Respiratory Medicine (2009) **103**, 1122–1129

available at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/rmed

Epidemiology of interstitial lung diseases in Greece☆

A. Karakatsani [a], D. Papakosta [b], A. Rapti [c], K.M. Antoniou [d], M. Dimadi [c], A. Markopoulou [e], P. Latsi [f,Ⱶ], V. Polychronopoulos [g], G. Birba [c], Labrakis Ch [c], D. Bouros [h,*,i]

[a] *2nd Department of Pneumonology, Medical School, University of Athens and ''Attikon'' University Hospital, Greece*
[b] *Department of Pneumonology, University of Thessaloniki, G. Papanikolaou Hospital, Greece*
[c] *Departments of Thoracic Medicine, ''SOTIRIA'' Chest Diseases Hospital, Athens, Greece*
[d] *Department of Thoracic Medicine, Medical school, University of Crete, Greece*
[e] *1st Department of Pneumonology, G. Papanikolaou Hospital, Thessaloniki, Greece*
[f] *1st Department of Pneumonology, University of Athens, ''SOTIRIA'' Chest Diseases Hospital, Greece*
[g] *3rd Department of Pneumonology, ''Sismanoglion'' General District Hospital, Athens, Greece*
[h] *Department of Pneumonology, Medical School, Demokritus University of Thrace and University Hospital of Alexandroupolis, Greece*

Received 14 August 2008; accepted 2 March 2009
Available online 3 April 2009

KEYWORDS
Registry;
Interstitial lung diseases;
Epidemiology;
Greece;
Idiopathic interstitial pneumonias;
Idiopathic pulmonary fibrosis

Summary
Introduction: Few data are available on the epidemiology of interstitial lung diseases (ILDs), especially after the current classification of idiopathic interstitial pneumonias. The aim of this study is to provide data on the epidemiology of ILDs in Greece, under the ATS/ERS international consensus.
Methods: Departments of Pneumonology were contacted and asked to complete a questionnaire for every case of ILD that was alive on 2004 as well as for every new case from 1st January 2004 to 31st December 2004. Questions on the patients' demographic data, the exact diagnosis and the procedures used to establish the diagnosis were included. Centers covering about 60% of the Greek population have been analyzed.
Results: A total of 967 cases have been registered. The estimated prevalence of ILDs is 17.3 cases per 100,000 inhabitants. The estimated annual incidence of ILDs is 4.63 new cases per 100,000 inhabitants. The most frequent disease is sarcoidosis (34.1%), followed in decreasing order by idiopathic pulmonary fibrosis (19.5%), ILD associated with collagen vascular diseases (12.4%), cryptogenic organizing pneumonia (5.3%), histiocytosis (3.8%), and hypersensitivity pneumonitis (2.6%). Unclassified ILD or not otherwise specified accounted for the 8.5% of prevalent cases.

☆ Presented in part at the 15th Annual ERS Congress, Copenhagen 2005.

* Corresponding author. Head, Department of Pneumonology, Medical School University of Thrace, University Hospital, Alexandroupolis 68100, Greece. Tel./fax: +30 25510 76106.
E-mail address: bouros@med.duth.gr (D. Bouros).
Ⱶ Deceased author.
[i] On behalf of the Hellenic Interstitial Lung Diseases Group. The other members of the Group are listed in the acknowledgments section.

0954-6111/$ - see front matter
doi:10.1016/j.rmed.2009.03.001

Conclusions: These data suggest that sarcoidosis and idiopathic pulmonary fibrosis are the most frequent ILDs in our population. In comparison with the few previous reports, interesting dissimilarities have been observed.

Introduction

More than 200 different entities are included under the term interstitial lung diseases (ILDs). In their pathogenesis many factors such as environmental and occupational agents, infections, drugs, radiation and genetic predisposition have been implicated.[1–4] However, the majority of these diseases are considered idiopathic, without a curable treatment.[5] Several attempts to estimate the incidence and prevalence of ILDs, although limited by variable and confusing diagnostic criteria, suggest that there is a rising trend in rates worldwide as well as international differences in the prevalence rates of the various forms of ILDs.[6–12] The recent American Thoracic Society/European Respiratory Society [ATS/ERS] international consensus classification of the idiopathic interstitial pneumonias, offers an opportunity for greater precision in epidemiological studies.[1–3]

There are few epidemiologic studies available regarding the incidence, prevalence or relative frequency of ILDs.[6–18] To date, a number of ILD registries have been established in various regions. Apart from the case of New Mexico,[6] the other registries have been organized by pneumonologists, and clearly underestimate the real incidence and prevalence of ILDs.[9–18] However, knowledge of the relative frequency of the diagnosis of the different types of ILD may provide interesting information about these diseases. Furthermore, histopathologic subsets of idiopathic interstitial pneumonias (IIPs) have prognostic significance.[19–21]

The aim of this study is to estimate the prevalence and incidence rate of ILDs in Greece in the light of the new international consensus classification of the IIPs and to compare our findings with those of other reports.

Materials and methods

By the end of 2003 the Interstitial Lung diseases Group of the Hellenic Thoracic Society (HILD) contacted the departments of pneumonology with special interest in ILDs from all over Greece and asked pneumonologists to complete a questionnaire for every case of ILD that was alive on 2004 (prevalent case) as well as for every new case (incident case) diagnosed from 1st January 2004 to 31st December 2004.

In order to achieve a good response rate the questionnaire was kept as simple as possible (one-page, Appendix A). Questions on the patients' demographic data, the exact diagnosis-type of ILD and the procedures, such as high-resolution computed tomography (HRCT), bronchoalveolar lavage (BAL), transbronchial lung biopsy, surgical lung biopsy, and serology, used to establish the diagnosis were included.

In every participating center the expert pneumonologist on ILDs was responsible to identify the cases based on the actual histological and radiological reports from pathology/BAL specimens and HRCT (evaluated by an expert pathologist and an expert radiologist respectively). Due to funding limitations it was not possible to create a panel of experts to visit the different hospitals and review each one of the 967 cases. The working group holds four meetings in order to standardize the diagnostic criteria. For every test performed in each one of the participating hospitals there are internal quality control procedures. In addition, guidelines for classification were repetitively discussed during specific sessions organized by the HILD Group. For the classification of idiopathic interstitial pneumonias' the ATS/ERS international multidisciplinary consensus[1] was used. As for sarcoidosis the diagnostic approaches proposed in the joint statement of the ATS, ERS and the World Association of Sarcoidosis and Other Granulomatous Disorders (WASOG) were applied.[22] ILDs due to neoplastic diseases, infections or heart diseases were excluded from the study.

Centers covering about 60% of the Greek adult population (age greater than 15 years), that is 5.6×10^6 inhabitants, have replied and participated in the study.

The diagnostic process for ILD was the same in all the centers contacted and the diagnostic algorithm used was that proposed by the ATS/ERS international multidisciplinary consensus.[1] Thus, the centers that participated in the study are probably representative of all the centers contacted. No major differences in case ascertainment have been observed among centers.

The study was approved by the Institutional Review Board of Demokritus University of Thrace.

Results

A total of 967 cases have been reported with a small preponderance of female population (53.6%). The male to female ratio was 1:1.15. Mean [SE] age of male patients was 58 [0.82] years and that of female 59.3 [0.64] years. Incidence rate is estimated to be 4.63 per 100,000/year and prevalence 17.3 per 100,000.

Table 1 shows the distribution of prevalent ILD cases and their prevalence in our population. The most frequent disease entity is sarcoidosis (34.1%) followed by IIPs (29.5%). Idiopathic pulmonary fibrosis (IPF) accounted for about 20% of all ILDs, whilst usual interstitial pneumonia (UIP) was the most frequent histology among IIPs. The above-mentioned diseases are followed in decreasing order by ILD-associated collagen vascular diseases (12.4%), cryptogenic organizing pneumonia (5.3%), histiocytosis (3.8%), and hypersensitivity pneumonitis (2.6%). Unclassified or not otherwise specified ILDs accounted for the 8.5% of prevalent cases.

The incidence of ILDs in our population and the number (%) of incident cases are shown in Table 2. Among incident cases, IIPs are the most frequent (32.4%) followed by sarcoidosis (23.2%).

Table 1 Numbers of prevalent cases of ILDs in the Greek population.

Clinical entity	Prevalent cases (%)	Prevalence (10^{-5})
Sarcoidosis	330 (34.1)	5.89
IIPs	285 (29.5)	5.09
IPF—UIP	189 (19.5)	3.38
NSIP	27 (2.8)	0.48
COP/BOOP	51 (5.3)	0.91
LIP	4 (0.4)	0.07
RBILD	4 (0.4)	0.07
DIP	8 (0.8)	0.14
AIP	2 (0.2)	0.04
Connective tissue diseases	120 (12.4)	2.14
Scleroderma	45 (4.6)	0.80
Rheumatoid arthritis	43 (4.4)	0.77
Dermatomyositis/polymyositis	7 (0.7)	0.13
Systemic lupus erythematosus	7 (0.7)	0.13
Sjögren's syndrome	5 (0.5)	0.09
Mixed connective tissue disease	2 (0.2)	0.04
Not specified	11 (1.1)	0.20
ILD unclassified, not otherwise specified	82 (8.5)	1.46
Histiocytosis	37 (3.8)	0.66
Hypersensitivity pneumonitis	25 (2.6)	0.45
Chronic eosinophilic pneumonia	21 (2.2)	0.38
Drug-induced ILD	17 (1.8)	0.30
Occupational	20 (2.0)	0.36
Vasculitides	14 (1.5)	0.25
Lymphangioleiomyomatosis	6 (0.6)	0.11
Alveolar proteinosis	5 (0.5)	0.09
Hemosiderosis	1 (0.1)	0.02
Bronchiolitis obliterans	4 (0.4)	0.07
Total	967	17.3

Table 2 Numbers of incident cases of ILDs in the Greek population.

Clinical entity	Incident cases (%)	Incidence (10^{-5}/y)
Sarcoidosis	60 (23.2)	1.07
IIPs	84 (32.4)	1.50
IPF—UIP	52 (20.1)	0.93
NSIP	10 (3.9)	0.18
COP/BOOP	18 (7.0)	0.32
RBILD	1 (0.4)	0.02
DIP	2 (0.8)	0.04
AIP	1 (0.4)	0.02
Connective tissue diseases	30 (11.6)	0.54
Scleroderma	12 (4.6)	0.21
Rheumatoid arthritis	9 (3.5)	0.16
Dermatomyositis/polymyositis	2 (0.8)	0.04
Systemic lupus erythematosous	2 (0.8)	0.04
Sjögren's syndrome	2 (0.8)	0.04
Mixed connective tissue disease	1 (0.4)	0.02
Not specified	2 (0.8)	0.04
ILD unclassified, not otherwise specified	40 (15.4)	0.71
Histiocytosis	7 (2.7)	0.13
Hypersensitivity pneumonitis	7 (2.7)	0.13
Chronic eosinophilic pneumonia	7 (2.7)	0.13
Drug-induced ILD	4 (1.5)	0.07
Occupational	8 (3.1)	0.14
Vasculitides	6 (2.3)	0.11
Alveolar proteinosis	1 (0.4)	0.02
Hemosiderosis	1 (0.4)	0.02
Bronchiolitis obliterans	4 (1.5)	0.07
Total	259	4.63

Analyses of the procedures used irrespective of contribution to diagnosis (Tables 3 and 4) showed that HRCT was performed in 87.4% of patients and BAL in 46.1%. In contrast, only 10.7% of cases had a transbronchial lung biopsy, whilst surgical lung biopsy was performed either by thoracotomy (11.4% of cases) or by video-assisted thoracic surgery (VATS, 6.3% of cases). When focusing on the procedures used in the diagnosis of IIPs the number of cases that underwent surgical lung biopsy (thoracotomy or VATS) rises to 34.1%.

In Table 5 the distribution of ILDs in Greece is compared to that of other countries revealing interesting similarities and differences among countries.

Discussion

The current study reports data on almost 1000 ILD cases in Greece. To the best of our knowledge this is the second study in the literature to report the results of an ILD registry conducted by pulmonary medicine centers, after the new classification of IIPs.[1,13] The main findings of our registry are: (1) sarcoidosis is the most frequent disease, followed in decreasing order by IPF and connective tissue disorders, (2) IPF is the most frequent among the group of IIPs, (3) the estimated annual incidence of ILDs is 4.63 per 100,000 population and the prevalence 17.3 per 100,000.

Almost no epidemiological data are available on a worldwide basis on the prevalence, incidence or relative frequency of ILDs, especially after the current ATS/ERS consensus on the classification of IIPs. Previous studies have shown that a variety of reasons make the investigation of the epidemiology of ILDs problematic.[1–3] The differences in results between epidemiological studies may be due to real differences in incidence, but may also be due to changes in disease definitions and classifications, differences in the epidemiological design of studies or even registration bias.[9] In general, epidemiological data may be obtained from different sources or population groups, using different study designs such as systematic national statistics, population-based data and registries, and large case series of specific diseases.

The first population-based study of adults, published before the ATS/ERS consensus reported a prevalence of 81 cases of ILD per 100,000 in males and 67 per 100,000 in females and an incidence of 32 per 100,000 in males and 26 per 100,000 in females in a limited area, in Bernalillo County, New Mexico.[6] Since then other registries have been conducted in Italy, Germany, Flanders (Belgium) and more recently in Spain.[7–14]

Table 3 Number of procedures irrespective of contribution to diagnosis.[a]

	Surgical biopsy		TBB *N* (%)	BB *N* (%)	BAL *N* (%)	HRCT *N* (%)
	OLB *N* (%)	VATS *N* (%)				
Sarcoidosis ($N = 330$)	19 (5.8)	14 (4.2)	59 (17.9)	115 (34.8)	176 (53.3)	277 (83.9)
IIPs ($N = 285$)	58 (20.4)	39 (13.7)	28 (9.8)	24 (8.4)	157 (55.1)	255 (89.5)
CTD ($N = 120$)	7 (5.8)	–	2 (1.7)	4 (3.3)	20 (16.7)	113 (94.2)
ILD unclassified ($N = 82$)	1 (1.2)	3 (3.7)	2 (2.4)	1 (1.2)	25 (30.5)	74 (90.2)
Histiocytosis ($N = 37$)	13 (35.1)	2 (5.4)	1 (2.7)	–	16 (43.2)	33 (89.2)
HP ($N = 25$)	1 (4.0)	1 (4.0)	3 (12.0)	2 (8.0)	18 (72.0)	21 (84.0)
Chronic eosinophilic pneumonia ($N = 21$)	1 (4.7)	–	–	–	9 (42.9)	17 (81.0)
Drug-induced ILD ($N = 17$)	–	–	–	–	7 (41.2)	15 (88.2)
Occupational ($N = 20$)	1 (5.0)	2 (1.0)	5 (10.0)	1 (5.0)	6 (30)	19 (95.0)
Vasculitides ($N = 14$)	6 (42.9)	–	1 (7.1)	1 (7.1)	4 (28.6)	11 (78.6)
Alveolar proteinosis ($N = 5$)	2 (40.0)	–	2 (40.0)	–	5 (100)	5 (100)
Hemosiderosis ($N = 1$)	–	–	–	–	1 (100)	1 (100)
Bronchiolitis obliterans ($N = 4$)	1 (20.0)	–	–	–	2 (50.0)	4 (100)
Total ($N = 967$)	110 (11.4)	61 (6.3)	103 (10.7)	148 (15.3)	446 (46.1)	845 (87.4)

OLB: open lung biopsy; VATS: video-assisted thoracic surgery; TBB: transbronchial lung biopsy; BB: bronchial biopsy; BAL: bronchoalveolar lavage; HRCT: high-resolution computed tomography.

[a] More than one type of biopsy was performed in several patients.

Our registry, like those in other European countries,[7–14] covers patients seen by respiratory medicine centers. These registries include either incident or prevalent cases, or even both. Variability of inclusion and exclusion criteria and the way these criteria were operationally applied hinders a straightforward comparison between countries. Moreover, period prevalence data are not strictly comparable. Nevertheless, comparison of Greece with each one of the countries that have provided prevalence data suggests significant differences (p-value < 0.001 compared to Flanders and Italy separately). Furthermore, the estimated annual incidence of ILDs found in our study was 4.63 per 100,000 inhabitants (95% CI from 4.1×10^{-5} to 5.2×10^{-5}), whilst the recent Xaubet et al.'s registry was 7.6 per 100,000 (95% CI from 6.9×10^{-5} to 8.3×10^{-5}).[13] Because of lack of overlapping the difference is clearly statistical significant. It should be noted that the incidence in the Flanders' registry was 1.0 per 100,000.[10] The comparison between the distribution of ILD in our registry and that of other registries is presented in Table 5. In all registries the most frequent diseases were IPF and sarcoidosis.

The relative frequency of IPF (20% of cases) in our study is similar with the one conducted in Flanders.[9] On the contrary, other registries reported frequencies ranging from 27 to 39%, probably due to inclusion of other IIPs.[6–8,10–13] Furthermore, we also found that among incident cases, IIPs (32.4%) are the most frequent reflecting to some extent the better diagnostic evaluation of these diseases after the recent classification.[1] In general, few are the data on the real incidence or prevalence of the other types of IIPs. Our registry shows that the second most frequent IIP is cryptogenic organizing pneumonia consisting 5.3% of prevalent and 7% of incident cases, close enough to the ones reported from the other registries (ranging from 5 to 10%).

Nonspecific interstitial pneumonia accounted for 2.8% of IIPs, and the other types for less than 1%. From previous studies after revaluation of the biopsy findings it has been estimated that nonspecific interstitial pneumonia accounts

Table 4 Number of procedures performed in IIP cases, irrespective of contribution to diagnosis.

	Surgical biopsy		TBB *N* (%)	BB *N* (%)	BAL *N* (%)	HRCT *N* (%)
	OLB *N* (%)	VATS *N* (%)				
IPF–UIP ($N = 189$)	35 (18.5)	25 (13.2)	15 (7.9)	16 (8.5)	112 (59.3)	168 (88.9)
NSIP ($N = 27$)	10 (37.0)	5 (18.5)	1 (3.7)	4 (14.8)	14 (51.9)	25 (92.6)
LIP ($N = 4$)	2 (50.0)	2 (50.0)	–	–	1 (25.0)	4 (100)
RBILD ($N = 4$)	1 (25.0)	1 (25.0)	–	–	–	4 (100)
DIP ($N = 8$)	4 (50.0)	2 (25.0)	1 (12.5)	1 (12.5)	1 (12.5)	8 (100)
AIP ($N = 2$)	1 (50.0)	–	–	–	–	1 (50.0)
BOOP/COP ($N = 51$)	5 (9.8)	4 (7.8)	11 (21.6)	3 (5.9)	29 (56.9)	45 (88.2)
Total ($N = 285$)	58 (20.4)	39 (13.7)	28 (9.8)	24 (8.4)	157 (55.1)	255 (89.5)

OLB: open lung biopsy; VATS: video-assisted thoracic surgery; TBB: transbronchial biopsy; BB: bronchial biopsy; BAL: bronchoalveolar lavage; HRCT: high-resolution computed tomography.

Table 5 Comparison of the distribution of ILDs in Greece and other countries.

	Greece		Spain[a]	Flanders[a]	Germany[a]	Italy[a]	N. Mexico[a]
Inhabitants	5.6×10^6		6.7×10^6	6×10^6	80×10^6	57×10^6	0.48×10^6
Duration of the registration (months)	12		12	48	12	30	48
Number of cases	967[c]	259[b]	511[b]	362[c]	234[b]	1382[c]	202[b]
IPF	189 (19.5%)[d]	52 (20.1%)[d]	197 (38.6%)[d]	72 (19.8%)[e]	76 (32.5%)[e]	520 (37.6%)[e]	63 (31.2%)[e]
Sarcoidosis	330 (34.1%)	60 (23.2%)	76 (14.9%)	112 (30.9%)	83 (35.5%)	403 (29.2%)	16 (7.9%)
Cryptogenic organizing pneumonia	51 (5.3%)	18 (7.0%)	53 (10.4%)	–[f]	16 (6.9%)	69 (5.0%)	1 (0.5%)
Connective tissue diseases	120 (12.4%)	30 (11.6%)	51 (9.9%)	27 (7.4%)	5 (2.1%)	–[f]	18 (8.9%)
Hypersensitivity pneumonitis	25 (2.6%)	7 (2.7%)	34 (6.7%)	47 (12.9%)	31 (13.2%)	50 (3.6%)	3 (1.5%)
Chronic eosinophilic pneumonia	21 (2.2%)	7 (2.7%)	15 (2.9%)	13 (3.5%)	0	91 (6.6%)	0
Drug-induced ILD	17 (1.8%)	4 (1.5%)	17 (3.3%)	12 (3.3%)	6 (2.6%)	23 (1.7%)	7 (3.5%)
Eosinophilic granuloma/ histiocytosis X	37 (3.8%)	7 (2.7%)	15 (2.9%)	13 (3.5%)	0	91 (6.6%)	0
Unclassified/not defined	82 (8.5%)	40 (15.4%)	26 (5.1%)	33 (9.1%)	12 (5.1%)	–[f]	60 (29.7%)
Others	95 (9.8%)	34 (13.1%)	27 (5.3%)	33 (9.1%)	5 (2.1%)	135 (9.7%)	34 (16.8%)

[a] See Refs. 5,7,9–12.
[b] Prevalent cases.
[c] Incident cases.
[d] Based on the recent classification of IIPs.
[e] The recent classification of IIPs was not used.
[f] Not specified.

for 14–36% of IIPs.[21,23–25] However, in some cases it may be difficult to distinguish the histological pattern of UIP from that of fibrotic nonspecific interstitial pneumonia.[23] Furthermore, interlobar histological variability is common in IIPs,[26] whilst it has been found that the findings of HRCT scan may be suggestive of UIP in 32% of patients with nonspecific interstitial pneumonia.[27] Nonetheless, we found that nonspecific interstitial pneumonia accounted for 2.6% of idiopathic interstitial pneumonias that is very similar to that of 3.3% in Xaubet et al.'s study,[13] in which the new classification has also been applied.

Previous studies have shown that there is remarkable diversity of the prevalence of sarcoidosis by area and ethnicity with a range from less than 1 in Korea [29] to 64 per 100,000 in Sweden.[30] One important finding of our registry is that sarcoidosis was found to be the most frequent disease in Greece among the prevalent cases (34.1%). Proportionally sarcoidosis is more prevalent in Greece than in Italy or Spain because overall ILDs are less common in the former than in the latter countries. Moreover in Greece, proportionally, the prevalence of sarcoidosis is higher than the corresponding incidence (the reported annually incidence rate of 1.07 sarcoidosis cases per 100,000 is similar to 1.01 per 100,000 found recently in Japan[31] and to 1.36 per 100,000 reported from Catalonia[32]), because of the very good prognosis of this disease. It should also be noticed that in the aforementioned European studies, as well as in our report, stage I sarcoidosis was included. On the contrary the lower rate (7.8%) reported from the New Mexico registry is probably due to inclusion of only stages II–IV sarcoidosis.[6] The German registry is the only one that reports the different stages of sarcoidosis separately concluding that sarcoidosis stage I (37.4%) and stage II (47%) are the most frequent.[7]

ILD associated with collagen vascular diseases was the third most frequent disease in our registry accounting for the 12.4% of prevalent cases. The comparison with other registries showed that this frequency is very similar to that of New Mexico[6] and the more recent Spanish report (9.9%).[13] Data are not available from Italy, while the German significantly differs with a reported rate of 2.1%.[7]

The frequency of hypersensitivity pneumonitis varies widely in the different registries (Table 5), probably because its prevalence and incidence in different countries are influenced by climatic and seasonal conditions, smoking habits and work practices.[28] In our report the frequency of hypersensitivity pneumonitis was found to be 2.5%. Unfortunately, the etiology has not been included to our questionnaire, while in the Spanish report, pigeon breeder's lung was found to be the most frequent cause.[13] The percentage of unclassified diseases varies greatly in the different registries (Table 5).

Epidemiologic studies require standardized and detailed diagnostic criteria. Usually, a stepwise approach is taken in the diagnosis of ILD, while the recent ERS/ATS classification strongly recommends a multidisciplinary evaluation between pneumonologists, pathologists and radiologists in order to obtain the correct diagnosis.[1] In our cohort, analyses of the procedures used to establish the diagnosis (Tables 3 and 4) showed that HRCT was performed in 87.4% of patients and BAL in 46.1%. The frequency of the application of these techniques is lower than that of the Xaubet et al.'s registry (Table 5). On the contrary, both studies have used the recently established criteria for IIPs.

Surgical lung biopsy was performed in 17.7% of ILD cases but in 34.1% of IIP cases. These numbers are similar to those of the other European registries reflecting consistency to current guidelines.[1]

Appendix A

QUESTIONNAIRE

Doctor's Name……

Tel ;…….

Fax :…….

e-mail:……..

Patient's ID……..

Date of birth:…….(day/month/year)

Diagnosis:…….

Date of diagnosis:……

Diagnostic procedures:

Open lung biopsy Yes ☐ No ☐

VATS Yes ☐ No ☐

Bronchial biopsy Yes ☐ No ☐

Transbronchial biopsy Yes ☐ No ☐

BAL Yes ☐ No ☐

HRCT Yes ☐ No ☐

Other:

Mediastinoscopy ☐ Other biopsy (skin, muscle, etc, please define)…..…… ☐

Ga scanning ☐ SACE ☐ Serology (please define)…… ☐

The diagnosis was based on: (please comment)…….

…….

The patient is alive: Yes ☐ No ☐

If not,

Date of death……

Our findings suggest that in Greece sarcoidosis as well as IPF has a low incidence and prevalence. Although based on population seen by respiratory medicine centers, thus a possible selection bias can not be excluded, current experience indicates that almost all patients with ILD are attended by pneumonologists.

In conclusion, these data suggest that sarcoidosis and IPF are the most frequent ILDs in our population. In comparison with the few previous reports, interesting dissimilarities have been observed. Further studies are warranted to investigate the epidemiology of ILDs in various countries in order to compare any differences and chronological trends.

Conflict of interest

We declare that we have no conflict of interest related to the article or the research described.

Acknowledgments

We acknowledge the contribution of the following members of the Hellenic ILD (HILD) group that made possible to draw up this report: S. Anevlavis, A. Tzouvelekis, A. Pataka, G. Kouliatsis (University Hospital of Alexandroupolis), I. Pappa (Athens VA Army Hospital), S. Loukides (''ATTIKON'' University Hospital, Athens), E. Lambiri, NM Siafakas (University Hospital of Heraklion), D. Mermigkis, K. Paschalaki, F. Drakopanagiotakis (Sismanoglion Hospital, Athens), N. Karvounas, D. Pavlakis (Social Insurance Institute, Athens), M. Alhanatis, Th. Bakogianni, A. Delaveri, A. Dimakou, P. Giamboudakis, E. Iliadi, S. Katsiboula, V. Michail, R. Triggidou, A. Tsarouha (''SOTIRIA'' Chest Diseases Hospital of Athens), S. Bousmoukilia (General Hospital of Kavala), Andrew Nicholson (Imperial College, London), Papalexatos (General Hospital of Patra), G. Trakada (University Hospital of Rio, Patra), E. Tsiagga (General Hospital of Serres), A. Papayiannis (''AGIOS LOUKAS'' Hospital, Thessaloniki), K. Katsoulis (424 Army Hospital, Thessaloniki), A. Antoniadis, P. Christaki, N. Galanis, D. Gioulekas, A. Kapetangiorgis, T. Kontakiotis, K. Manika, D. Patakas, M. Saroglou, E. Serasli, L. Sichletidis, I. Stanopoulos, P. Argyropoulou, Stiropoulos, S. Tryphon (''G. PAPANIKOLAOU'' Hospital, Thessaloniki), A. Garyfallos (''IPPOKRATION'' General Hospital of Thessaloniki).

References

1. American Thoracic Society/European Respiratory Society. International multidisciplinary consensus classification of the idiopathic interstitial pneumonias. *Am J Respir Crit Care Med* 2002;**165**:277—304.
2. American Thoracic Society. Idiopathic pulmonary fibrosis: diagnosis and treatment. International Consensus Statement. *Am J Respir Crit Care Med* 2000;**161**:646—64.
3. Bouros D. Current classification of idiopathic interstitial pneumonias. *Monaldi Arch Chest Dis* 2000;**55**:450—4.
4. Verleden GM, Du Bois RM, Bouros D, et al. Genetic predisposition and pathogenetic mechanisms of interstitial lung diseases of unknown origin. *Eur Respir J* 2001;**18**(32):17s—29s.
5. Bouros D, Antoniou KM. Current and future treatment approaches in idiopathic pulmonary fibrosis. *Eur Respir J* 2005; **16**:693—703.
6. Coultas DB, Zumwalt RE, Black WC, Sobonya RE. The epidemiology of interstitial lung diseases. *Am J Respir Crit Care Med* 1994;**150**:967—72.
7. Schweisfurth H. Mitteilung der wissenschaftliches Arbeitsgemeinschaft für die Therapie Lungenkrankheiten (WATL): Deutsches Fibrosereregister mit ernsten Ergebnissen. *Pneumologie* 1996;**50**:899—901.
8. Schweisfurth H, Kieslich C, Satake N, et al. How are interstitial lung diseases diagnosed in Germany? Results of the scientific registry for the exploration of interstitial lung diseases ("Fibrosis registry") of the WATL. *Pneumologie* 2003 Jul;**57**: 373—82.
9. Thomeer M, Demetds M, Vandeurzen K and the VRGT working group on Interstitial Lung diseases. Registration of interstitial lung diseases in 20 centers of respiratory medicine in Flanders. *Acta Clin Belg* 2001;**56**:163—72.
10. Roelandt M, Demedts M, Callebaut W, et al. Working group on ILD. Epidemiology of interstitial lung diseases in Flanders registration by pneumologists in 1992—1994. *Acta Clin Belg* 1995;**50**—**55**:260—8.
11. Agostini C, Albera C, Bariffi F, et al. First report of the Italian register for diffuse lung disorders (RIPID). *Monaldi Arch Chest Dis* 2001;**56**:364—8.
12. Tinelli C, De Silvestri A, Richeldi L, Oggionni T. The Italian register for diffuse infiltrative lung disorders (RIPID): a four-year report. *Sarcoidosis Vasc Diffuse Lung Dis* 2005;**22**(1):S4—8.
13. Xaubet A, Ancochea J, Morell F, et al. Report on the incidence of interstitial lung diseases in Spain. *Sarcoidosis Vasc Diffuse Lung Dis* 2004;**21**:64—70.
14. Lopez-Campos JL, Rodriguez-Becerra E; Neumosur Task Group; Registry of Interstitial Lung Diseases. Incidence of interstitial lung diseases in the south of Spain 1998—2000: the RENIA study. *Eur J Epidemiol* 2004;**19**:155—61.
15. Demedts M, Wells AU, Antó JM, et al. Interstitial lung diseases: an epidemiological overview. *Eur Respir J* 2001;**18**(32):2s—16s.
16. Thomeer MJ, Costabel U, Rizzato G, Poletti V, Demedts M. Comparison of registries of interstitial lung diseases in three European countries. *Eur Respir J* 2001;**18**(32):114s—8s.
17. Hodgson U, Laitinen T, Tukiainen P. Nationwide prevalence of sporadic and familial idiopathic pulmonary fibrosis: evidence of founder effect among multiplex families in Finland. *Thorax* 2002;**57**:338—42.
18. Byg KF, Milman N, Hansen S. Sarcoidosis in Denmark 1980—1994. A registry-based incidence study comprising 5536 patients. *Sarcoidosis Vasc Diffuse Lung Dis* 2003;**20**:46—52.
19. Nicholson AG, Colby TV, Wells AU. Histopathological approach to patterns of interstitial pneumonia in patients with connective tissue disorders. *Sarcoidosis Vasc Diffuse Lung Dis* 2002;**19**:10—7.
20. Bouros D, Wells AU, Nicholson AG, et al. Histopathological subsets of fibrosing alveolitis in patients with systemic sclerosis and their relation to outcome. *Am J Respir Crit Care Med* 2002; **165**:1581—6.
21. Bjoraker JA, Ryu JH, Edwin MK, et al. Prognostic significance of histopathologic subsets in idiopathic pulmonary fibrosis. *Am J Respir Crit Care Med* 1998;**157**:199—203.
22. Joint Statement of the American Thoracic Society (ATS), the European Respiratory Society (ERS) and the World Association of Sarcoidosis and Other Granulomatous Disorders (WASOG). February 1999. Statement on sarcoidosis. *Am J Respir Crit Care Med* 1999;**160**:736—55 (Adopted by the ATS Board of Directors and by the ERS Executive Committee).
23. Nicholson AG, Colby TV, du Bois RM, Hansell DM, Wells AU. The prognostic significance of the histological pattern of idiopathic pneumonias in patients presenting with the clinical entity of cryptogenic fibrosing alveolitis. *Am J Respir Crit Care Med* 2000;**162**:2213—7.
24. Nagai S, Kitaichi M, Itoh H, Nishimura K, Izumi T, Colby TV. Idiopathic nonspecific interstitial pneumonia/fibrosis:

comparison with idiopathic pulmonary fibrosis and BOOP. *Eur Respir J* 1998;**12**:1010—9.
25. Travis WD, Matsui K, Moss J, Ferrans VJ. Idiopathic nonspecific interstitial pneumonia: prognostic significance of cellular and fibrosing patterns-survival comparison with usual interstitial pneumonia and desquamative interstitial pneumonia. *Am J Surg Pathol* 2000;**24**:19—33.
26. Flaherty KR, Travis WD, Colby TV, et al. Histopathological variability in usual and nonspecific interstitial pneumonias. *Am J Respir Crit Care Med* 2001;**164**:1722—7.
27. Hartman TE, Swensen SJ, Hansell DM, et al. Nonspecific interstitial pneumonia: variable appearance at high-resolution chest CT. *Radiology* 2000;**217**:701—5.
28. Bourke SJ, Dalphin JC, Boyd G, McSharry C, Baldwin CI, Calvert JE. Hypersensitivity pneumonitis: current concepts. *Eur Respir J* 2001;**18**(32):81s—92s.
29. Kim DS. Sarcoidosis in Korea: report of the second nationwide survey. *Sarcoidosis Vasc Diffuse Lung Dis* 2001;**18**:176—80.
30. Bresnitz EA, Strom BL. Epidemiology of sarcoidosis. *Epidemiol Rev* 1983;**5**:124—56.
31. Morimoto T, Azuma A, Abe S, Usuki J, Kudoh S, Sugisaki K, Oritsu M, Nukiwa T. Epidemiology of sarcoidosis in Japan. *Eur Respir J* 2008;**31**:372—9.
32. Fité E, Alsina JM, Maňá J, Pujol R, Ruiz J, Morera J. Epidemiology of sarcoidosis in Catalonia: 1979—1989. *Sarcoidosis Vasc Diffuse Lung Dis* 1996;**13**:153—8.