RESEARCH ARTICLE

RECENT TRENDS IN INTERSTITIAL LUNG DISEASE: STUDY OF 25 CASES

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DOI: 10.5455/ijmsph.2013.2.52-55 **Received Date: 10.10.2012** **Accepted Date: 10.10.2012**

ABSTRACT

Background: Interstitial lung disease accounts for more than 200 etiology. There has been worldwide increase in diagnosis of interstitial lung disease because of the help of recent advance diagnostic tools.

Aims & Objective: to study age & sex distribution, to correlate symptoms & pulmonary function, role of HRCT as etiology diagnosis particular in interstitial pulmonary fibrosis, to study ECG & 2D ECHO changes and to study pulmonary function test pattern.

Material and Methods: This was the study of 25 cases of interstitial lung disease in which various parameters like DLCO, PFT, 2D ECHO, ECG, identification of etiology, assessment of prognosis & role of immunosuppressant, steroids were studied. The exclusion criteria was age < 12 years.

Results: The age distribution was highest in age group of 50-70 years. Occupational interstitial lung disease was more common in male while the connective tissue disorders are common in female which lead to more incidence of interstitial lung disease. Pulmonary function test is very helpful for prognosis. The patient with high pulmonary artery pressure had worst prognosis. HRCT is a useful tool for diagnosis of IPF without biopsy.

Conclusion: Interstitial lung disease with moderate to severe pulmonary artery hypertension leads to poor prognosis. HRCT is very useful non-invasive diagnostic tool for interstitial lung disease.

KEY-WORDS: Interstitial Lung Disease; HRCT Lung; Steroids; Immunosuppressant

Introduction

Interstitial lung disease is a heterogeneous group of disease which defined as interstitial inflammatory condition involving lung parenchyma, alveoli, alveolar epithelium, and capillary endothelium, spaces between this structure as well as perivascular & lymphatic tissue.[1] It accounts more than 200 different etiology.[2] There has been worldwide increase in diagnosis of interstitial lung disease because of the help of recent advance diagnostic tools like high resolution computer tomography scan & thoracoscopic lung biopsy. This was the study of 25 cases of interstitial lung disease in which various parameters like diffuse lung capacity of the lung for carbon monoxide (DLCO), pulmonary function test (PFT), 2D ECHO, ECG, identification of etiology, assessment of prognosis & role of immunosuppressant, steroids were studied. The aim & objective are as follow: (1) to study age & sex distribution (2) to correlate symptoms & pulmonary function (3) role of HRCT as etiology diagnosis particular in interstitial pulmonary fibrosis (4) to study ECG & 2D ECHO changes (5) to study pulmonary function test pattern.

Materials and Methods

A group of 25 patients of interstitial lung disease were studied. All patients were taken randomly. The study period was September 2009 to September 2010. The exclusion criteria was age < 12 years. All patients were interviewed, examined & evaluated to chart their clinical profile. Exposure occupational history evaluated by checking exposure to toxins like cotton dust, bird dropping etc. all patient were undergone ABGA, ECG, Chest X-ray, 2D ECHO, DLCO, PFT & HRCT apart from routine investigations. Patients were grouped according to their diagnosis. Biopsy was not included in the study because most patients refuse for biopsy 7 rest were terminally ill.

Results

In interstitial lung disease most of the patients diagnosed in age group 51-70. This may be due to late consultation. (Table 1)

Table-1: Age Distribution

Age (in years)	No of Cases	%
20-30	1	4
31-40	3	12
41-50	2	8
51-60	8	32
61-70	10	40
71-80	1	4
Total	25	100

Idiopathic pulmonary fibrosis (IPF) is the most common IIP and is defined as a progressive fibrotic lung disease isolated to the lung ILD is a well-known complication of various connective tissue diseases. The most commonly implicated disorders are scleroderma, rheumatoid arthritis, Sjögren's syndrome, polymyositis or dermatomyositis and systemic lupus erythematosus. (Table 2)

Table-2: Incidence [3]

Type of Interstitial Lung Disease	No of Cases	%
IPF	12	48
NSIP	3	12
AIP	1	4
COP	1	4
Bysinosis	3	12
Sarcoidosis	1	4
RA	2	8
SLE	1	4
Systemic sclerosis	1	4

In interstitial lung diseases, lung function studies shows pattern of restriction or combined restriction-obstruction, lower diffusion capacity, and reduced blood oxygen tension at exercise. (Table 3)

Table-3: Pulmonary Function Test in Interstitial Lung Disease [4]

Type of Interstitial Lung Disease	Male	Female	FEV1 (litre)	FVC (litre)	FEV1/FVC (%)
IPF	7	5	0.81	0.92	89
NSIP	0	3	0.62	0.63	98
AIP	0	1	1.19	1.52	79
COP	0	1	0.70	0.87	80
Bysinosis	3	0	0.94	1.02	92
Sarcoidosis	0	1	0.76	0.98	77
RA	0	2	0.65	0.92	70
SLE	0	1	0.80	0.96	83
Systemic sclerosis	0	1	0.70	0.90	77

Interstitial lung disease (ILD) may be caused by a large number of agents encountered in the workplace or in the home or recreational environment. These exposures account for up to 20% of all ILDs. (Table 4)

Pulmonary hypertension is a common comorbidity in patients with idiopathic pulmonary fibrosis, and an estimated 20-40% of patients with idiopathic pulmonary fibrosis. (Table 5)

Table-4: Occupation Distribution [18]

Occupation	No of cases	%
Housewife	15	60
Cotton mill worker	3	12
Driver	2	8
Teacher	1	4
Plumber	1	4
Shopkeeper	3	12
Total	25	100

Table-5: Pulmonary Artery Hypertension [5]

Pulmonary Artery Hypertension	Male	Female	Total
<40	3	8	11
41-60	5	2	7
61-80	2	4	6
>80	0	1	1

Patients with hypoxemia (PaO2 < 55 mmHg or oxygen saturation as measured using pulse oximetry [SpO2] < 88%) at rest or with exercise should be prescribed oxygen therapy to maintain a saturation of at least 90% at rest, with sleep, and with exertion. (Table 6)

Table-6: O_2 Therapy at Home

Type of Interstitial Lung Disease	Male	Female	O_2 Therapy at Home
IPF	4	2	6
NSIP	0	3	3
AIP	0	0	0
COP	0	0	0
Bysinosis	32	0	2
Sarcoidosis	0	0	0
RA	0	0	0
SLE	0	0	0
Systemic sclerosis	0	1	1
Total	6	6	12

Discussion

In our study, the age distribution was highest in age group of 50-70 years. The most common etiology of interstitial lung disease was IPF. The no of female cases were higher because in our study interstitial lung disease due to connective tissue disorder was higher. Occupational interstitial lung disease was more common in

male. We found that smoking is the risk factor for various interstitial lung diseases. Interstitial lung disease showed restrictive pattern so that both FEV1 & FVC were reduced. But the reduction of FVC is greater than FEV1. So the ratio increases than normal. Pulmonary function test is very helpful for prognosis. In this study the large no of patients had duration of symptoms < 6 months. In interstitial lung disease, prolonged duration of symptoms lead to worst prognosis as occurred in our one case where the duration was more than 2 years.[6] In interstitial lung disease, ECG changes are found in form of right ventricular hypertrophy & P- pulmonale. In this study, the patient with P-pulmonale change in ECG had worst prognosis. 2D ECHO is helpful to diagnose pulmonary artery hypertension.[19] In this study, the patient with high pulmonary artery pressure had worst prognosis. DLCO is a useful screening & prognostic tool in interstitial lung disease. It is also helpful to monitor response to the treatment. All the patients were undergone HRCT for diagnosis.[17] HRCT is a useful tool for diagnosis of IPF without biopsy.[7,8] In this study we had given treatment in the form of drug therapy with steroid/immunosuppressant and O_2 therapy.[15] We had given steroid + immunosuppressant to patient having connective tissue disorder[16].7 patients of IPF were not given steroid as there is no definitive treatment for it.[9-11] The patients with good PO2 on admission without right sided heart failure were only given O_2 therapy. The patients with worst presentation on admission like moderate to severe hypoxia, severe pulmonary artery hypertension, and cor pulmonale had given O_2 therapy at home with drug therapy. All female patients presented with NSIP required O_2 therapy which is not seen in NSIP with good outcome.[13,14]

Conclusion

The entities grouped as ILDs are a diverse group of illnesses of varied causation, treatment, and prognosis. The connective tissue disorders are common in female which lead to more incidence of interstitial lung disease. Interstitial lung disease with moderate to severe pulmonary artery hypertension leads to poor prognosis. HRCT is very useful non-invasive diagnostic tool for interstitial lung disease. O_2 therapy, steroid & immunosuppressant are the mainstay of treatment in interstitial lung disease.[12,20]

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Cite this article as: Palat P, Parmar HD. Recent trends in interstitial lung disease: Study of 25 cases. Int J Med Sci Public Health 2013; 2:52-55.
Source of Support: Nil
Conflict of interest: None declared