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REAL-WORLD TREATMENT PATTERN AND EFFECTIVENESS OF PIRFENIDONE AND NINTEDANIB IN PATIENTS WITH IDIOPATHIC PULMONARY FIBROSIS: A MULTI-INSTITUTIONAL STUDY IN TAIWAN

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Background and Objectives:

- Pirfenidone and nintedanib have been proven survival benefits and been currently approved for idiopathic pulmonary fibrosis (IPF).
- However, real-world comparison of effectiveness between two antifibrotics remains limited in Asia.
- Our study was aimed to assess: (1) factors associated with the choice of pirfenidone versus nintedanib; (2) dose modification during treatment; (3) overall survival (OS).

Methods:

Study Period Study cohort from 2018/1/1 to 2020/12/31

Study Design Retrospective cohort study

Data Source Chang Gung Research Database (CGRD), the largest multi-institutional electronic medical records database in Taiwan.

Study Outcomes Prognostic factors, dose modification, overall survival (OS)

Statistical analysis Inverse probability of treatment weighting (IPTW) and Cox regression model

Study Population

- idiopathic pulmonary fibrosis (IPF) patients
- Newly receiving pirfenidone or nintedanib
- The first date of antifibrotics was defined as index date.
- The clinical factors included age, sex, lung function, biochemical data, comorbidities and co-medications.
- Follow-up period : from the index date until dose modification date, death, last date of clinical visit or 2022/12/31.

Results:

- A total of 86 patients receiving pirfenidone and 142 patients receiving nintedanib.
- Mean age and Forced vital capacity (FVC) were 70.7 ± 11.3 years and 68.8 ± 17.4%, respectively.
- The use of nintedanib was positively associated with the patients with chronic kidney disease (CKD) (odds ratio: 2.1, 95% CI: 1.06 – 4.18).
- Dose reduction rate was similar between two groups (59.3% vs. 65.4%, P = 0.34).
- Nintedanib users were associated with worsen OS than pirfenidone users (adjusted HR: 2.07, 95% CI: 1.24 – 3.45).

Table 1. Baseline Characteristics (before weighting)

Baseline variables	Nintedanib (n=142)	Pirfenidone (n=86)	P value
Age, median years (range)	71.0 (64.0 – 78.0)	70.5 (62.0 – 78.0)	0.36
Male sex, n (%)	108 (67.9%)	51 (59.3%)	0.17
Smoking, n (%)			0.31
Current	13 (8.2%)	5 (5.8%)	
Ever	66 (41.5%)	27 (31.4%)	
Never	79 (45.9%)	49 (56.9%)	
FVC (%), median (range)	67.5 (56.0 – 76.5)	73.7 (58.0 – 78.4)	0.37
FVC > 80%	25 (15.7%)	13 (15.1%)	0.90
ALT	19.6 (14.5 – 28.3)	20.6 (15.6 – 29.7)	0.26
Creatinine	0.8 (0.7 – 1.1)	0.9 (0.7 – 1.3)	**<0.01**
Comorbidities, n (%)			
- Malignancy	17 (10.6%)	5 (5.8%)	0.20
- Chronic Kidney Disease	20 (12.5%)	20 (23.2%)	**0.03**
- Atrial Fibrillation	7 (4.4%)	3 (3.4%)	0.72
- Stroke	9 (5.6%)	5 (5.8%)	0.96
- Ischemic Heart Disease	33 (20.7%)	13 (15.1%)	0.28
- Myocardial Infarction	6 (3.7%)	1 (1.1%)	0.24
- Heart Failure	19 (11.9%)	9 (10.4%)	0.72
- Diabetes Mellitus	37 (23.2%)	27 (31.3%)	0.16
- Hypertension	62 (38.9%)	38 (44.1%)	0.43
- Hyperlipidemia	37 (23.2%)	19 (22.0%)	0.83
- COPD	97 (61.0%)	52 (60.4%)	0.93
- Psoriasis	2 (1.2%)	0 (0%)	0.29
- Rheumatoid arthritis	6 (3.7%)	0 (0%)	0.74
Pill counts, median (range)	8.0 (5.0 – 13.0)	8.0 (3.0 – 13.0)	
Poly pharmacy	120 (75.4%)	60 (69.7%)	0.33
Co-medication, n(%)			
Angiotensin-converting enzyme Inhibitor	6 (3.7%)	1 (1.1%)	0.24
Angiotensin II receptor blockers	29 (18.2%)	21 (24.4%)	0.25
β-blockers	28 (17.6%)	18 (20.9%)	0.52
Diuretics	21 (13.2%)	10 (11.6%)	0.72
calcium channel blocker	37 (23.2%)	22 (25.5%)	0.68

Figure 1. Kaplan-Meier estimates of overall survival (before weighting)

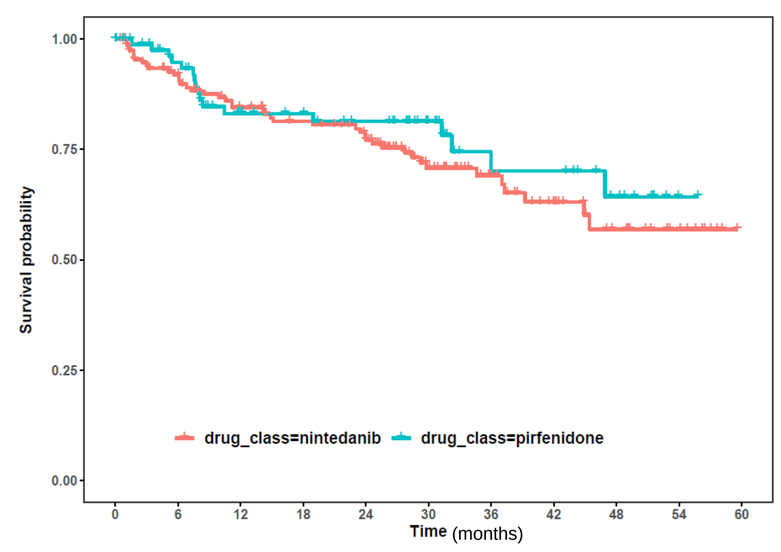
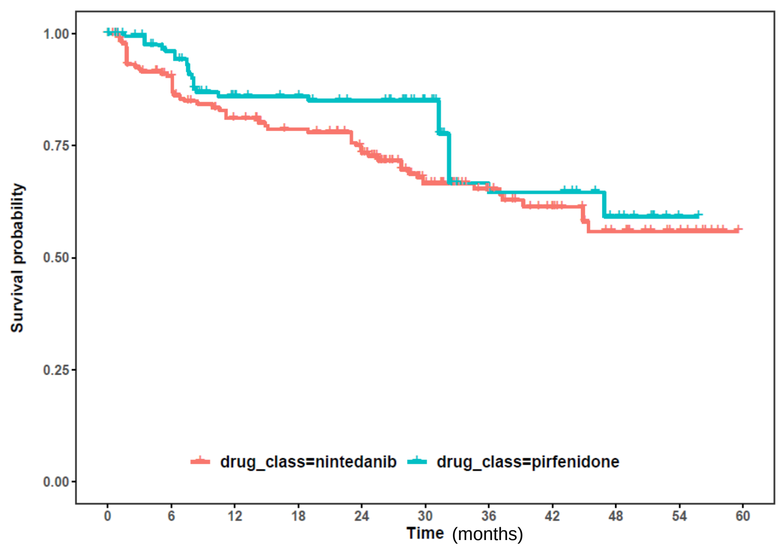


Figure 2. Kaplan-Meier estimates of overall survival (after weighting)



Conclusions:

- Our study showed CKD patients were likely prescribed nintedanib. Pirfenidone users had association of better all-cause mortality than nintedanib users. Further studies are suggested to confirm our findings.