Mortality Risk of Patients with Idiopathic Pulmonary Fibrosis

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BACKGROUND & PURPOSE

- Idiopathic pulmonary fibrosis (IPF) is a debilitating, progressive, unpredictable and fatal fibrotic lung disease requiring early intervention to improve outcomes.
  - IPF occurs predominantly in older adults
  - Median survival from diagnosis is approximately 3-5 years
- The objective of this study was to understand the mortality risk of patients with IPF compared with matched controls in the Medicare population.

METHODS

Study Design

- Retrospective matched cohort study using Medicare claims data to examine mortality risk among beneficiaries who were newly diagnosed with IPF compared to patients without IPF.

Patient Selection

IPF Selection Criteria

- Patients newly diagnosed with IPF were identified in the Medicare Research Identifiable Files (100% of beneficiaries) between 1/1/2010 and 12/31/2010 (ID period).
- An IPF patient was defined as meeting the following 3 criteria:
  - ≥ 1 inpatient claim or ≥ 2 outpatient claims within 12 months with IPF as a listed diagnosis (ICD-9-CM: 516.3), with the first qualifying IPF claim during the ID period; AND
  - had no claim with codes for other interstitial lung diseases after the last IPF claim; AND
  - had no claims with IPF as a listed diagnosis in the 1 year before the index date (baseline period)
- Additional inclusion criteria:
  - age ≥ 66 and ≤ 97[a] on the index date
  - continuous enrollment in fee-for-service (FFS) Medicare and eligible for Medicare Parts A and B during the baseline period
  - continuous enrollment in FFS Medicare during the first year after the index date (unless the patient died)

Disease-Free Control (DFC) Selection Criteria

- For each IPF patient, 1 beneficiary with the same age, gender, and region, but with no claims of IPF during the study timeframe (2009-2013), was selected from a 5% random sample of Medicare patients.
- For IPF patients, the date of the first IPF claim was defined as the index date. DFC patients were assigned the same index date as the IPF patient to whom they were matched.
- The same continuous enrollment requirement (during baseline and first year of follow-up) for IPF patients was applied to DFC patients.

IPF and DFC patients were followed for up to 4 years after index.

Study Variables

- Main outcome: death
- Demographic variables: age, gender and region.

Statistical Analysis

- Descriptive statistics were generated for all measures. First-year and 4-year mortality risk was reported.
- Kaplan-Meier mortality curves were used to illustrate differences in mortality over time

[a] The 5% Medicare sample codes all patients age ≥98 as 98 years old; therefore, matching could only be done for patients ≤97

RESULTS

- 13,615 patients with IPF and 13,615 matched DFC were identified (Figure 1).
- Mean age (SD) was 78.9 years (7.1), and 49.7% were female (Table 1).
- 26.5% of patients with IPF died within the first year post-index compared to 13.6% of controls (P < 0.001) (Table 2).
- There were 0.234 deaths per person-year in patients with IPF vs. 0.096 in controls (P < 0.001).
- Patients with IPF had shorter survival compared with controls (P <0.001) (Figure 2).
  - 25% of patients with IPF had died by 0.91 years vs. 3.00 years for DFC
  - The median post-index survival was 3.06 years for patients with IPF and was not yet reached for controls.

Figure 1: Patient Identification

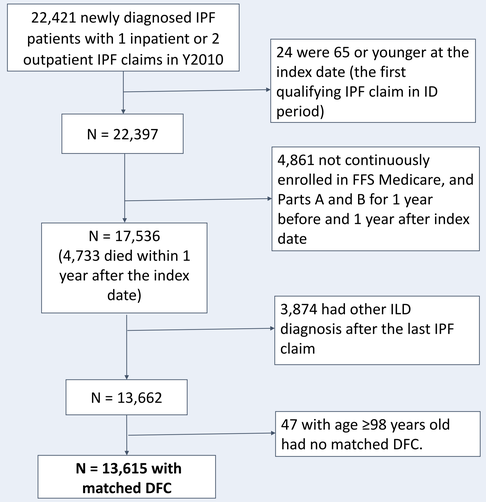

Figure 2: Kaplan-Meier Mortality Curves

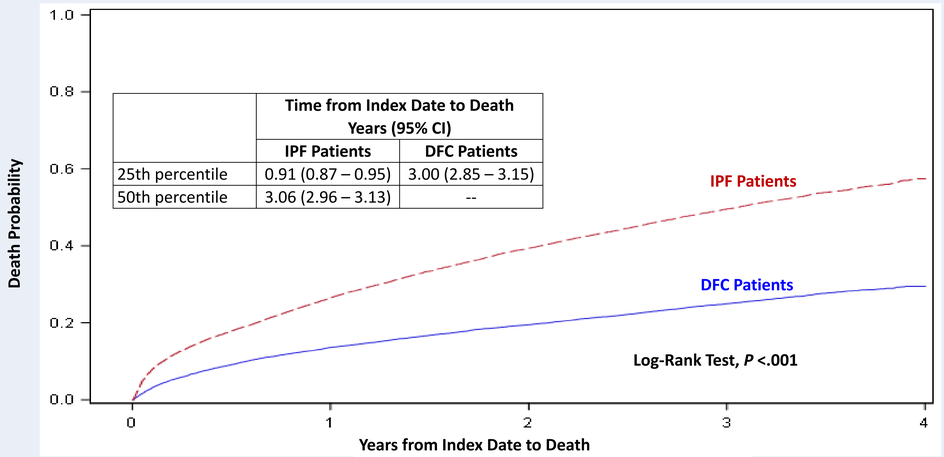

Table 1: Patient Characteristics Matched IPF and DFC Patients

	IPF N = 13,615	DFC N = 13,615	All N =27,230
Age, year, mean (SD)	78.9 (7.1)	78.9 (7.1)	78.9 (7.1)
Female, no. (%)	6,768 (49.7)	6,768 (49.7)	13,536 (49.7)

Table 2: Mortality Risk Among Matched IPF and DFC Patients

	IPF N = 13,615	DFC N = 13,615	All N =27,230	p-value
Died within 1 year post-index, no. (%)	3,613 (26.5)	1,853 (13.6)	5,466 (20.1)	<0.001
Died within 4 years post-index, no. (per patient-year)	7,191 (0.23)	3,647 (0.10)	10,838 (0.16)	<0.001

LIMITATIONS

- Results may not be representative of non-Medicare aged IPF patients.
- The data were from 2009-2013, during which time there were no FDA-approved anti-fibrotic therapies.

CONCLUSION & CLINICAL IMPLICATIONS

- One quarter of IPF patients died in under a year and median survival was ≈ 3 years. This is significantly lower than matched, non-IPF counterparts.
- This study confirms the rapid, progressive decline of patients with IPF within a few years of diagnosis when they receive standard-of-care treatment.
- Similar studies should be repeated in the years to come to assess the impact of new therapies on survival.

REFERENCES

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