
Autoinmune Disease (%)	53 (36)	28 (30)	25 (44)	0.1
Pulmonary function test				
FVC % (SD)	59 ± 16	56 ± 17	64 ± 15	0.007
DLCO % (SD)	48 ± 18	48 ± 19	47 ± 16	0.9
Sat O_2 at rest (%)	93 ± 2	93 ± 2	93 ± 3	0.8
Metres walked (SD)	356 ± 119	341 ± 131	380 ± 94	0.2
Hads scale				
*HADS anxiety (SD)	4 ± 3	2 ± 2	6 ± 3	<0.0001
HADS depression (SD)	3 ± 3	2 ± 2	5 ± 4	<0.0001
Anxiety (%)	13 (9)	4 (4)	9 (16)	0.03
Depression (%)	8 (5)	4 (4)	4 (7)	0.4
Mixted (%)	19 (13)	5 (5)	14 (25)	0.001

Table 1: Clinical characteristics and functional measurements of both cohorts.

Anxiety	
Absence of anxiety (0-7 points), n (%)	117 (78)
Requires consideration (8-10 points), n (%)	25 (16)
Relevant symptomatology (11-21 points) (%)	7 (4)
Depression	
Absence of depression (0-7 points), n (%)	122 (82)
Requires consideration (8-10 points), n (%)	16 (11)
Relevant symptomatology (11-21 points) (%)	11 (7)
* HADS: Hospital Anxiety and Depression Scale	

Table 2: Patients' distribution according to different cut points of HADS scale for anxiety and depression.

Variables	Depression(n=8)	Anxiety (n= 13)	Mixted
Female gender (%)	6 (75)	8 (62)	13 (68)
Age, mean (SD)	59 ± 12	63 ± 7	63 ± 9
Months since diagnosis, median (SD)	32 ± 17	25 ± 22	21 ± 18
Pulmonary function test			
FVC% (SD)	45 ± 14	67 ± 15	59 ± 16
DLCO% (SD)	43 ± 13	45 ± 17	48 ±19
SPO2% rest (SD)	94 ± 2	94 ± 3	94 ± 2
Metres, mean (SD)	357 ± 146	346 ± 85	345 ± 97

Table 3: Patients general data divided by emotional distress.

Variables	SRGQ-I S*	SGRQ-I A*	SGRQ-I I*	SGRQ-IT*	Months since diagnosis	FVC%	DLCO%	Metres
HADS A	0,43 (0,005)	0,35 (0,005)	0,63 (0,001)	0,58 (0,001)	0,11	0,0713	-0,0688	-0,1262
					(0,1488)	(0,3874)	(0,4112)	(0,1305)
HADS D	0,45 (0,003)	0,37 (0,003)	0,54 (0,001)	0,55 (0,001)	0,16	-0,1296	-0,2144	-0,1723
					(0,0506)	(0,1153)	(0,0096)	(0,0096)
The coefficients "r" with their respective values of p are reported.								
*The SGRQ-I questionnaire was applied only to patients from the Argentine cohort. S= Symptoms, A= Activity, I =Impact, T=Total.								

Table 4: Correlation analysis between HADS values for anxiety and depression, and time since diagnosis, CVF%, DLCO%, meters walked in the walking test, and SGRQ-I with its different components.

Discussion

ILD is a group of chronic degenerative diseases most of them without curative treatment. They have a direct impact on HRQOL and high economic cost. The importance of chronic comorbidities to overall disease burden has been increasingly recognized over recent years, particularly in ILD. It is necessary to understand better the emotional characteristics of these patients in order to provide more appropriate management, with the goal of improving HRQoL. Psychological impact of these disorders on patients is crucial, not only from the disease but also the understanding of it, attachment and response to treatments. In this study we found a frequency of anxiety and depression using the HADS scale in patients with ILD in 27% of the total sample, which agrees with that described in previous studies in other populations [15]. These results maybe are crucial, because it is possible that treatment of comorbidities could have a critical impact on the overall burden of ILD, particularly in the psychological burden.

Interestingly, we found difference in the prevalence of anxiety and depression in patients with ILD between countries. The Argentine cohort presents a greater number of emotional distresses (48%) compared to the Mexican cohort (13%). This finding may be due to different cultural characteristics, different resilient capacities, and different social determinants (such as insecurity and worsening economic conditions). However, we know that the total prevalence of depression in Argentina and Mexico are very similar (4.7 *vs* 4.2% respectively) [6]. Further studies need to be conducted to acknowledge these differences. It has been observed that in patients with autoimmune disease, anxiety occupies 11% while depression 29% despite different comorbidities [16]. Some patients that must use corticosteroids as part of their treatment has reported anxiety, depression a cognitive impairment, all in relation with the nature of their disease, however the use of corticosteroids is not a risk factor for cognitive impairment [17]. A period of adaptation has been necessary to accept de process of evolution of the disease. The literature describes the importance of an early psychological intervention in chronic diseases; it has been reported different variables (motivation, mental function, emotions, social background, and personal background) that modulate the impact of the disease [18]. The behavioral and physiological changes that the patient suffers at the moment of the diagnosis appear force them to seek a readjustment in their life, this is related to the emotional state, familial structure, communication between physician and patient, and it has been reported that over time a positive change from small to moderate is generated with the perception of the disease [19].

This is the first study to compare two cohorts from different countries although they belong to the same region (Latin America). Among the limitations of this study, we identified that only the emotional and respiratory function variables were considered, excluding the cultural and social variables, since the objective was to measure the emotional impact of the disease. An alternative would be the use of the BECK depression instrument that correlates positively with the HADS instrument. Another limitation of our study is that there are variables that could be related to the mood of the patients and were not included. An example is the role played by the patient in their family, as this can also impact on emotional health. Likewise, we were unable to analyze the socioeconomic or educational level of the participants that may be interesting variables in the lability of the mood. Adverse effects caused by the drugs used in these types of diseases should also be considered as variables that affect emotional health and quality of life. On the other hand, the SGRQ-I could not be performed for this study in the Mexican cohort; although we believe that for future investigations the use of the same tests would be adequate and thus be able to compare the quality of life in both cohorts.

Finally, as it was a cross-sectional study, it was not possible to establish causal relationships or determine the evolution of patients' emotional health. Performing longitudinal studies will allow us to know the impact of the interventions carried out with the aim of improving the emotional state of patients with ILD. In conclusion, our findings indicate that diffuse interstitial lung diseases are associated with anxiety and depression problems, which have a direct impact on quality of life and are underdiagnosed in daily practice, so in the monitoring and treatment of patients should implement objective tests that help us to detect these problems early, and perform some maneuver that impacts on the improvement of the quality of life of these patients.

Conclusion

Because lung interstitial diseases are chronic diseases, we recommend adding to the multidisciplinary supportive team that treats these patients psychological and psychiatric support to identify emotional disorders in a timely manner to initiate timely individualized treatment to improve acceptance and adherence to the indications suggested to the patient. It is important that every patient could access to palliative or supportive care, which is the act of bringing people together to ensure that all those with serious illness receive the care they need, in the right places, at the right time. It is synonymous with comfort, supportive care, and symptom management and aims to improve quality of life the whole disease course for patient and caregivers. Palliative care could be delivered by the clinical care team, interdisciplinary team or eventually specialty palliative care providers.

References

1. Kreuter M, Swigris J, Pittrow D, Geier S, Klotsche J, et al. (2017) Health related quality of life in patients with idiopathic pulmonary fibrosis in clinical practice: Insights-IPF registry. Respir Res 18**:** 139

2. Barreto-Rodriguez J, Mejia M, Buendia-Roldan I (2015) Current prospect of idiopathic pulmonary fibrosis in Mexico. Neumol Cir Torax 74:256-261.

3. Mejia M, Buendia-Roldan I, Mateos-Toledo M, Estrada A, Espinoza-Hernandez M, et al. (2016) First Mexican Consensus on Idiopathic Pulmonary Fibrosis. Neumologia Cirugia de Torax 75: 32-51.

4. Asociación Americana de Psiquiatría (2013) Guía de consulta de los criterios diagnósticos del DSM 5. Arlington, VA, Asociación Americana de Psiquiatría.

5. Martin M, Matellanes M, Perez J (2007) The psychological impact of lung cancer on patients and their families. Maphre Medicina 18: 108-113.

6. World Health Organization (2017) Depression and other common mental disorders: Global Health Estimates, Geneva. Licence: CC BY-NC-SA 3.0 IGO.

7. Yount S, Beaumont J, Chen S, Kaiser K, Wortman K, et al. (2016) Health-related quality of life in patients with idiopathic pulmonary fibrosis. Lung 194: 227-234.

8. Glaspole I, Chapman S, Cooper W, Ellis S, Goh N, et al. (2017) Health-related quality of life in idiopathic pulmonary fibrosis: Data from the Australian IPF Registry. Respirology 22: 950– 956.

9. Lee Y, Choi S, Lee Y, Cho Y, Yoon H, et al. (2017) Clinical impact of depression and anxiety in patients with idiopathic pulmonary fibrosis. Plos One 12: 0184300.

10. Holland A, Fiore J, Bell E, Goh N, Westall G, et al. (2014) Dyspnoea and comorbidity contribute to anxiety and depression in interstitial lung disease. Respirology 19:1215–1221.

11. Miller M, Hankinson J, Brusasco V, Burgos F, Casaburi R, et al. (2005) Standardization of spirometry. Eur Respir J 26: 319-338.

12. Holland A, Spruit M, Troosters T, Puhan M, Pepin V, et al. (2014) An official European respiratory society/American thoracic society technical standard: Field walking tests in chronic respiratory disease. Eur Respir j 44: 1428-1446.

13. Galindo O, Benjet C, García F, Rosas A, Ponce J, et al. (2015) Psychometric properties of the Hospital Anxiety and Depression Scale (HADS) in a Mexican population of cancer patients. Salud Ment 38: 253-258.

14. Capparelli I, Fernandez M, Otero-Saadia M, Steimberga J, Brassescoa M, et al. (2018) Spanish translation and validation of the Saint George questionnaire specific for idiopathic pulmonary fibrosis. Arch Bronconeumol 54: 68-73.

15. Guerrero J, Mendieta D, Lara M, Ortiz R (2017) Evaluation of quality of life and depression in patients with rheumatoid arthritis in a general hospital. Colomb J Rheumatol 24: 199-204.

16. Fiest K, Fisk J, Patten S, Tremlett H, Wolfson C, et al. (2015) Comorbidity is associated with pain-related activity limitations in multiple sclerosis. Mult Scler Relat Dis 4: 470–476.

17. Fernandez H, Cevallos A, Jimbo R, Naranjo F, Mera D, et al. (2019) Mental disorders in systemic lupus erythematosus: A cohort study. Rheumatol Int 39: 1689-1695.

18. Dekker J, De-Groot V (2018) Psychological adjustment to chronic disease and rehabilitation: An exploration. Disabil Rehabil 40: 116-120.

19. De-Ridder D, Geenen R, Kuijer R, Van-Middendorp H (2008) Psychological adjustment to chronic disease. Lancet 372: 246–255.