Frequency of cough versus dyspnoea as the first recorded symptom of idiopathic pulmonary fibrosis

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BACKGROUND

- Idiopathic pulmonary fibrosis (IPF):
  - Leads to progressive and irreversible loss in lung function.[1]
  - Affects 14-43 per 100,000, commonly above age of 50 years.[2]
  - Poor prognosis: Median survival time only around 3 years.[3]
- Challenging to diagnose in primary care and multidisciplinary team needed (pulmonologists, radiologists, and pathologists).[4]
- Identification of indicators for IPF in primary care could help early, accurate diagnosis and allow early intervention with novel treatments.

AIM

- To investigate the patterns of signs and symptoms in the years prior to IPF diagnosis.

DESIGN & METHODOLOGY

- Design: Historical study of primary care records.
- Data source: Optimum Patient Care Research Database (OPCRD), a validated clinical research database containing primary care records of >5.5 million patients from >650 primary care centers across the UK (http://opcrd.co.uk/). QR link:
- Clinical Outcome: Potential signs and symptoms for IPF identified via Read codes (classification code within UK general practice) and electronic medical record free-text.
- Subject groups:
  1. Sensitive definition: Subjects with IPF identified via Read codes, drug prescription, and unstructured free text.
  2. More specific definition: Patients with code for referral to chest specialist, followed by code for IPF. More likely to actually have IPF.
- Statistical Analysis:
  - Prevalence of first signs & symptoms presented as n (%).
  - Consultation rate was calculated as rate per 100 patient-years with 95% confidence interval.
  - Principal Component Analysis (PCA) with rotation conducted to visualize prevalence and co-occurrence of signs and symptoms.

PATIENT SELECTION

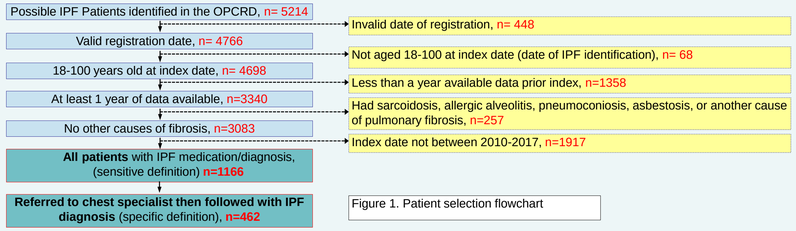

Figure 1. Patient selection flowchart

RESULTS – First Signs & Symptoms Prior IPF Diagnosis

Table 1. First signs & symptoms in year up to index date, n (%)

	All patients (n=1166)		Referral followed by diagnosis (n=462)	
Symptom	Read Code only	Read-code or Free-Text	Read Code only	Read-code or Free-Text
Clubbed fingers	3 (0.3)	4 (0.3)	0 (0.0)	1 (0.2)
Cough	**307 (26.3)**	**371 (31.8)**	**119 (25.8)**	**154 (33.3)**
Crackles	1 (0.1)	12 (1.0)	0 (0.0)	6 (1.3)
Dry cough	31 (2.7)	38 (3.3)	13 (2.8)	16 (3.5)
Dyspnoea	**257 (22.0)**	**333 (28.6)**	**108 (23.4)**	**146 (31.6)**
Fatigue or malaise	23 (2.0)	31 (2.7)	6 (1.3)	9 (1.9)
Loss of appetite	8 (0.7)	12 (1.0)	4 (0.9)	7 (1.5)
Weight loss	20 (1.7)	27 (2.3)	11 (2.4)	13 (2.8)

All patients: medication and/or diagnosis; Referral to chest specialist followed by a diagnostic code: referral code allowed up to 60 days after diagnosis.

- Dyspnoea and cough were the most common coded first symptoms in the year prior IPF diagnosis.
- Addition of free-text data improves ability to detect signs & symptoms in general practice data.
- Symptoms identified via Read code and free-text more common in patients with referral followed by diagnosis.

RESULTS – Consultation Rate Prior IPF Diagnosis

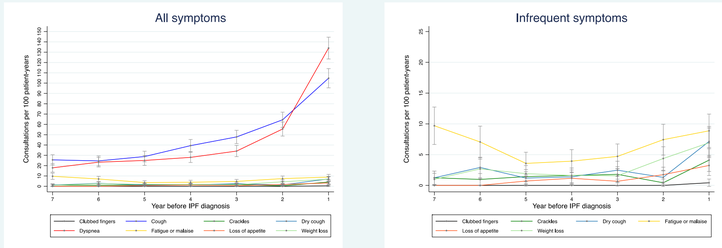

Figure 2. Symptom frequencies based on consultation rates in years leading to IPF diagnosis in patients with more specific diagnosis.

- High increase in consultation rate for cough and dyspnoea closer to year of IPF diagnosis.

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References:
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2. Raghu G, Chen SY, Hou Q, Yeh WS, Collard HR. Incidence and prevalence of idiopathic pulmonary fibrosis in US adults 18-64 years old. Eur Respir J 2016 July;48(1):179-86.
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RESULTS – Relationship between signs & symptoms

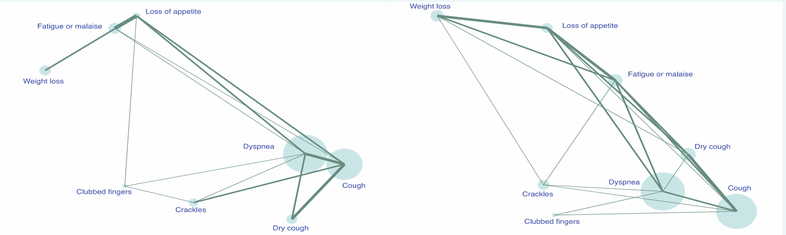

Figure 3. Principal component analysis (PCA) based network charts of signs and symptoms in 90 days (left) and 365 days (right) prior diagnosis in patients with more specific diagnosis

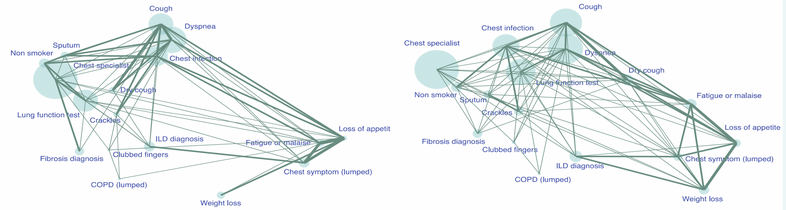

Figure 4. Principal component analysis (PCA) based network charts of extended list of signs and symptoms in 90 days (left) and 365 days (right) prior diagnosis in patients with more specific diagnosis

- Bubble size indicates prevalence of signs & symptoms; Thickness of line indicate associations between signs & symptoms.
- Strong correlation between cough and dyspnea observed. High prevalence of code for chest specialist visit observed in 90 days and 365 days prior IPF diagnosis also observed.

CONCLUSION

- Dyspnoea and cough were the most common first presenting symptoms for IPF in the year prior to diagnosis, occurring equally in around 30% of patients.
- Other symptoms, such as weight loss and fatigue, or signs such as crackles and clubbed fingers were rarely recorded (around 2% patients).
- Free-text identification improved the capability to detect signs and symptoms within general practice electronic medical record data.
- Diagnostic algorithms are now being tested, aiming at improving early diagnosis using primary care data.

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