ORIGINAL ARTICLE

INTERSTITIAL LUNG DISEASES AND MIMICS: EXPERIENCE FROM A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Interstitial Lung Diseases (ILDs) is a diverse group of lung diseases, associated with inflammation and fibrotic changes in the lung interstitium. The etiology of these diseases is multifactorial including idiopathic disorders, associated with connective tissue diseases, due to environmental and occupational exposure and drug related. According to some studies Idiopathic pulmonary fibrosis (IPF) is more prevalent form of ILD but connective tissue disease-associated ILD (CTD-ILD), hypersensitivity pneumonitis (HP) are more common in areas where occupational or environmental exposures are high. This study aims to investigate the distribution of subtypes of ILD among patients presenting to a tertiary care hospital setting.

Methods: This retrospective analysis was carried out in the Department of Pulmonology, Shaikh Zayed Hospital, Federal Postgraduate Medical Institute (FPGMI), Lahore. All 138 patients diagnosed with ILD between January 2021 and December 2024 were included in the study.

Results: The number of patients enrolled in the study was 138, having ages ranging from 25 to 82 years, with the most frequent diagnoses being hypersensitivity pneumonitis (HP) at 27.5%, rheumatoid arthritis-associated interstitial lung disease (RA-ILD) at 15.9%, idiopathic pulmonary fibrosis (IPF) at 11.6%, and sarcoidosis at 10.1%. In patients with HP, avian exposure was the predominant etiological factor, seen in 63.1% of patients. In patients with IPF, all patients were older than 55 years, whereas sarcoidosis was more common in those aged between 25 and 50 years.

Conclusion: Hypersensitivity pneumonitis (HP) and rheumatoid arthritis-associated interstitial lung disease (RA-ILD) are the most prevalent form of ILD in our population.

Key Words: Hypersensitivity pneumonitis (HP), Interstitial lung diseases (ILD), rheumatoid arthritis-associated interstitial lung disease (RA-ILD)

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INTRODUCTION

Interstitial Lung Diseases (ILDs) represent a heterogeneous group of the lung disorders, characterized by inflammatory and fibrotic changes affecting the interstitium of the lungs.[1] These disorders are resultant from a broad range of underlying factors and triggers, such as idiopathic causes, autoimmune disorders, environmental exposures, and drug-related effects. A vast array of disorders comes under the spectrum of ILDs like idiopathic pulmonary fibrosis (IPF), connective-

tissue-disorder-associated ILD (CTD-ILD), hypersensitivity pneumonitis (HP), sarcoidosis, and nonspecific-interstitial pneumonia (NSIP). All these diseases pose an extraordinary challenge in diagnosis and management, primarily due to their complexly intertwined clinical features and varied underlying mechanisms.

The prevalence and distribution of different ILD subtypes are characterized by significant geospatial variability and are influenced by multiple factors. These factors include environmental exposures, genetic susceptibilities, and disparities in access to healthcare. Studies document that IPF is the most common type of idiopathic interstitial pneumonia, whereas HP and CTD-ILD are more often seen in areas where exposures are high, be it occupational or environmental.[2,3] Furthermore, sarcoidosis and drug-induced ILDs are also significantly relevant clinically and usually require a holistic-interdisciplinary approach for diagnosis and management.[4]

Tertiary hospitals play a key role as referral centers in the diagnosis and management of complex and rare ILD cases, providing an opportunity to study the spectrum and frequency of these diseases in a defined patient population. An in-depth understanding of such trends would prove instrumental in developing higher accuracy-on-diagnosis and targeted strategies for treatment compatible with local needs.

This research aims to investigate the distribution of ILD subtypes among patients presenting to a tertiary care hospital setting. This research will be an overview of ILD clinical, demographic, and etiological data in order to strengthen already-existing knowledge and create avenues for the future in research and healthcare planning.

METHODS

A retrospective study was carried out in the Department of Pulmonology at Shaikh Zayed Hospital, FPGMI, Lahore. The study included all 138 patients diagnosed with interstitial lung disease (ILD) between January 2021 and December 2024. Data were entered and analyzed using SPSS version 20.0. Descriptive statistics, including frequencies and percentages, were used to summarize the data, which were presented using tables, pie charts, and bar graphs.

RESULTS

A total of 138 patients were enrolled in the study, having ages between 25 and 82 years. The most common diagnosis was Hypersensitivity pneumonitis (HP) seen in 27.5% of cases, followed by rheumatoid arthritis-associated interstitial lung disease (RA-ILD) observed in 15.9% and idiopathic pulmonary fibrosis (IPF) in 11.6%. While other diseases included sarcoidosis in 10.1%, systemic sclerosis-associated ILD in 8.7%, Non-spacific interstitial pneumonia (NSIP) 8%, systemic lupus erythematosus-associated ILD (SLE-ILD) in 6.5%, interstitial pneumonia with autoimmune features (IPAF) in 5.8%, cryptogenic organizing pneumonia (COP) in 4.3%, and silicosis in 1.4% of cases.

Sarcoidosis was most commonly diagnosed in age group 25 to 50 years, other common diagnosis of this group included connective tissue disease associated ILD & CHP. IPF was more commonly diagnosed in females (61%), and all patients with IPF were above 55 years of age. Among patients with HP, avian exposure was the most common etiological factor, identified in 63.1% of cases, followed by farmer's lung in 21.0% and other occupational exposures in 15.7%.

Table: 1

Gender	Number	Percentage
Male	60	43.5
Female	78	56.5
Age Group	Number	Percentage
25 to 50	58	42.4
51 to 70	55	40.2
More Than 70	25	17.4

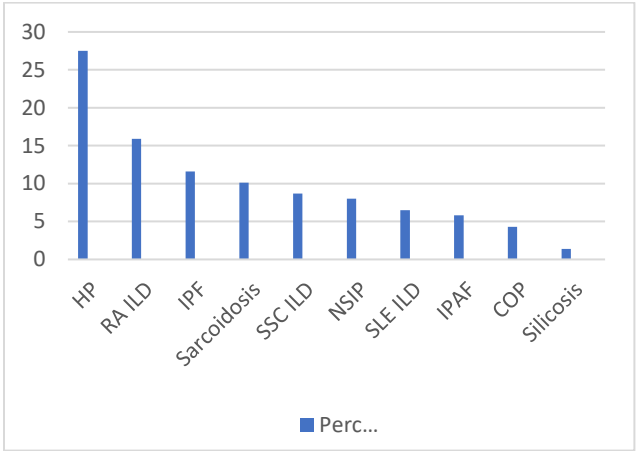

Figure1: Frequency of ILDs

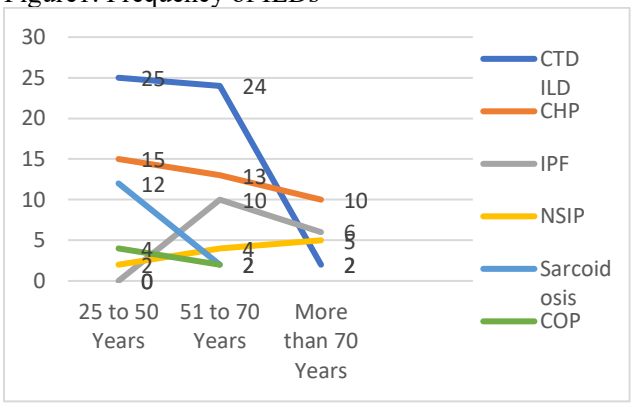

Figure2: Distribution of ILD according to age

DISCUSSION

This research highlights the spectrum of ILD subtypes observed in a tertiary healthcare facility, revealing both similarities and distinct differences when compared to previous national and international studies.

Hypersensitivity pneumonitis (HP) emerged as the most frequently diagnosed ILD in our study population accounting for 27.5% of cases. This high prevalence may be attributed to common environmental exposures in our population, particularly avian contact and agricultural activities. Avian exposure was identified as the leading cause, consistent with findings from regional studies that emphasize the impact of domestic bird exposure in South Asia.[5] The National ILD Registry from Pakistan (ILD-PAK) reported HP in 12.6% of cases, suggesting geographic and environmental factors strongly influence disease distribution.[4] Similarly, studies from India have reported HP prevalence ranging between 10% and 47%, further supporting the role of local exposures.[6]

Rheumatoid arthritis-associated ILD (RA-ILD) was the second most common diagnosis (15.9%), in line with ILD-PAK registry findings where connective tissue disease-associated ILD (CTD-ILD) was highly prevalent. Variations in reported frequencies of CTD-ILD globally likely reflect population genetics and differences in rheumatological disease burdens across regions.[5]

Idiopathic pulmonary fibrosis (IPF) constituted 11.6% of cases in our study. Notably, there was a female predominance (62%) and all cases occurred in patients above 55 years of age. This differs from the ILD-PAK registry, where IPF was the most common ILD (28.3%) and global studies which report a male predominance.[5,7] Possible explanations for these differences include sample size, referral bias, or environmental and genetic factors unique to our population

Sarcoidosis accounted for 10.1% of ILD cases, predominantly affecting patients between 25 to 50 years, which is consistent with the age distribution reported in other studies, including the ILD-PAK registry where sarcoidosis accounted for 6.8%.[5]

Less commonly observed ILDs included those associated with systemic sclerosis, systemic lupus erythematosus (SLE), interstitial pneumonia with autoimmune features (IPAF), cryptogenic organizing pneumonia (COP), and silicosis, highlighting the heterogeneous nature of ILD presentations in our clinical setting. The presence of silicosis, though limited, highlights ongoing occupational health risks similar to those reported in other local studies.[8]

Overall, our study underlines the significant burden of HP and CTD-ILDs in our population, emphasizing the importance of environmental history and multidisciplinary evaluation in ILD diagnosis. The regional variation observed in ILD patterns calls for expanded registry data and continued research to guide early diagnosis, preventive strategies, and effective management.

Further large-scale studies with long-term follow-up are warranted to better understand disease progression and outcomes in our population. Establishing regional ILD registries may help improve diagnosis, facilitate research, and guide management strategies tailored to local needs.

ETHICAL APPROVAL

Ethical approval was granted by the Institutional Review Board King Edward Medical University; Lahore vide reference No 639/RC/KEMU dated: 10/09/2020

CONFLICT OF INTEREST:

Authors declare no conflict of interest.

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AUTHOR'S CONTRIBUTIONS

MS, MSN: Data collection and manuscript writing
TM: Data collection & analysis and critical review
MR: Manuscript writing, data analysis
FR: Data analysis and manuscript writing
ALL AUTHORS: Approval of the final version of the manuscript to be published

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