What is IPF?

IPF overview

Idiopathic pulmonary fibrosis (IPF) is a specific form of chronic, progressive, fibrosing, interstitial pneumonia. IPF is thought to result from repeated micro-injury and abnormal wound repair that leads to progressive fibrosis and irreversible loss of function (see Pathophysiology of IPF).[1-3]

IPF has an unpredictable course that is characterised by progressive decline in lung function with increasing fibrosis, eventually leading to death.[3]

Key clinical features of IPF[3-5]

Physicians should be aware of IPF when assessing patients with the features outlined below and consider referring patients with these symptoms to a pulmonologist for further investigation.[4]

Presenting features of IPF

- Over 50 years of age[3]
- Unexplained breathlessness on exertion[3-5]
- Persistent cough[4,5]
- Clubbing of the fingers[4,5]
- Bilateral inspiratory crackles when listening to the base of the lungs[4,5]
- Restrictive pattern on spirometry; occasional normal or combined obstructive pattern[4-5]

Risk factors

While the cause of IPF is not fully understood, multiple risk factors have been associated with the development of the disorder. These include environmental factors,[6-8] infection,[9] gastroesophageal reflux disease[10-14] and genetic factors.[8]

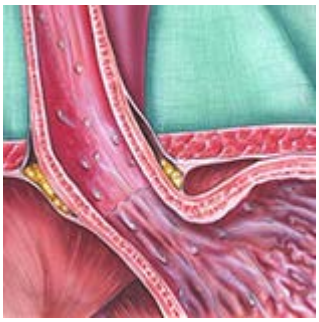
Environmental factors

Cigarette smoking

- History of smoking strongly associated with an increased risk of IPF (odds ratio 1.6–2.3)[6]
- 41–83% of IPF patients are current or former smokers (dependent on the definition used for IPF)[7]

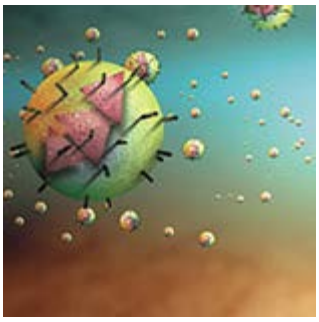
Environmental pollutants

- Exposure to metal and wood dusts, farming, raising birds, hairdressing and stone cutting/polishing are associated with an increased risk of IPF[8]



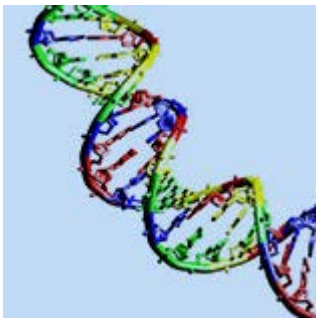
Gastroesophageal reflux disease (GERD)

- GERD is a proposed cause of repeated micro-injury
- The estimated prevalence of GERD in IPF is 36–94%[10–14]



Infection

- Herpes viruses and hepatitis C virus have been linked to the pathogenesis, progression and exacerbation of IPF[9]
- Studies have examined the association between infection and IPF, but findings are inconclusive[9]



Genetic factors

- Familial pulmonary fibrosis accounts for <5% of the total population with IPF[8]
- Mutations in telomerase genes (TERT, TERC), surfactant proteins gene (SPC, SPA2), mucin 5B (MUC5B), ELMOD2 and TOLLIP have been linked with IPF[8]

Incidence and prevalence of IPF

Incidence

A 2015 systematic review assessing 34 studies from 1968 through 2013 suggests that the incidence of IPF is similar to that of stomach, liver, testicular and cervical cancers, reporting a conservative estimate of the incidence of IPF as ~3–9 per 100,000 per year across Europe and North America.[15]

A 2012 review of literature published from 1990 to 2011 reported that the incidence of IPF in Europe was from 0.22 to 7.4 per 100,000. In the USA, the incidence of IPF ranged from 6.8–8.8 or 16.3–17.4 per 100,000 population, depending on if narrow or broad case definitions of IPF were used, respectively.[16]

Prevalence

The prevalence of IPF increases with age and is predominant in those older than 65 years of age. It is estimated that approximately 100,000 adults in the US are diagnosed with IPF.[17,18]

The 2012 review by Nalysnyk et al. reported estimates of IPF prevalence in Europe between 1.25 and 23.4 cases per 100,000, and in the USA between 14 and 27.9 or 42.7 and 63 cases per 100,000, depending on if narrow or broad case definitions of IPF were used, respectively.[16]

Disease progression and overall survival

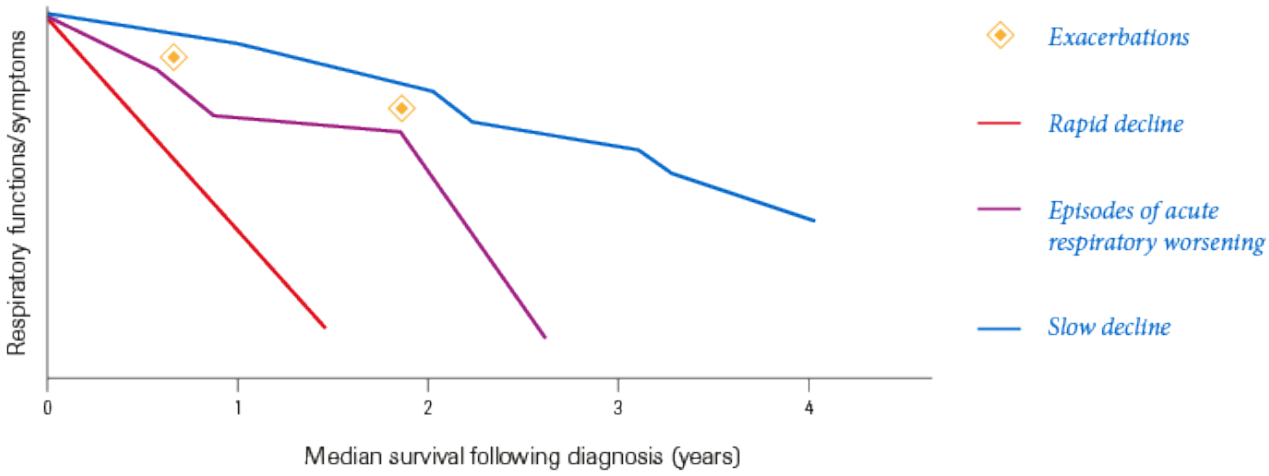
Progression

The clinical course of IPF is variable, and there is no way to accurately predict prognosis or directly assess treatment response in individual patients.[19-22] Without treatment, the rate of decline in respiratory function and progression towards death can take several different forms loosely categorised as rapid decline, slow decline or slow decline with periods of acute respiratory worsening.[21]

Survival

Regardless of rate of progression, IPF is a fatal disease, therefore, overall survival is an important factor to consider; patients diagnosed with IPF typically survive 2–5 years after diagnosis.[21-31] IPF is associated with a 5-year survival rate of 20–40%,[31] which is similar to the reported 5-year survival rate of non-small cell lung cancer and worse than that of many other cancers.[32,33] Due to the limited overall survival with IPF and the irreversibility of the disease, prompt treatment following diagnosis is critical.

Disease progression of untreated patients after diagnosis[21]



Diagnosis overview

IPF is often diagnosed at an advanced stage of the disease. It is commonly misdiagnosed as other conditions that have some symptoms that mimic IPF, such as:[34]

- Chronic obstructive pulmonary disease
- Congestive heart failure
- Other lung diseases
- Connective tissue diseases with lung involvement

It is important to identify patients presenting with the key clinical features of IPF so that they can be referred to a pulmonologist.[34]

Diagnosis of IPF is based on clinical, radiographic (high-resolution computed tomography [HRCT] scan) and/or pathological criteria from a lung biopsy, together with the exclusion of other causes of interstitial lung disease (ILD). Results from clinical history, HRCT and/or biopsy are ideally interpreted by a multidisciplinary diagnostic team that is experienced in ILD.[3]

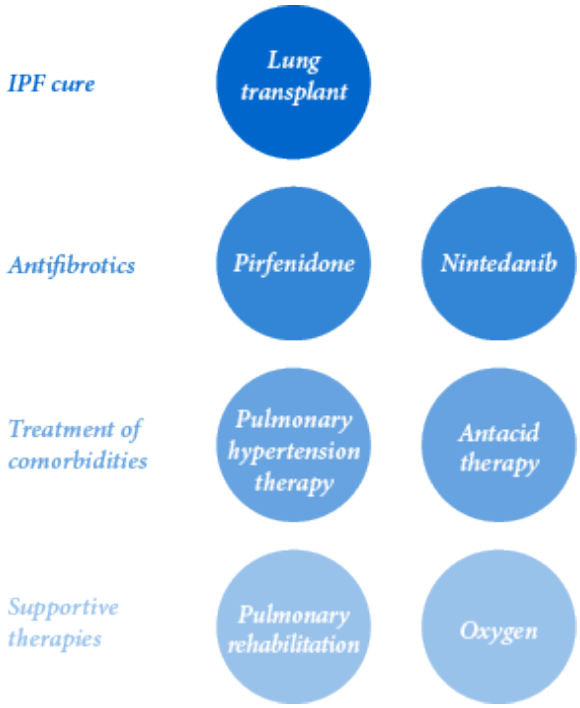
Treatment overview

Two antifibrotics therapies, pirfenidone and nintedanib, are available for the treatment of IPF.[1,3,35,36]

Prior to the approval of the current antifibrotic options, the only treatment options available to patients with IPF were those for supportive care (e.g. oxygen therapy, pulmonary rehabilitation).[3]

With the availability of antifibrotic therapies, patients have the opportunity to receive treatment that affects profibrotic stimuli implied in the pathogenesis of lung fibrosis alongside supportive care.[1,3,35,36]

Current IPF treatments[1,3,35,36]

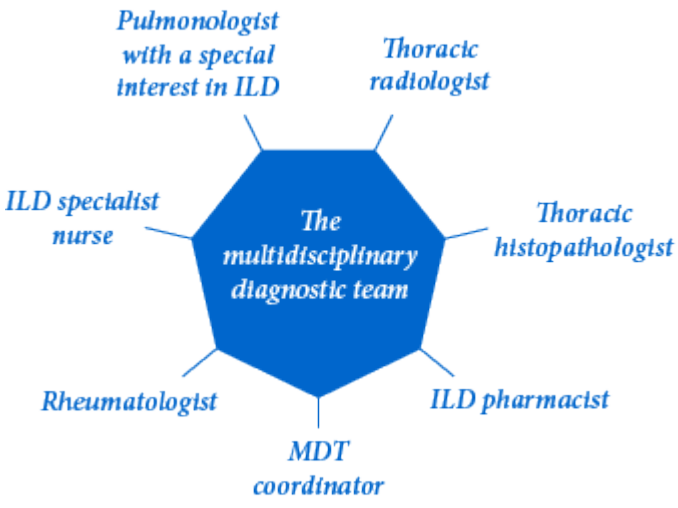


The multidisciplinary team

The multidisciplinary team (MDT) is key to both the diagnosis and management of IPF.[3,37-39]

The MDT involves multiple roles from physician through imaging, histopathology, and ongoing care.[3,37-39]

Diagnosis with an MDT involves the pulmonologist, thoracic radiologist and thoracic histopathologist as core members, and may also include a rheumatologist.[3,37] For treatment and management of IPF, the pulmonologist and radiologist can be joined by an ILD specialist nurse and an ILD pharmacist, creating an experienced team across the core areas of IPF patient care. In larger centres, an MDT coordinator may be available to help organise the members of the team.[3,37-39]



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