Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/k4dy7x73

DIAGNOSTIC DELAY AND MISDIAGNOSIS IN INTERSTITIAL LUNG DISEASE

Taqdees zahra[1], Tahira[2], Samreen Bugti[3*], Tariq Mehmood[4]

[1]Assistant professor Medicine department, Bolan Medical College/ Bolan medical complex hospital Quetta
[2]Assistant professor, Department of medicine, Bolan medical college/ Bolan medical complex hospital Quetta
[3*]Assistant professor, Department of medicine, Bolan medical college/ Bolan medical complex hospital Quetta
[4]Medicine PGMI/sheikh Khalifa Bin Zayyed al nehan hospital Quetta

***Corresponding author:** Samreen Bugti
*Assistant professor, Department of medicine, Bolan medical college/ Bolan medical complex hospital Quetta, **Email:** dr.sbugti@gmail.com

Abstract
Background: Interstitial lung diseases (ILD) refers to a group of unrelated diseases with both known and unknown causative agents. Interstitial lung disease patients frequently experience delays in diagnosis.
Objective: The aim of the current study was to determine the diagnostic delay and misdiagnosis in interstitial lung disease.
Methodology: The current cross sectional study was carried out at the Department of medicine, Bolan medical college/ Bolan medical complex hospital Quetta from July 2023 to December 2023 after taking permission from the ethical committee of the institute. The sample size was determined by the formula ($z1-\delta\ 2^2$p (1-p)/d^2)**.** Only verified incidents of ILD were included. SPSS version 24 was employed for the statistical analysis.
Results: A total of 74 individuals participated in this study out of which 56(75.6%) were female and 18 (24.3%) were male. Majority of patients were in the age group from 50 to 65 years old. lower socio-economic group had primary identification of asthma 30(40.5%) and 30(40.5%) participants were on Anti-tuberculosis treatment. The diagnosis was delayed by a mean of (18.43 ± 11.232). Males experienced a greater delay in diagnosis than females did. Maximum delay in the diagnosis was noted in the individual's age 50 to 65 years old.
Conclusion: It was concluded that interstitial lung disease individuals are diagnosed after a significant delay and provide significant diagnostic challenges for basic and secondary care.

Key words: Diagnostic delay: Misdiagnosis: interstitial lung disease

Introduction

Interstitial lung diseases (ILD) refers to a group of unrelated diseases with both known and unknown causative agents. Typically, there is diagnostic and treatment problem for attending physicians. Many healthcare professionals believe that because prognoses and treatment responses

are almost always poor, early, targeted diagnosis and prompt care are useless. This misconception causes lots of people to have delays in diagnosis and referrals to experts for appropriate care. The lack of an optimal therapy and etiology for it discourages both doctors and patients.[1] The diagnosis is challenging and frequently requires input from consultants in a variety of specialties, such as radiography and pulmonology in developing countries, access to these consultative views may be problematic.[2-3] ILD encompasses around 150 distinct categories of lung parenchymal diseases, all of which are distinguished by cellular alterations, fibrosis, and inflammation of the lung parenchyma.[4-5] The clinical manifestations of these illnesses include a decline in lung function test scores and gradually increasing dyspnea, which is particularly noticeable after exercise. In more advanced phases, both of these issues contribute to the limits of regular physical exercise.[6] Advice on avoiding exposure, using extra oxygen, using corticosteroids and antifibrotic medications, getting rehabilitated, and having better access to extremely cutting-edge therapy alternatives like lung transplantation are among the available treatment choices.[7] older age can cause individuals to attribute their perceived shortness of breath to deconditioning, leading to a delay in diagnosis.[8-10] The absence of specificity in symptoms contributes to an early underreporting of cases.[11] One of the most important factors in limiting disease is early detection and the implementation of anti-fibrotic medicines to reduce the progression of the condition.[12] The time interval that typically elapses between the onset of dyspnea and the final identification of Idiopathic Pulmonary Fibrosis (IPF) is slightly more than two years. A person is at greater risk to pass away from ILD problems the longer their diagnosis is delayed.[13] Errors in diagnosis are an a long-standing yet significant issue in the medical sector. Despite the fact that modern medicine has advanced significantly from many angles, incorrect diagnosis are still a possibility at any point we deal with complicated medical cases since a variety of non-medical and medical elements might cause an error to occur.[14] Enhancing diagnostic techniques, increasing patient access to specialized diagnostic centers in ILD, streamlining the process of referring individuals to specialists, and encouraging patients to see their doctor as soon as symptoms arise are all ways that medical education can help patients achieve these goals.[15]ILD literature is quite limited. The aim of this research was to investigate the average duration of ILD diagnosis delay and the demographic factors contributing to the delay among individuals.

Methodology

The current cross sectional study was carried out at the Department of medicine, Bolan medical college/ Bolan medical complex hospital Quetta from July 2023 to December 2023 after taking permission from the ethical committee of the institute. The sample size was determined by the formula ($z1-\delta\ 2^2$p (1-p)/$d^{2)}$ Where Z 1-α/2^2 means standard normal variate (at five percent type 1 error ($p < 0.05$) which is 1.96. 1.96 is used in the calculation because, as in other research, p-values are regarded as significant below 0.05. p means predicted percentage of the population based on pilot or previous research = 0.231[14] and d = Absolute error or precision = 0.09. Individuals with other pulmonary conditions that resembled ILD, such as post-infectious fibrosis, cancer, and vacuities, were eliminated. Only verified incidents of ILD were included. The following details were noted: names of possible diagnoses, number of visits to the diagnostic center, number of investigations conducted prior to a definitive diagnosis, and status of antituberculous treatment (ATT).

Data analysis

Software, SPSS version 24 was employed to conduct the statistical analysis. The same demographic factors were used to compute the mean delay in months. Additionally, the standard deviation was computed.

Results

A total of 74 individuals participated in this study out of which 56(75.6%) were female and 18 (24.3%) were male. Majority of patients were in the age group from 50 t0 65 years old 30(40.5%), followed by age group above 65 years old 26(35.1%) and below 50 years 18(24.3%) respectively

as shown in **figure 1**. Rural inhabitants were widely recognized 40(54.05%). literacy level was low, lower socio-economic group had primary identification of asthma 30(40.5%) and 30(40.5%) took Anti-tuberculosis treatment as described in **table 1.**

The diagnosis was delayed by a mean of (18.43 ± 11.232) 2-36 months. Males experienced a greater delay in diagnosis (22.50 ±13.11 than females did. Maximum delay in the diagnosis was noted in the individual's age 50 to 65 years old (22.51 ±11.58). The study revealed that those with lower levels of schooling and those living in rural regions experienced longer delays, with respective values of 22.64 ± 10.66 and 19.21 ± 11.34 months. The mean for those in the lowest socioeconomic category was 21.61, with a standard deviation of 10.492 as described in **table 2.**

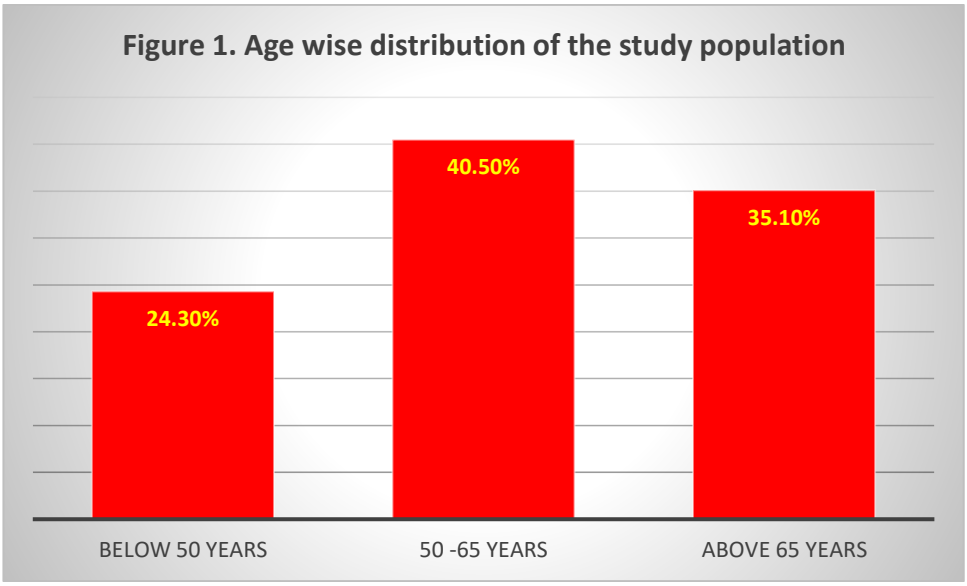

Table 1.Distribution of demographic features 'of the study population N= 74

Variable	N (%)
Sex	
Female	56(75.6%)
Male	18(24.3%)
Age in years	
Below 50	18(24.3%)
50 to 65	30(40.5%)
Above 65	26(35.1%)
Residence	
Urban	34(45.9%)
Rural	40(54.05%)
Literacy	
Illiterate	46(62.1%)
Primary	16(21.6%)
Secondary	6(8.1%)
Higher secondary	6(8.1)
Economic and social status	
Lower class	38(51.3%)
Middle class	28(37.8%)
Upper class	8(10%)
Initial assessment	
Asthma	30(40.5%)
COPD	16(21.62%)

Left Heart Failure	10(13.5%)
Pulmonary Tuberculosis	10(13.5%)
More than one Diagnosis	8(10%)
Anti-tuberculosis treatment	
Yes	30(40.5%)
No	44(59.4%)

Table .2 The average month delay based on several criteria.

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Sex					
Female	56	3	37	17.52	13.11
Male	18	4	37	22.50	10.574
Age in years					
Below 50	18	2	25	9.75	8.985
50 to 65	30	7	37	22.51	11.58
Above 65	26	7	37	19.38	9.343
Residence					
Urban	34	3	37	17.50	11.345
Rural	40	5	37	19.21	11.205
Literacy					
Illiterate	46	7	37	22.64	10.660
Primary	16	5	25	12.14	6.620
Secondary	6	3	25	10.67	10.367
Higher secondary	6	2	25	10.00	10.881
Economic and social status					
Lower class	38	37	37	21.61	10.492
Middle class	28	27	37	17.0	11.056
Upper class	8	8	25	8.75	9.483

Discussion

Interstitial lung disease individuals frequently experience delays in diagnosis. A significant portion of patients in primary care encounter a delay in diagnosis. In this study we explored the diagnostic delay and misdiagnosis in interstitial lung disease According to our statistics, the diagnostic delay in our setup was almost 2-36 months. It could indicate that lacks of quality medical facilities. These findings are with contrast with the study conducted by Mujeeb Rahman and Samariaall, they documented that 52 percent of the participants experienced an average one-year diagnosis delay.[16] But the research conducted in the United States by Pritchard et al. revealed comparable results.[17] According to Cosgrove et al., bronchial asthma was the most often misdiagnosed disease when it came to interstitial lung diseases.[9] In cases of misdiagnosis, our research also revealed that bronchial asthma was (40.5%) the most often given diagnosis. In addition to this, individuals were also given inhaled medicine, according to a research by Hoyer et al.[18] It is critical to diagnose interstitial lung diseases as soon as possible so that the illness may be appropriately controlled and treated. The disease's co-morbidities and deadly complications should be the main emphasis. Respiratory therapists use methods such as 99mTc-MIBI Lung Scintigraphy to track the development of interstitial lung diseases and assess the degree of parenchymal involvement worldwide.[19] similarly, if proper diagnosis and therapy are not received promptly, the problems of interstitial lung disease will also increase. Numerous smoking-related diffuse parenchymal lung illnesses, such as desquamative interstitial pneumonia, pulmonary Langerhans-cell histiocytosis and respiratory bronchiolitis-associated interstitial lung disease were reported by Hagmeyer and Randerath.[20] Additionally, smoking increases the risk of developing several other ILD, such as diffuse alveolar haemorrhage in Goodpasture syndrome, pulmonary alveolar proteinosis, acute eosinophilic pneumonia, rheumatoid arthritis-associated interstitial lung disease, and combined pulmonary fibrosis and emphysema.[21] If our settings lack a CT scan, bronchoscopy, open lung biopsy, and a skilled histopathologist, we may find it difficult to distinguish between the different causes of ILD.

Conclusion

It was concluded that interstitial lung disease individuals are diagnosed after a significant delay and provide significant diagnostic challenges for basic and secondary care.

References

1. Raghu G, Mehta S. Interstitial lung disease (ILD) in India: Insights and lessons from the prospective, landmark ILD-India registry. Lung India 2016; 33:589-91.
2. Raghu G, Remy-Jardin M, Myers JL, Richeldi L, Ryerson CJ, Lederer DJ, Diagnosis of Idiopathic Pulmonary Fibrosis. An Official ATS/ERS/JRS/ALAT Clinical Practice Guideline. Am J Respir Crit Care Med 2018; 198:e44-e68.
3. Martinez FJ, Chisholm A, Collard HR, Flaherty KR, Myers J, Raghu G, et al. The diagnosis of idiopathic pulmonary fibrosis: current and future approaches. Lancet Respir Med 2017; 5:61-71.
4. Flaherty KR, Toews GB, Travis WD, Colby TV, Kazerooni EA, Gross BH, et al. Clinical significance of histological classification of idiopathic interstitial pneumonia. Eur Respir J 2002; 19:275-83.
5. Bjoraker JA, Ryu JH, Edwin MK, Myers JL, Tazelaar HD, Schroeder DR, et al. Prognostic significance of histopathologic subsets in idiopathic pulmonary fibrosis. Am J Respir Crit Care Med 1998; 157:199-203.
6. Raghu G, Collard HR, Egan JJ, Martinez FJ, Behr J, Brown KK, et al. An official ATS/ERS/JRS/ALAT statement: idiopathic pulmonary fibrosis: evidence-based guidelines for diagnosis and management.Am J Respir Crit Care Med 2011;183:788-824.
7. Oldham JM, Noth I. Idiopathic pulmonary fibrosis: early detection and referral. Respir Med 2014; 108:819–29.
8. Schoenheit G, Becattelli I, Cohen AH. Living with idiopathic pulmonary fibrosis: an in-depth qualitative survey of European patients. Chron Resp Dis 2011;8:225–31.
9. Cosgrove GP, Bianchi P, Danese S, Lederer DJ. Barriers to timely diagnosis of interstitial lung disease in the real world: the INTENSITY survey. BMC Pulm Med 2018; 18:9-13.
10. Bonella F, Wijsenbeek M, Molina-Molina M, Duck A,Mele R, Geissler K, et al. European IPF patient charter: unmet needs and a call to action for healthcare policymakers. Eur Respir J 2016; 47:597–606.
11. Jones RC, Price D, Ryan D, Sims EJ, von Ziegenweidt J, Mascarenhas L, et al. Opportunities to diagnose chronic obstructive pulmonary disease in routine care in the UK: a retrospective study of a clinical cohort. Lancet Respir Med 2014; 2:267-76.
12. Martinez FJ, Chisholm A, Collard HR, Flaherty KR, Myers J, Raghu G, et al. The diagnosis of idiopathic pulmonary fibrosis: current and future approaches. Lancet Respir Med 2017; 5:61-71.
13. Antoniou KM, Symvoulakis EK, Margaritopoulos GA, Lionis C, Wells AU. Early diagnosis of IPF: time for a primary-care case-finding initiative? Lancet Respir Med 2014; 2:-1.
14. Crisan-Dabija R., Mihaescu T. Analysis of possible diagnostic errors—A proposed formula to improve the management of respiratory patients; Proceedings of the E-Health and Bioengineering Conference (EHB); Sinaia, Romania. 22–24 June 2017; pp. 486–489
15. Schoenheit G., Becattelli I., Cohen A.H. Living with idiopathic pulmonary fibrosis: An in-depth qualitative survey of European patients. *Chron. Respir. Dis.* 2011; 8:225–231.
16. Mujeeb Rahman KK, Samaria JK.Diagnostic delay and misdiagnosis in interstitial lung disease (ILD) at primary health care level. Eue Resp J 2016; 48:1-5.
17.Pritchard D, Adengunsoye A, Lafond E, Pugashetti JV, digeronimo R, Boctor N et al. Diagnostic test interpretation and referral delay in patients with interstitial lung disease. Respir Res 2019; 20:253-8
18. Bahtouee M, Saberifard J, Javadi H, Nabipour I, Raeisi A, Assadi M et al. 99mTc-MIBI Lung cintigraphy in the Assessment of Pulmonary Involvement in Interstitial Lung

Disease and its Comparison with Pulmonary Function Tests and High-Resolution Computed Tomography: A Preliminary Study. Medicine (Baltimore) 2015; 94:e2082

19.Cobo-Ibáñez T, López-Longo FJ, Joven B, Carreira PE, Muñoz-Fernández S, Maldonado-Romero V, et al. Long-term pulmonary outcomes and mortality in idiopathic inflammatory myopathies associated with interstitial lung disease. Clin Rheumatol 2019; 38:803-15

21. Hagmeyer L, Randerath W. Smoking-related interstitial lung disease. Dtsch Arztebl Int 2015; 112:43-50

22.Wijsenbeek M, Kreuter M, Olson A, Fischer A, Bendstrup E, Wells CD et al. Progressive fibrosing interstitial lung diseases: current practice in diagnosis and management. Curr Med Res Opin 2019; 35:2015-24