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Pulmonary Medicine

RETROSPECTIVE ANALYSIS OF INTERSTITIAL LUNG DISEASE IN TERTIARY CARE CENTRE OF CENTRAL INDIA.

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ABSTRACT Significant progress has been made in recent years in understanding the epidemiology of interstitial lung diseases (ILD) across the world, but the amount of information available is still small compared to other respiratory diseases like obstructive lung diseases or lung cancer. In this study we tried to explore the epidemiology of ILD, by describing a retrospectively collected data of newly diagnosed ILD cases in a tertiary care centre of central India over two years.

The collected data was entered in excel sheet and analysed. A totalof 82 retrospectively collected patients requiring a bronchoscopy were enrolled, 83diagnostic procedures were done among 82 patients, in which,82 broncho alveolar lavages (BAL) with trans-bronchial biopsies, and only one surgical lungbiopsy was included.The most common diagnosis was sarcoidosis followed by non specific interstitial pneumonitis and occupational lung diseases, being more common in males than in females.

KEYWORDS :

Introduction

Interstitiallungdiseases,alsocalleddiffuse parenchymal lung diseases, are a large and diverse group of fibrotic and non- fibrotic conditions that affect the bronchioles, alveoli and interstitium of the lungs. Severalfactorsplayrolein the pathogenesis of these diseases including genetics, drug and radiation toxicities, smoking, environmental and occupational exposures. They could also beidiopathic.DPLD areclassified based on etiology into four groups: DPLD of known cause (like drugs or CTD associated),Idiopathicinterstitialpneumonias (like IPF), Granulomatous DPLD (like sarcoidosis), and others (like Lymphangioleiomyomatosis). The inci- dence of these diseases has been increasing based on population based analyses.[1,2] Most of these studies were from the Western hemisphere, with few Mediterranean studies.[3,4,5] Unfortunately there is no data about the epidemiology of ILD in Tertriary Care Centres of Central India. In this study we examined all the cases of newly diagnosed ILD presented to our Hospital, from 2016-2018.

Materials and Methods

This is a retrospective analysisof all 82 undiagnosed patients, who were suspected to have ILD, and who presented to our hospital,intheperiodbetweenAugust1st2016 andDecember31st2018.

Data wascollected from bronchoscopyunit, those patients attending the OPD or admitted in IPD who required a bronchoscopicprocedure and those who were 18 years or greater in age were enrolled in the study.Atotalof83diagnostic procedures were done among 82 patients, in which,82 broncho alveolar lavages (BAL) with trans-bronchial biopsies, and only one surgical lungbiopsy was included. Eachcasewas discussed by a pulmonologist and a radiologist and differential diagnosis list was generated. Thepathologistreviewed specimens in light of the mostlikelydifferentialdiagnosis.

Results

We identified 82 patients with suspected ILD, including 36 males (44%) and 46 females (56%), with a mean age of 49.3 years(50.5formales,49forfemales).Most patientswerenevers mokers48(58.5%),11 (13.4%) were ex-smokers and only 10 patients(12%) wereactivesmokers atthe time of diagnosis. Data about smoking statuscould notberetrieved in13patients (15.8%)(Table1).

Ahistory of relevant occupational or environmental exposurewas documented in 25patients(30%). Theseincluded11 patients (44%) who were exposed to constructiondust,5patients(20%)whowere exposed to chemical, other exposures included farm dust, tobacco farming, asbestos, metals, tear gas and others (Table 2). Patients were also distributed geographically according to their place of residence. Most patients came from Pithampur (23%), Dewas (12%), Mandideep (11%), Hoshangabad (9.7%), and Sanwer(7.3%), these numbers were probably less valid as ease of access to our hospital from surrounding cities compared to others and by different population sizes of these cities (Table 3).

A final diagnosis was made in 68 of 82 patients (diagnostic accuracy of 86%), more than 15 different interstitial lung diseases were identified.

The most common ILD in tertiary care centres of central India was sarcoidosis, diagnosed in 22 patients (26.8%), this was also the most common diagnosis in males (25%) and females (28.2%) alone, being slightly more common in females.

The second most common diagnosis made was non-specific interstitial Pneumonitis (NSIP), surprisingly NSIP was more common in males than in females at 19.4% in males compared to 17.3% in females. The third most common ILD was Occupational lung disease in males (16.6%) and Vasculitis, LIP, Bronchiolitis and Alveolar proteinosis in females, each making up to 6.5% of diagnoses. All the four Alveolar proteinosis cases were diagnosed in 2016,and none in 2018. All patients underwent chest x-ray and CT chest as a part of their evaluation, the most common finding was bilateral interstitial infiltrates, in more than 89% of patients.

As found, interstitial lung diseases were more common in females in comparison to males (1.27:1), probably because of higher incidence of associated diseases, like vasculitis and connective tissue diseases in females. The most common diagnosis made was Sarcoidosis, followed by NSIP in both genders, while Sarcoidosis was more common in females (1:0.69), NSIP was slightly more common in males compared to females (1.16:1). The third most common diagnosis was occupational lung disease in males-mostly due to exposure to construction dust in the workplace- where as in females LIP, Vasculitis, Bronchiolitis and Alveolar proteinosis came third, each making up 6.5%.

All four Alveolar proteinosis cases were diagnosed in 2014, and none in 2015. We believe these cases were non- diagnosed left over cases from previous years. It is not until 2016 when another case of alveolar proteinosisgets diagnosed.

These data represent the first and only available data on ILD in tertiary care centres of central India, however it is still not enough to accurately calculate the incidence or prevalence of ILD in the country, for several reasons.First, the data gets collected from archives of only one medical center in the country, while many still seek medical care in surrounding areas, this represents a potential loss of data. Second, the data is a retrospective analysis of all bronchoscopy derived ILD diagnosis, that is the interstitial lung diseases that usually get diagnosed based on clinical presentation and typical imaging without invasive procedures being included in the analysis, for example patients with diseases like

Idiopathic pulmonary fibrosis, Lymphangioleiomyomatosis, or Pulmonary Langerhans cell histiocytosis were unlikely to undergo a bronchoscopic procedure in our department. Additionally, patients who were sick enough did not undergo diagnostic procedures and were not included in the registry itself.

Discussion:

Data about the epidemiology of interstitial lung diseases are still scarce compared to other pulmonary diseases, especially in the Mediterranean region. Karakatsani etal[3]studied the incidence and prevalence of various interstitial lung diseases among 967Greek patients, they found that the annual incidence of ILDs was 4.63 new cases per 100,000 inhabitants, and the estimated prevalence was 17.3 cases per 100,000 inhabitants. The most frequent diagnosis was Sarcoidosis at (34.1%), followed by IPF at (19.5%) and CTD related ILD (12.4%).

In Italy Agustini[4] provided the first look into the Italian register for diffuse infiltrative lung disorders (RIPID), his report spanned the period 1998-2000 and showed that the most frequent disorders were IPF at (37.6%), followed by sarcoidosis at (29.2%), and Langherans' cell hystiocytosis at (6.6%). A second look at the same register by Tinelli[5] from 2001 to 2005 included 3152 patients and showed that the most frequently reported diagnoses wereSarcoidosis (33.7%) and IPF (27.4%).

In a report from the southern regions of Spain that included 744 patients, López- Campo[6]studied the incidence of ILD over a 3-year period 1998-2000, the most common diseases were Idiopathic interstitial pneumonias (39%) followed by sarcoidosis (12%). The annual incidence of ILD was 3.62 cases per 100,000 inhabitants. Another study from Spain by Xaubet[7] calculated the incidence of ILD at 7.6 cases per 100,000 inhabitants, again the most common diseases were IPF (38.6%), followed in decreasing order by sarcoidosis (14.9%), cryptogenic organizing pneumonia (10.4%), ILD associated with collagen vascular diseases (9.9%) and hypersensitivity pneumonitis (6.6%).

Finally in a study from Saudi Arabia by Alhamad et al.[8] CTD related ILD was the most common diagnosis at (34.8%), followed by IPF (23.3%) and Sarcoidosis (20%).

The results of this study are comparable to data from other Middle Eastern and Mediterranean countries, taking in consideration that our data were derived from bronchoscopy archives and did not include IPF patients in the current study. In all these studies sarcoidosis was the most common or second most common interstitial lung disease encountered.

Although we studied a small number of patients over a short period of time, our results are invaluable, because they represent the first and only data about ILD in tertiary care centres of central India, we hope this study will lay the ground for more extensive research of ILD.

Conclusions

Sarcoidosis is the most common ILD in both males and females with female preponderence, followed by Non-specific Interstitial Pneumonia (NSIP). ILD in general is more common in females compared to males, and in none smokers or ex-smokers compared to current smokers. Nearly one third of patients had an occupational or an environmental exposure, the most common was exposure to construction dust. 89% patients had bilateral interstitial infiltrates on imaging. Also the diagnostic yield of clinico-radiologic information combined with bronchscopictransbronchial procedures was excellent at 86%.

Implications:

The presence of smoking, tobacco farming, occupational dust can be an important factor in etiogenesis but prophylactic bronchoscopy can aid in early diagnosis and treatment.

Table 1. Illustrates demographic characteristics of study patients.

S.No.	Exposure	2016	2017	2018
1	Smoker	3	7	10
2	Exsmoker	8	3	11
3	Not Mentioned	8	5	13
4	Non-Smoker	25	23	48
5	History of Exposure	18	7	25

Table 2. Illustrates occupational exposure of study patients.

S. No.	Exposure	No. of Patients	Percentage
1	Construction dust	11	44%
2	Metalworker	1	4%
3	Asbestos	1	4%
4	Farm dust	2	8%
5	Tobbaco industry	1	4%
6	Chemicals	5	20%
7	Others	4	16%

Table 3. Illustrates the diagnosis of study patients.

S. No.	Exposure	2016 (N1= 44)	2017 (N2=38)	2018 (N3= 82)
1	IPF	1	0	1
2	NSIP	6	7	13
3	LIP	2	1	3
4	DIP	0	1	1
5	Sarcoidosis	11	11	22
6	Occupational lung disease	2	4	6
7	Drug induced lung disease	1	1	2
8	AEP	0	1	1
9	Bronchiolitis	1	3	4
10	Vasculitis	2	3	5
11	Alveolar proteinosis	4	0	4
12	HSP	2	0	2
13	BOOP	2	0	2
14	Aspiration pneumonia	2	0	2
15	Not diagnostic	8	6	6

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