ILD: how big is the problem? How can you spot it and how should you monitor it?

P1 GLOBAL OVERVIEW OF INCIDENCE AND PREVALENCE OF INTERSTITIAL LUNG DISEASE: A SYSTEMATIC LITERATURE REVIEW

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10.1136/thorax-2021-BTSabstracts.111

Introduction Interstitial lung diseases (ILD) are a diverse group of pulmonary fibrotic and inflammatory conditions. The global burden of ILD is largely unknown, in part because of differences between countries in diagnosis and in coding practices¹. Reviews to date have therefore tended to be limited in geographical scope and focused on individual ILDs. Our aim was to systematically review evidence for ILD prevalence and incidence on a global scale.

Methods A systematic search of Medline and Embase was conducted to identify relevant articles reporting the incidence and/or prevalence of individual ILD subtypes. The search was limited to observational studies published between 2015 and 2020 in English, with articles independently screened by two reviewers. An adapted Newcastle-Ottawa scale was used to assess quality and risk of bias.

Results Of 8,560 articles, 51 studies were included. Geographically, most studies were from Asia (47.1%) and Europe

(43.1%). Significant heterogeneity was noted in the incidence and prevalence (figure 1) of ILDs between different countries. These variations are largely attributed to the diversity of the underlying population and differences in data sources used. For example, the prevalence of systemic sclerosis ILD ranged from 30% in Europe to 71% in Asia, silicosis ranged from 0.02% in the USA to 37% in Brazil. IPF was the most reported ILD, the range of prevalence was 8.5 to 38.8 per 100,000 persons, and incidence was 2.4 to 48.5 per 100,000 persons-years, across regions.

Discussion There have been few reviews investigating the epidemiology of ILDs overall or by subtypes. ILD publications differed by region, for example, more studies from Asia explored occupational ILDs, whereas more European studies reported on autoimmune ILDs. With an increasing research interest in progressive fibrosing ILDs, there is a need to understand the global burden of ILD and highlight unmet needs.

REFERENCE

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P2 GEOGRAPHICAL VARIATION OF INTERSTITIAL LUNG DISEASE IN THE NORTHERN TRUST

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10.1136/thorax-2021-BTSabstracts.112

Aims There are geographical variations in Interstitial Lung disease, particularly sarcoidosis, that may shed light on aetiology and aid service development. The Northern Trust services a population of all most 471'000 people across a geographic area of 1,733 square miles making it the largest geographical trust in Northern Ireland. By exploring this unique attribute, we sought to define the geographical prevalence of Interstitial Lung Disease (ILD) and investigated whether this was affected by population density. Secondary aims included quality improvement in service provision.

Methods We identified 712 patients attending the ILD clinic within the last 12 months. Patients were classified on the basis of CT imaging and electronic care record review. Baseline demographic data and geographic location (Postcode) were collated and compared to recent census data to define population density and crude rates of prevalence. Average travel distance for patients attending clinic twice a year were calculated and compared to a proposed satellite clinic closer to patient homes.

Results Of the 712 patients included in analysis; 171 (24%) Sarcoidosis, 157 (22.1%) definite or probable UIP, 67 (9.4%)

Abstract P1 Figure 1 Prevalence stratified by underlying population and reporting units

IIP, idiopathic interstitial pneumonia; IPF, idiopathic pulmonary fibrosis; NSIP, nonspecific interstitial idiopathic pneumonia; DIP, desquamative interstitial pneumonia; OP, organizing pneumonia; RA-ILD, rheumatoid arthritis ILD; SSC-ILD, systemic sclerosis ILD; PM/DM-ILD, polymyositis/dermatomyositis; MTCD, mixed connective tissue ILD; HP, hypersensitivity pneumonitis ILD; LAM, lymphangioleiomyomatosis; PLCH, pulmonary Langerhans cell histiocytosis

Abstract P2 Figure 1

unclassified Pulmonary Fibrosis, 67 (6.5%) Fibrotic Hypersensitivity Pneumonitis, 100 (14%) CT-ILD and 71 (9.9%) exposure including Asbestos were classified. Crude prevalence rates (per 100'000 (Min-Max)) for Sarcoidosis 31.4 (11.1–67.5), UIP definite and probable 47.5 (12.2–76.9) and CT-ILD 23.1 (12.2–76.9). Prevalence of disease appeared to correlate with population density (figure 1) however there was a suggestion of clustering associated with topographic features particularly with regards to sarcoidosis.

Exploratory analysis of patient travel distance suggested that reallocation of 108 patients (15%) to a satellite clinic closer to home could save in excess 14'000 miles per year, reducing the carbon footprint by 4.15 tonnes.

Conclusions Northern Ireland has a stable population with little drift making it ideal for study. Preliminary analysis of data suggests intriguing clusters which may lead to insights into disease pathogenesis with further study. Analysis of crude prevalence and patient travel distance allows for planning of service provision and a potential reduction of carbon footprint.

P3 PROGRESSION OF EARLY FIBROTIC ILA TO ESTABLISHED INTERSTITIAL LUNG DISEASE AND MORTALITY: OBSERVATIONS FROM A REGIONAL CENTRE

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10.1136/thorax-2021-BTSabstracts.113

Introduction Interstitial lung abnormalities (ILA) are defined as patterns of increased lung density on CT scans, compatible with early interstitial lung disease (ILD). Patients are typically asymptomatic, but a proportion will progress to pulmonary fibrosis. Factors predisposing to this are unclear.

Aims Determine estimated prevalence of fibrotic ILAs in specified geographical region (Oxfordshire), and explore factors contributing to progression and mortality.

Methods Using the Clinical Record Interactive System database of the Oxford University Hospitals NHS trust (serving an estimated population of 800,000), we analysed reports from CTs performed between January-2015 and December-2020. Search criteria were selective for early fibrotic ILA within this

database; ['reticulation' or 'interstitial'] AND ['sub-pleural' or 'basal' or 'lower zone' or 'Possible UIP'] AND [Age: 45–75]. Radiological features, patient demographics and contemporaneous blood leukocyte counts were examined to explore contribution to progression and mortality using multivariate Cox regression.

Results 40,711 patients underwent CT thorax during this period; 2735 (6.7%) patients met inclusion criteria. Mean age 65.5 years (± 7.32), male 1486 (54.3%). 762 of these patients had traction bronchiectasis and/or honeycombing on first CT. 355 cases had normal CTs; 80 had non-emphysematous cysts and GGO only in 279. The remaining 1259 cases demonstrated reticulation $\pm$ additional parenchymal features (Table 1).

Follow on CT was performed in 390 cases. Progression was observed in 47.4%; progression to reticulation 28 (7.1% of 390), of reticulation 51 (13.1%), to probable UIP 84 (21.2%), to definite UIP 22 (5.6%).

Compared to the group with normal CT, reticulation combined with emphysema $\pm$ GGO demonstrated significant risk of mortality (Table 1). Of those that underwent follow-on CT, progression appeared significantly associated with mortality [HR 1.92, 1.2–3.2, $p=0.013$]. Progression to definite UIP was associated with greatest mortality risk [HR 3.47, 1.6–7.5, $p=0.002$]. Monocyte:lymphocyte ratio [1.50, 1.16–1.94, $p=0.002$] and age [1.04, 1.01–1.07, $p=0.010$] at first CT scan, were the only independent factors associated with progression.

Conclusion 3.1% (1259/40,711) of patients requiring thoracic CT during our analysis period demonstrated ILA with early fibrotic features. Monocyte:lymphocyte ratio was significantly associated with progression suggesting this and other blood leukocyte derivations could be explored further as potential prognostic biomarkers of sub-clinical ILD.

P4 LUNG CANCER SCREENING PROVIDES A UNIQUE OPPORTUNITY FOR EARLY DIAGNOSIS AND MANAGEMENT OF INTERSTITIAL LUNG DISEASES

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10.1136/thorax-2021-BTSabstracts.114

Abstract P3 Table 1 Univariate and multivariate cox regression analysis for outcome of mortality. Hazard ratios of ILD categories are expressed relative to Nil ILD group

Table 1. Outcome = Mortality			Univariate			Multivariate				
Covariate	n	Death	HR	Lower	Upper	Sig.	HR	Lower	Upper	Sig.
Age	–	–	1.02	1.01	1.04	0.0001*	1.02	1.01	1.04	0.002*
Gender	–	–	1.14	0.95	1.37	0.140	1.08	0.89	1.31	0.420
Nil ILD (ref. category)	355 (13.0%)	43 (12.1%)	–	–	–	<0.001*	–	–	–	<0.001*
GGO only	279 (10.2%)	54 (19.3%)	1.67	1.12	2.50	0.011*	1.63	1.09	2.43	0.017*
Reticulation only	603 (22.0%)	68 (11.3%)	1.09	0.74	1.59	0.667	1.01	0.69	1.48	0.966
Reticulation + GGO	373 (13.6%)	55 (14.7%)	1.43	0.96	2.13	0.079	1.39	0.93	2.07	0.108
Reticulation + Emph	133 (4.9%)	28 (2.1%)	2.32	1.45	3.71	<0.001*	2.08	1.29	3.35	0.003*
Retic + GGO + Emph	150 (5.5%)	27 (18.0%)	1.74	1.07	2.81	0.025*	1.67	1.03	2.70	0.038*
Probable UIP	490 (17.9%)	86 (17.5%)	1.58	1.10	2.28	0.014*	1.45	1.01	2.11	0.047*
Definite UIP	272 (9.9%)	87 (32.0%)	2.82	1.95	4.10	<0.001*	2.55	1.76	3.69	<0.001*

* $P<0.05$. GGO; ground glass opacities, UIP; Usual interstitial pneumonia, Emph; Emphysema.