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Spectrum of Interstitial Lung Disease at Tertiary Care Hospital in Lahore

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ABSTRACT

Background and Objectives: Interstitial lung disease (ILD) is a family of lung diseases characterized by inflammation and scarring of the lung tissue, alveolar walls, alveolar ducts, and bronchioles. The nature of such diseases is rather diverse, and they can be caused by any number of factors of manifest different progression patterns; thus, correct diagnosis is crucial here. To compare the range of ILDs among patients admitted to a tertiary care hospital in Lahore.

METHODOLOGY: This cross-sectional study recruited 149 patients (121 male and 30 female) with suspected ILD using a convenient sampling technique from General Hospital Lahore. These symptoms were cough in 99 patients, shortness of breath in 112 patients and smoking in 97 patients. The diagnosis was done using HRCT through a Toshiba Aquiline 64 Slice CT scanner.

RESULTS: Out of the 149 patients, 99 had cough, 112 had short breath, and 97 were smokers. The HRCT results showed that the middle right lung lobe was involved in 44%, the upper lung zone in 52% and the lower lung zone in 53% of smokers. There was a slight increase in Septal thickening (33%) and focal to moderate honeycombing (35%) in the upper left lobe. The ages ranged from 48 to 73 years.

CONCLUSION: The findings of this study show that ILDs are more prevalent in females as compared to males. The common symptoms of ILDs are similar to tuberculosis, which suggests that the disease remains grossly unrecognized and underdiagnosed. Some drugs, including chemotherapeutic agents and anti-inflammatory drugs, have been found to induce the formation of ILD.

KEYWORDS: ILDs, HRCT

INTRODUCTION

There is no consistent definition of ILD but it is generally described as a generic term for a group of more than 200 lung disorders that mainly affect the lung parenchyma and are inflammatory and fibrotic (1). The general disease can be idiopathic, pulmonary fibrosis (IPF), idiopathic non-specific interstitial pneumonitis (INSIP), hypersensitivity pneumonitis (HP) and diseases associated with connective tissue disorders (CTD). Research shows that more than half of the ILDs are of undetermined aetiology except for IPF and INSIP, which are the most frequent forms. The various ILDs have been reported in different parts of the world with little research done especially in the developing world (2).

ILD can be diagnosed clinically, by high-resolution computed tomography, lung function tests and very rarely – biopsy. HRCT scan is invaluable in the diagnosis of ILD and in staging the extent of lung disease. ILD patients may present with changes such as traction bronchiectasis, honeycombing, ground glass opacity and reticular pattern. Alerts such as these help in distinguishing ILD from a number of pulmonary diseases (3).

Tertiary care hospitals in Lahore, Pakistan and their role in diagnosing and managing ILDs: The availability of advanced diagnostic facilities. Local research indicates that 30-40% of all ILD patients in Pakistan have IPF (4). However, ILD has remained difficult to diagnose since it is very diverse and is often confused with other lung diseases such as tuberculosis. This perhaps brings a sense of even more emphasis to early detection and more enlightenment to professionals in

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the field of medicine (5).

The risk associated with developing ILD includes smoking, age, and environmental or occupational exposure. Moreover, it can cause several complications such as; gastroesophageal reflux, depression, pulmonary hypertension, and sleep-disordered breathing, which makes the condition of the patient worse. In most cases, ILD is associated with chronic lung diseases like COPD, bronchiectasis and cystic fibrosis complicating the management with such conditions as osteoporosis (6).

ILD typically progresses to respiratory failure, which is manifested by shortness of breath, and cough. It can be a nonprogressive disease in some patients and can be progressive and permanently disabling at other times. The disease if left undiagnosed or diagnosed late usually requires the intervention of several forms of care and multiple professionals. Appreciation of the clinical distribution of ILDs in tertiary care centres is important in fine-tuning diagnostic approaches and therapeutic management (4).

Hence, ILD is a chronic ongoing health issue, and ailments need a coordinated, interprofessional approach to diagnosis and treatment. Enhanced awareness of such disorders, besides improved diagnostic services in medical facilities, is likely to be of great significance in facing a better result for patients of ILDs (7).

Objective: To find out the spectrum of interstitial lung disease at a tertiary care hospital in Lahore

METHODOLOGY

Study Design: Cross-sectional Descriptive

Settings: The study was conducted at the Department of Radiology Lahore General Hospital, Lahore (5).

Duration of Study: 4 months

Sample Size: All the patients coming within 4 months of study duration with ILD were included.

Sampling Technique: Convenient sampling technique

Sample section

Inclusion Criteria:

All of the patients visiting the radiology department for HRCT chest with a clinical diagnosis of interstitial lung disease.

Exclusion Criteria:

- Uncooperative Patient
- Pregnancy

Equipment: Siemens- 64 slices Multidetector Computed Tomography

Ethical Considerations

The study is conducted in accordance with the ethical standards established by the ethical committee of the University of Lahore, and participant rights are upheld.

- Written informed consent (attached) was taken from all the participants.
- All information and data collection are kept private.
- The study's participants maintained their anonymity at all times.
- They were informed that they were free to withdraw at any time during the process of the study.
- If there were any known risks associated with this research.
- Known Risks: Radiation exposure, Contrast agent reaction, Misinterpretation of results.
- Benefits: Improved Diagnosis, Increased Knowledge, Cost-effectiveness.
- We have done everything we can to protect privacy. Identity was not revealed in any publication resulting from this study.

Their participation in this research study is voluntary. They choose not to participate and may withdraw their consent to participate at any time. They will not be penalized in any way should they decide not you participate or to withdraw from this study.

Data Collection Procedure

- Data was collected by data collection sheets (8).
- Data was collected after taking informed consent forms from all patients.
- Data was collected according to age, gender Smoking status, cough, shortness of breath, reticular pattern and nodular pattern will be recorded on the datasheet.
- All data was stored in a Microsoft Excel sheet and SPSS (9).
- Patient was made to lie supine on the couch and raised arms over the head for CT examination.
- Collimation was from the clavicle to the diaphragm.
- Lung window was used.
- Breath holds technique was described to the patient (10).
- All the examination was well explained to the patient
- Thin sections defined as <1.5 mm (the original HRCT technique performed in first- and second-generation scanners, due to hardware limitations, had a thicker definition of thin slices defined as <3.0 mm)

Data Analysis Procedure

Data was evaluated and analyzed using Statistical

Software for Social Sciences (SPSS version 24.0), and Microsoft Excel 201. Frequency distribution tables and graphs were made (11).

RESULTS

In this study, 149 patients visited the radiology department due to cough, smoking, and shortness of breath There were 121 males and 30 were females (12). Out of 151 patients, 99 patients had complained of cough, 112 patients had shortness of breath, and 97 were smokers. In HRCT Findings smoking was found middle right lung lobe involvement in 44% of HRCT Findings upper lung zone. There were 73 males and 76 females. Out of 149 patients, 78 patients had complained of cough, 75 patients had shortness of breath, and 97 were smokers. 32 had Left lobe involvement 44 patients and Out of 149 patients, 33 patients had wheezing in the left lobe of the lung (13). Out of 149 patients, 62 patients were smokers and their upper left lobe lung was involved. In HRCT Findings septal thickening was 33%middle right lobe of the lung, In HRCT Findings upper lung zone involvement was 52%, the lower zone was 53% central distribution was 65.6%, In HRCT Findings honeycombing was found upper left lobe lung involved 35% The minimum age was 48 years and the maximum was 73 years. In HRCT Findings of Right lung lobe involvement out of 149 patients, 73 were Middle (11).

Table 1: Frequency distribution of Gender

Gender M/F	Frequency/Percentage total (149)
cough	Yes 78 (52.2%) No 71 (47.7%)
Wheezing	Yes 73 (49.9%) No 76 (51.0%)
Smokers	Yes 81 (54.4%) No 68 (45.8%)

Table: 1 Out of 149 patients, 78 patients had complained of cough Out of 149 patients, 73 patients had complained of wheezing Out of 149 patients 81 were smokers.

Table 2: Crosstabulation between Status of left lung lobe involvement

Smoking Years (Yes/No)	LUNG LOBE INVOLVEMENT	Lower Count	Lower %
No	Count	2	10%
	% within LUNG LOBE	42%	24%
Yes	Count	2	
	% within LUNG LOBE	28%	78%
Total	Count	2	
	% within LUNG LOBE	00.0%	00.0%

Table 3: Chi-Square Tests

Test	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.0978	2	0.078
Likelihood Ratio	5.232	2	0.073
N of Valid Cases	149		

DISCUSSION

In this study, 149 patients with interstitial lung disease (ILD) were evaluated, most of them presented with dyspnoea, cough, and wheezing. Out of the two cultural groups, there were 76 females and 73 males. Of these, 97 were smokers, 78 patients said that they coughed frequently, and 75 said they felt breathless most of the time (14). All 149 patients were with confirmed centrilobular emphysema and 32 with left lung lobe involvement, of which 33 complained of left lung lobe wheezing. All together there were 62 smokers with lung involvement detected in the upper left lobe. Findings of the examination by the HRCT scans were middle right lung lob dilation is 33%, while the upper and lower lung zones were involved in 52% and 53% respectively, in the septal thickening. The central distribution was at 65.6 per cent (7)

In the the clinical and radiological characteristics of ILD, a study conducted by Ali Sarwar Zubairy, Khumbsawad et al looked at a study of 537 patients where all the patients were above the age of sixteen years with confirmed ILD diagnosis. Of the patients, 324 (60.3%) were female: the average age of the population was 60.5 ± 14.9 years. Co-morbid conditions were DM II at 13.4%, IHD at 3.9% and hypertension at 8.9%. Among them, idiopathic pulmonary fibrosis (IPF) was more common than other ILDs, in which it comprised 40.4%. Other diagnoses were sarcoidosis 15.%.3, idiopathic nonspecific interstitial pneumonia 19.%.7 and ILD associated with connective tissue disease 10% (15).

Hypersensitivity pneumonitis (HP) was found as the second most prevalent ILD in this study and occurred with higher prevalence than in the prior decade. However, HP was reported more frequently in the Indian registry (47.3%) as well as in the Japanese survey (60.4%). Out of 52 patients with HP, 79.5% were exposed to avian and 45.3% were housewives who were positive for avian antigens suggesting a high prevalence of avian antigens in a home environment. This can be aligned with the regional data in particular identifying the growing awareness of chronic fibrosing HP that is typically mistaken for IPF (16).

In the study done by Sheetu Singh his patients' enrollment total was 1,084 For HP, a diagnosis was made in 47.3%, for CTD-ILD in 13.9% and for IPF in 13.7%. The main drawback of the data collected through the

ILD registry is that these data have been collected mostly from large urban populations of Pakistan, and therefore they may not be quite representative of overall Pakistani rural populations (14). Furthermore, the absence of elaborate checklists to elicit the exposure history and failure to use serum precipitins to diagnose environmental allergens could have resulted in the underreporting of HP (11).

A collaboration of these studies focuses on the diversification and sophistication, which makes ILDs need precise diagnosis and identification of future trends, including the rise in HP. Recognition and adequate treatment are exceptional for enhancing the patient's condition, increasingly when environmental and occupational hazards are easily found in a specific area. Appreciation of the range of clinical, imaging, and functional profiles of ILa is informative to clinicians keen on improving the approach to individual patients (13-21)

CONCLUSION

In this study, we concluded that females were more likely to develop pulmonary disease ILDs than males. ILDs are still frequently misdiagnosed as TB, and increased awareness, education and diagnostic facilities are required to diagnose ILDs at an early stage. Certain medications, such as chemotherapy drugs, antibiotics, and anti-inflammatory agents, can cause lung damage and ILD.

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Authors Contributions:

Muhammad Saad Siddique and Muhammad Shaheryar: Substa ntial contributions to the conception and design of the work.

Iqra Ramzan and Sadia Yaseen: Design of the work and the acquisition.

Muskan Yaseen and Hamza Azam: Drafting the work. Final approval of the version to be published.

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