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Comprehensive Care In Pulmonary Fibrosis

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ABSTRACT

Pulmonary fibrosis is a respiratory condition that associates progressive loss of quality of life mainly due to respiratory failure with emotional impairment due to the loss of autonomy and the poor prognosis. These clinical conditions and the poor prognosis would require a strategy closer to lung cancer than to other respiratory diseases. However, most centres that manage patients with pulmonary fibrosis have not enough resources to properly provide the multidisciplinary approach that they require. Idiopathic pulmonary fibrosis (IPF) is the most frequent and lethal form of lung fibrosis, for which two anti-fibrotic drugs have demonstrated to slow-down disease progression. Both drugs require a close monitoring to ensure adherence and to prevent or reduce adverse effects. Currently, there is an increased demand of improving the multidisciplinary integral treatment of IPF and other lung fibrotic entities to optimise drug benefits and quality of life during the different stages of the disease, including end of life. **(BRN Rev. 2019;5(1):35-47)**

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INTRODUCTION

Pulmonary fibrosis is a respiratory disorder that in most patients is associated with progressive loss of lung function, ultimately leading to respiratory failure. Patients experience an increase in dyspnoea, cough and activity limitation, globally developing a decrease in quality of life (QoL)[1-4]. Idiopathic pulmonary fibrosis (IPF) is the most frequent and lethal interstitial lung disease (ILD), and it is considered as the paradigm of lung fibrosis[1-4]. However, other progressive fibrotic ILDs, such as chronic hypersensitivity pneumonitis (cHP) or fibrotic non-specific interstitial pneumonia (fNSIP), share some common diagnostic and treatment challenges[1]. The therapeutic approach of IPF has notably changed in the last decade, especially with the introduction of the anti-fibrotic medications (pirfenidone and nintedanib)[5-8]. Both drugs have demonstrated a slowing-down of disease progression and a decrease in the one-year mortality rate[5,6]. Despite this progress in treatment options, IPF remains a deadly disease; therefore different anti-fibrotic combinations are being tested in clinical trials to improve the outcome[8]. The anti-fibrotic therapeutic approach is also being tested in different types of progressive fibrotic non-IPF patients through ongoing clinical trials by using nintedanib (NCT02999178, INBUILD) or pirfenidone (NCT03099187)[9]. More details about both clinical trials may be checked at https://www.clinicaltrials.gov. However, other therapeutic and management requirements that are likewise important but frequently overlooked are increasingly noted[8,10-47]: patient education and empowering, handling symptomatic treatment from diagnosis, prevention and early management of adverse effects of anti-fibrotic medication, controlling comorbidities, emotional assessment and psychological treatment when required, nutritional and physical well-being, oxygen therapy and last but not least comfort care at the end-of-life (Fig. 1).

In terms of multidisciplinary diagnostic and treatment management, prognosis and monitoring, IPF and other fibrotic lung diseases are closer to lung cancer than to other common respiratory diseases such as asthma or chronic obstructive pulmonary disease (COPD). The unfortunate main difference with several oncological diseases is the lack of a cohesive global worldwide strategy to establish expert multidisciplinary teams integrating the supportive care that these patients require, in line with other debilitating and lethal rare disorders. Supportive care, also called comfort care or palliative care, improves the QoL of patients who have a serious or life-threatening disease, acting on symptoms, side effects caused by disease treatment, and psychological, social, or spiritual problems related to the disease[30-32]. Recent studies have reported the lack of supportive care in IPF and the related challenges (Fig. 1)[30-34]. Furthermore, some data suggest the potential benefits of implementing a comprehensive and integrating therapeutic strategy[16,19,21,22,31,32]. Referring to Professor W. Osler's words, when looking for the best care, the focus should be the patient who has the disease, not only the disease. The present review will summarise the main identified challenges in the supportive treatment of pulmonary fibrosis (Fig. 1), and some recent potential initiatives to integrate the multidisciplinary therapeutic management.

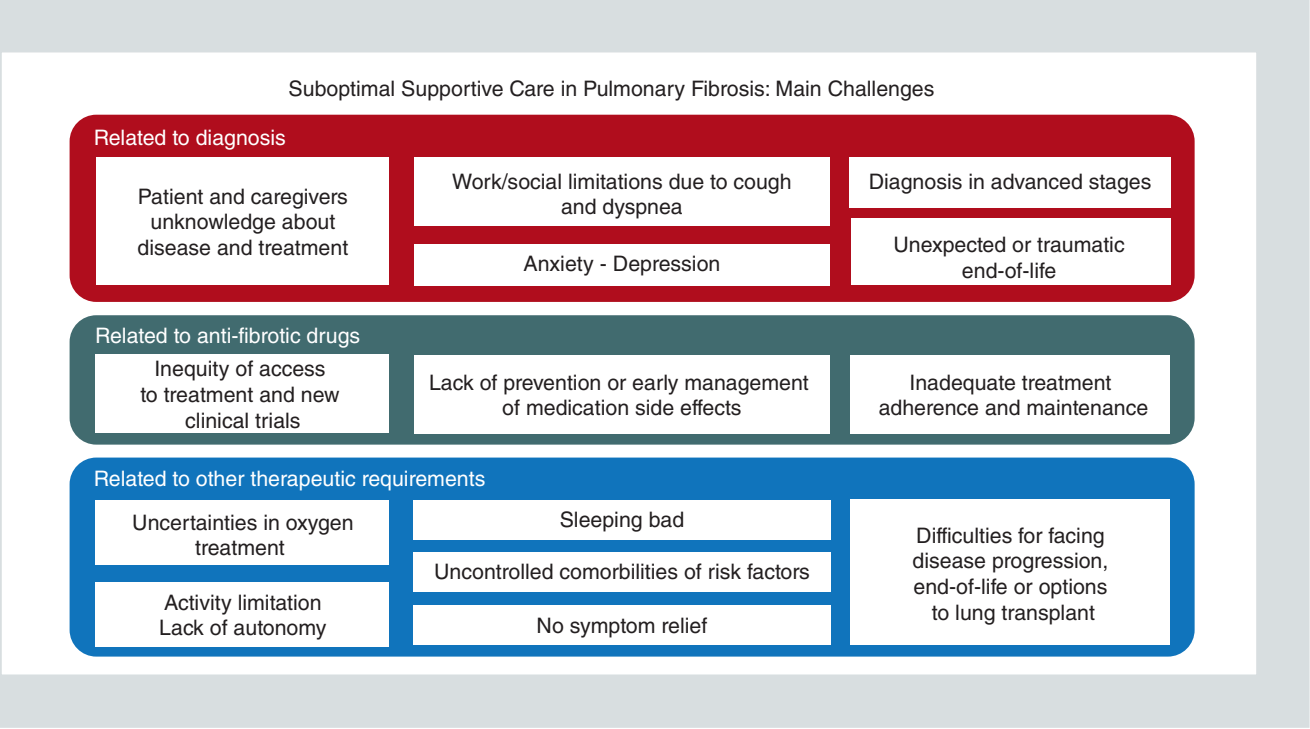

Figure 1. Main challenges associated with the suboptimal supportive care in pulmonary fibrosis. Identifying the patient problems related to diagnosis, anti-fibrotic drugs and comorbidities would represent the first step to improve supportive care in fibrotic interstitial lung diseases.

PATIENT EMPOWERING AND PRIORITIES

Patients are increasingly interested in knowing more about the disease and the medicines they take to understand how they can better deal with the disease and participate in therapeutic decisions[12,18,22]. Furthermore, a growing volume of information from different online sources that may lack of reliability frequently threatens patients' wellbeing[48]. Patients can find better and reliable information at www.eu-ipff.org (website of the European Federation of IPF patients and relatives). Comprehensive and high-quality information about the condition is one of the unmet needs included in the European IPF patient charter[12]. There is no perfect recipe for properly giving the information, and every patient requires a tailored approach even for disease and treatment education. One of the first steps is to start listening to the patient and caregivers, understanding patients' priorities and setting up together sequential objectives[18,20,27]. This whole process requires time and space, something that the physician and nurse frequently lack and that the current health care systems should recognise and improve. Furthermore, ILD caregivers would benefit from educational programs for improving their communication abilities. Finally, patient associations may help in empowering patients by sharing information, experiences and guidance during the course of the disease. Patient empowerment will depend in part on different educational, cultural and social backgrounds, personal limitations and preferences, and patient-clinician communication. A well-informed patient can make realistic choices, which may also

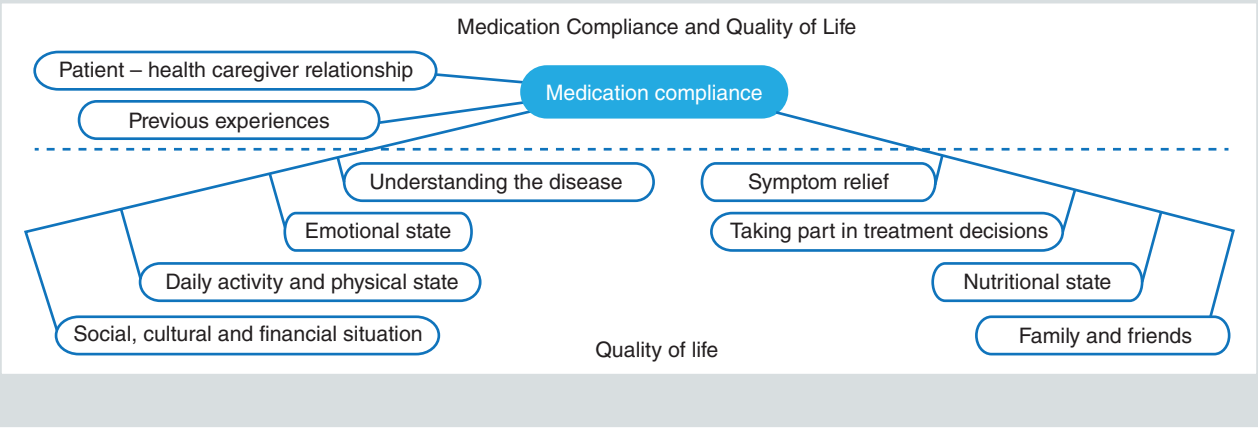

Figure 2. Medication compliance and quality of life. Medication compliance depends on multiple factors, most of them are related to quality of life, except for patient-health caregiver relationship and previous experiences. Improving these factors would implicate a benefit in quality of life and, therefore, a higher probability of medication compliance.

Table 1. Predictors of poor medication adherence potentially modifiable through educational interventions to improve idiopathic pulmonary fibrosis (IPF)

Believing you have disease only when signs or symptoms
Considering there is no need for medication if no symptoms
Worrying about side-effects of anti-fibrotic medicines
Feeling medicines are hard to take
Lack of self-confidence in controlling IPF
Lack of confidence in the medical evaluation or diagnosis
Lack of support from healthcare team
Impaired access to care

promote medication compliance and eventually turn into better disease outcomes (Fig. 2, Table 1)[13-33].

PALLIATION OF SYMPTOMS

Palliative treatment is intended to relieve symptoms and improve QoL at any stage of the disease[30-40]. Physicians and nurses in ILD care are tasked with the care of pulmonary fibrotic patients that may present dyspnoea and cough at any stage of the disease, in an evolving field of new therapies through which patient survival is being prolonged[30-40]. In oncology and other chronic disable diseases, palliative medicine has an important role in managing sources of patient distress and improving patients' QoL, which may even help in medication tolerance and compliance (Fig. 2)[14,16,49]. In practice, palliative care teams usually work alongside a patient's team of oncologists. However, the need for better palliative care in pulmonary fibrosis is increasingly acknowledged. Stimulating collaboration between palliative care and pulmonary fibrotic ILD teams would enable the opportunity to improve symptom relief, QoL and dying for patients[31,36-39]. Palliative teams are trained in symptom management and patient communication, assistance with medical decision-making and end-of-life care[39]. Translating this knowledge and activity to the healthcare of patients with pulmonary fibrosis would represent an advance and improvement for the patients' QoL[36]. On the other hand, ILD specialists need to better interact

with palliative care specialists and inform them about IPF therapies and patient's needs. Palliative care teams vary from country to country, but they are progressively including non-oncological patients in their routine of services. Currently, international strategies, national guidelines and consensus recommendations for integrating palliative care in pulmonary fibrosis are lacking, but urgently needed. Nowadays, palliative care is only accessible for a minority of ILD patients and healthcare providers worldwide.

The main symptoms that drive QoL in IPF are cough, dyspnoea and anxiety[28]. Different treatment strategies have been used to relieve chronic cough and progressive dyspnoea associated with pulmonary fibrosis, presenting limited evidence and modest results[29,40-47]. Cough and dyspnoea relief may be achieved with opioid drugs[40], but sometimes the required dose may affect daily life activities, especially in mild and moderate stages of the disease. Although no perfect therapeutic formula has been identified to palliate both symptoms, different options have been suggested (Table 2). Palliative care teams can play an important role in supporting patients. When offering palliative care referral, explanation about the role of palliative care is crucial, as patients may think that palliative care is synonymous with end-of-life care and, therefore, even sometimes decline this option[31,35]. Finally, increasing shortness of breath and immobility in advanced stages represent another challenge for many patients and create problems in accessing healthcare. New home care programs that incorporate eHealth technologies hold vast potential for facilitating real-time data about patient situation and requirements[41,50]. Therefore, the ILD community should work to find better options for symptom palliation from initial stages of the disease and also to set the best healthcare strategy for patient acceptance and participation in care.

Table 2. Treatments used for dyspnoea and cough relieve in pulmonary fibrosis

Treatments for the chronic cough[24,29,61-64] a) Exclude other causes of cough b) Antitussive agents: – Opioids: morphine, methadone, codeine, and dextromethorphan – Anaesthetics: gabapentine, pregabalin – Low dose glucocorticoids (i.e. 2.5-5 mg/day) – Antifibrotic medication[64] – Sodium cromoglycate, PA101* – Thalidomide* – Others: Theophylline, Anticholinergic bronchodilator c) Treatment of GERD if present
Treatments for shortness of breath or dyspnoea[38,58,60] a) Respiratory rehabilitation program[58,60] b) Psychological techniques (reducing anxiety, improving respiratory pattern) c) Opioids: morphine 10-30 mg/day[40]

*Thalidomide and PA101 have been tested in clinical trials targeting cough in patients with pulmonary fibrosis. Both showed a reduction of cough frequency compared with placebo, although the trials included a limited number of patients and evaluated short time effect. Thalidomide is not available in all countries.

PREVENTION AND EARLY TREATMENT OF POSSIBLE DISEASE-MEDICATION ADVERSE EFFECTS

After sharing the information about risks and benefits with the patient, the beginning of anti-fibrotic treatment is recommended facing the diagnosis of IPF[3,4]. Early diagnosis and initiation of treatment are of critical importance for long-term clinical outcomes[14]. Both anti-fibrotic drugs, pirfenidone and nintedanib, present a reasonable safety profile in clinical trials and report only 4-6% of definitive drug discontinuation due to intolerance[3-7]. However, data from real-world clinical practice, such as national registries, show higher

Table 3. Preventing and early treating anti-fibrotic medication side effects

Pirfenidone

1 capsule per day (801 mg/day) first week
1 capsule every 12 h (1602 mg/day) second week
1 capsule every 8 h (2403 mg/day) third week
The option of lower dose per capsule is also available and then the titration differs: 1 capsule every 8h first week, 2 capsules every 8h the second week and 3 capsules every 8 h the third week. This option may be better for patients that present slow gastric motility or some related disorder since it allows to perform the tittration even more slowly.

Preventive advice:
– The medication should be taken with abundant food and water
– Avoiding: smoking, drinking alcohol, concomitant medication that may alter liver metabolism
– Decreasing risk of photosensitivity: sun-cream (+50 sunscreen protective factor [SPF], avoiding direct sun exposure (especially after 1-2 h of taking medication), sunglasses and hat, clothes with SPF
– Decreasing risk of nausea and vomiting: avoiding food or treatments that may reduce the stomach motility as fatty foods or opioid pain relievers

Treating photosensitivity and rush:
– After sun cream and low dose of oral corticosteroids (prednisone 2.5-10 mg or equivalent)
– Depending on the severity, the medication should be reduced or discontinued

Treating nausea and vomiting:
a) Medication that recover digestive motility and ameliorate symptoms: metoclopramide, cisapride,…
b) Diet based on low fat food. Abundant hydration. Spreading the pills over the meal (if 3 caps/8 h)
c) Reducing medication. In case of severity, maintenance of gastrointestinal adverse events or rapid weight loss, pirfenidone should be discontinued

Nintedanib

1 capsule 150 mg every 12 h, with food (no dose titration is required)

Preventive advises:
– Avoiding food or drinks that increase digestive motility (e.g., coffee, iced-drinks, pumpkin)
– Avoiding alcohol or concomitant medication that can modify drug-metabolism

Treating diarrhoea
– Astringent diet, abundant hydration and probiotic supplements
– Anti-diarrheal medication (loperamide or similar)
– If symptoms persist despite initial treatment temporarily interrupt treatment
– Resume at full dose after the end of digestive problems. If unable to resume at full dose, decrease to 100 mg/12 h
– Discontinuation if not tolerance of 100 mg/12 h

Liver enzymes (for both drugs):
– Before initiation of the medication and after one-two weeks of treatment a blood test should be performed to evaluate liver tolerance (aspartate transaminase [AST]/alanine transaminase, aka alanine aminotransferase [ALT]), and then once a month up to the third month.
– AST/ALT > 3 to < 5 x upper limit to normal (ULN) without signs of sever liver damage: interrupt medication or reduce dose; once normalising AST/ALT, medication may be reintroduced and increase to full dosage if no new elevated liver enzymes.
– AST/ALT > 5 x ULN or lower values but signs of liver damage: interrupt medication. The reintroduction could be dangerous.

proportion of drug interruption associated with side effects, which negatively impact on QoL[23,51,52]. Furthermore, the number of on-treatment patients after one year is really variable[23,51,52]. So, keeping IPF patients on medication depends in part on the health-care setting. A high proportion of patients are being treated in hospitals with not enough patient support nor close follow-up, which may impact compliance and outcomes for patients[14]. Although not all patients that initiate anti-fibrotic medication will develop a side effect, recommendations concerning the drug intake and preventive measures to reduce the risk of adverse events are also useful, providing the patient with some tools for early identification and coping (Table 3). The most frequent pirfenidone-related adverse effects are nausea, vomiting and photosensitivity, with a wide range of variability

depending on the country and even on the region. Nausea and vomiting may be present due to the decrease in gastric motility that pirfenidone may associate. Photosensitivity is more frequent in summer, especially when patients forget the sun protection. Related to nintedanib, the most common adverse effect is diarrhoea, which is usually mild-to-moderate, but sometimes may be the reason for drug discontinuation. For both medications, liver enzymes should be monitored specially during the first month. Liver alteration is only present in 1% of cases but may be life threatening, and, therefore, early identification is mandatory. Both treatments should be administered during the food intake (not before or just after meals) to decrease the gastrointestinal side effects. Frequently, treating adverse effects under supervision, optimising the management and, if required, temporarily reducing or discontinuing the drug may reduce the final medication withdrawal[8].

MENTAL WELLBEING AND PHYSICAL HEALTH

Every patient may react to disease information and treatment in a completely different way depending on several conditions, including physical health, mental wellbeing, and social support network[53,54]. Patients with both physical health problems and depression or anxiety are at particular risk since the physical problem can complicate the assessment and treatment of the mental disorder[51]. Therefore, improving both the physical and mental health is becoming a priority area for clinicians and policymakers, yet the practical steps needed to achieve this are less clear.

After hearing the diagnosis of IPF, an initial sadness or stress response is frequent and could even be considered a physiological activation of interconnected neuroendocrine circuits to react to a new and threatening problem (the disease). However, if the intensity is too high or the duration too long, a maladaptation may incur to altered mental health, depression or anxiety. Depression and anxiety have been described in around 25% of patients with IPF[55-57]. Depression and chronic physical illness are in reciprocal relationship with one another: not only do many chronic diseases cause higher rates of depression, but depression has been shown to decrease the potential benefits of the treatment approach[58]. Depression and anxiety may also impact on medication adherence[55,56] (Fig. 2). Furthermore, IPF patients often describe feelings of loneliness and numbness when learning about their disease, which leads to different other disabling emotions[34]. Therefore, an optimal evaluation of patients' emotions and mental wellbeing from the initial visits as well as individualising communication with the patient are essential to allow for treatment and support[34].

Physical activity and autonomy are fundamental for the physical and mental health, and also for better dealing with any chronic illness[53-55]. Reduced physical activity is associated with poor QoL and survival[14,24,58-60]. Physical activity and respiratory rehabilitation are recommended in the integral care of IPF[2-4]. Rehabilitation programs include muscular training by combining exercises of strength and resistance and respiratory education for optimising the pattern of breathing, altogether to improve gas exchange and decreasing anxiety[59,60]. The approach to activity and training will likely change throughout

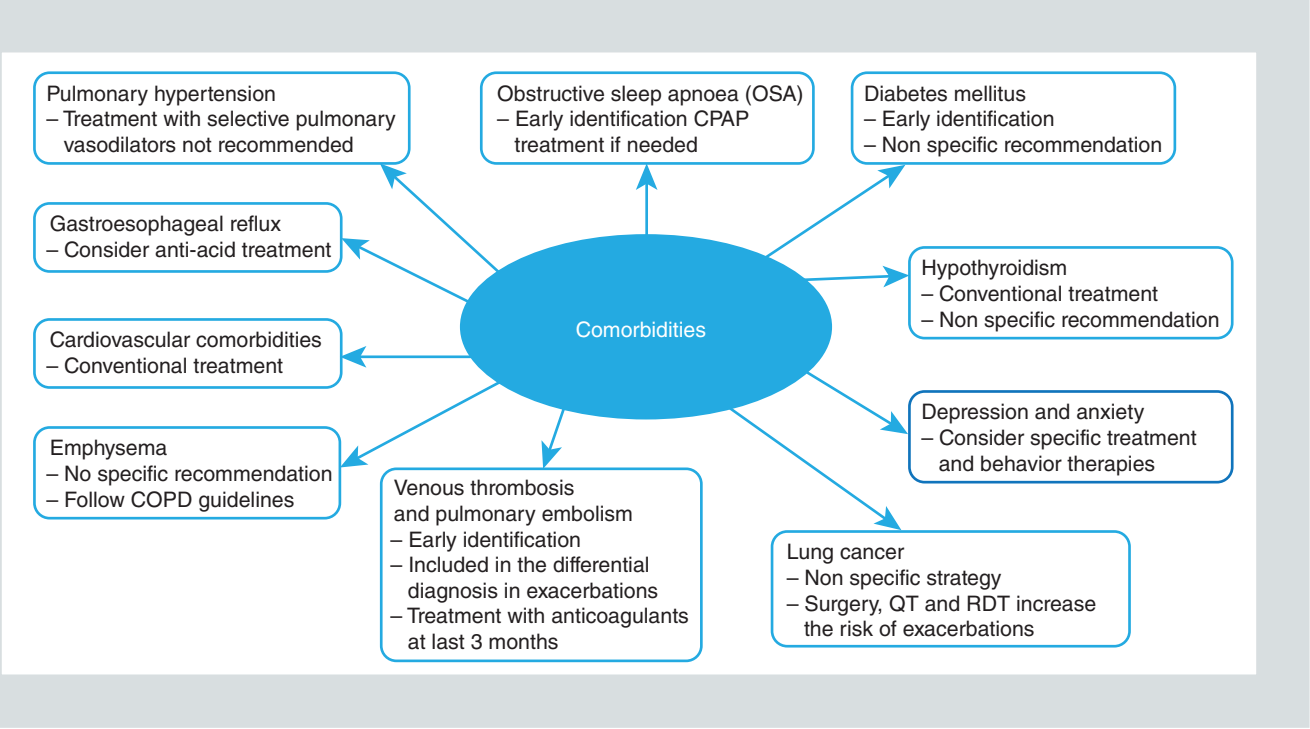

Figure 3. Comorbidities identified in pulmonary fibrosis. The most frequent comorbidities are gastroesophageal reflux, diabetes mellitus, hypothyroidism, cardiovascular diseases, depression-anxiety and emphysema. The prevalence of lung cancer and obstructive sleep apnoea is higher than in the global population. Lung cancer, pulmonary hypertension and pulmonary embolism are associated with poor prognosis *(reproduced and modified with permission from Millan-Billi P et al.[45]).*
COPD: chronic obstructive pulmonary disease; CPAP: continuous positive airway pressure; QT: chemotherapy; RDT: radiotherapy.

the different stages of the disease and also depend on the daily life activities or habits. Patients with mild or no symptoms and no limitations for daily life activities would need some form of supervision of their weekly physical activity or exercise, or, in case of sedentary habits, initiate them withina pulmonary rehabilitation program, while patients in more advanced stages could benefit from physiotherapy to improve patient's autonomy. The presence of debilitating comorbidities and their treatment may also interfere in the patient's physical activity and QoL[45] (Fig. 3). However, the educational and activity content of specified pulmonary fibrosis physiotherapy or respiratory rehabilitation programs have not been designed yet[44]. Furthermore, the beneficial effect of pulmonary rehabilitation in IPF has been proven evaluating the activity performed during some months, but often the effect may wean out at longer term[58-60]. Patients with pulmonary fibrosis may have severe hypoxia (oxygen saturation [SaO_2] < 88%) during exercise from mild-to-moderate stages of the disease[1-4], which may be a challenge for exercise programs. Oxygen desaturation during the six-minute walking test (6MWT) has been suggested as a prognostic factor of disease progression and mortality[46,47]. Although oxygen therapy improves exercise capacity in IPF[47], the potential benefits for the disease of incorporating oxygen treatment during activity still remains unknown. Furthermore, the benefits of pulmonary rehabilitation

programs have been mostly evaluated in other respiratory diseases such as COPD, which present a different mechanism leading to dyspnoea and may require another training approach. Recent reviews concluded that pulmonary rehabilitation increases exercise tolerance and improves QoL in patients with IPF[58-60]. Therefore, more research evidence is required to set the optimal type of program for physical activity or pulmonary rehabilitation in IPF and also to test its long-term effects.

LOOKING FOR THE BEST SUPPORTIVE CARE

The best supportive care would be the combination of interventions in a holistic multidisciplinary therapeutic approach that looks for improving wellbeing and QoL in patients suffering progressive and devastating illnesses, considering the different needs related to the disease, the personal or cultural believing and the physical and psychosocial state[31,65]. The best care in IPF and other pulmonary fibrotic diseases should be patient-centered and not only include an optimal anti-fibrotic approach but also any intervention that reduces the burden of the disease, helps to control drug-related adverse events, and enhances the physical and mental state of the patient, aimed at improving the QoL. Therefore, moving from disease-centred care to patient-centred care. The common tools to assess QoL are specific questionnaires that include the patient-reported outcomes[16]. The most common questionnaires used in IPF to evaluate symptoms and other health related conditions are[16]: 1) The King's Brief Interstitial Lung Disease health status questionnaire (K-BILD), which was developed for IPF and other ILDs; 2) The Saint George's Respiratory Questionnaire (SGRQ), which was first validated in other chronic respiratory diseases and, more recently, modified and revalidated for IPF population (SGRQ-I); 3) A Tool to Assess Quality of Life in IPF (ATAQ-IPF), which was developed in a reduced number of IPF patients but, is now widely used in clinical trials and patient care; 4) The EuroQol 5-Dimensional Quality of Life Questionnaire (EQ-5D), a short questionnaire to evaluate health state, that has been used in clinical trials and it is being validated for IPF; 5) The University of California San Diego Shortness of Breath Questionnaire (UCSD's questionnaire), a dyspnoea-specific questionnaire that has been used in IPF clinical trials but not specifically validated for this respiratory condition; 6) The Leicester Cough Questionnaire (LCQ), a cough-specific questionnaire that has been used in IPF studies; 7) The Cough Quality of Life (CQoL) questionnaire, which has been evaluated in IPF, but not completely validated for this disease; 8) The Needs Assessment Tool: Progressive Disease for People with Interstitial Lung Disease (NAT:PD-ILD), a tool to evaluate ILD patient requirements.

Dyspnoea and cough may be also evaluated through different scales. The Medical Research Council (MRC) dyspnoea and the Borg rating of perceived exertion scales have been widely used in IPF clinical practice[16]. Interventions that may improve QoL in IPF are related to disease treatment, symptom relieve, physical condition and mental equilibrium. To facilitate a systematic and comprehensive approach to treatment and follow-up in IPF the "ABCDE" of care has recently been suggested[16]: A) Assess patients' needs and

values. Continuous reassessment of requirements, wishes, and adaptation is crucial to properly provide the needed health care at each stage or time point of the disease. B) Backing patients: information and education of patients and caregivers about the disease and treatments are fundamental to enhance communication. C) Comorbidities and comfort care. As previously mentioned, symptoms worsen during disease progression and different strategies may be useful to control or relief them. Furthermore, comorbidities are frequently present, and some of them may reduce life expectancy (Fig. 3). Gastroesophageal reflux has been associated with higher risk of acute exacerbations. Associated cardiovascular disease increases the mortality of IPF patients, so healthy nutritional habits, physical activity and avoiding cardiovascular risk factors such as tobacco may benefit patient survival. Smoking is also a risk factor for other deadly comorbidities such as lung cancer and emphysema and may interfere in the anti-fibrotic metabolism, so smoking cessation is mandatory in IPF. Other frequent comorbidities such as obstructive sleep apnoea (OSA), hypothyroidism, anxiety/depression, and pulmonary hypertension may be the reason of worsening in health status. Therefore, the proper treatment approach of comorbidities would improve patients' health. D) Disease-modifying treatment. The existence of two anti-fibrotic drugs that slow-down disease progression is a hope for these patients. Preventing or early treating potential adverse events may increase the medication adherence and permanence, which allow optimizing treatment benefits. Furthermore, offering the possibility of new anti-fibrotic combinations in clinical trials and/or, in those cases that meet the criteria, lung transplantation should be a common procedure not only when disease progress but also from the initial visits in some cases. E) End-of-life care. Talking about the end of life with the patient and caregivers remain a challenge in IPF and other lung fibrotic diseases; however it is useful to enable patients and families to make decisions in line with their values and preferences[16,65]. Although the integration of palliative care into non-malignant life-threatening disease is not routine, family members of patients that received care at home with hospice services were more likely to report a less harmful dying experience.

The figure of a specialised nurse is crucial to engage patients and caregivers in being part of the treatment decision-making, looking for the best supportive care plan in each patient and ensuring the updating about the clinical and personal situation of the patient at the different time-points of the follow-up. Furthermore, the ILD nurse would act as a connection hub between the primary care and the ILD team at the hospital and also between the different disciplinary therapeutic or management areas (e.g., psychologists, social care, nutritionist, physiotherapist/rehabilitation). However, the presence of a specialised ILD nurse in those centres that provide care for ILD patients remains an unmet need in most countries and it is probably one of the first steps to achieve for any strategy that would include a best care practice in fibrotic ILDs. Education plans and new health care policies are required to enhance the incorporation of specialised ILD nurses in all countries.

Ongoing clinical trials with new anti-fibrotic combinations would require specifying and measuring all supportive care interventions.

In fact, supportive interventions would have a major role in increasing tolerance to new combination medications. However, only randomised clinical trials will demonstrate the real benefits of supportive care measurements and may evaluate the potential interventions that could be considered as best supportive care. Different interventions and programs that would include the holistic therapeutic approach individually required for each patient could be tested. Currently, there is an ongoing clinical trial that measures the potential benefit of the combination of education, self-management training for most common and distressing symptoms, caring for caregiver, and planning for future and development of shared end-of-life goals (SUPPORT, NCT02929017) comparing with routine care in IPF[66]. The only inclusion criteria for patients recruitment was the confident diagnosis of IPF. The inclusion criteria for caregivers were: age older than 18 years, non-paid caregivers, and identified by patient as providing the majority of support. Probably, the benefits of different supportive care strategies or changes in some interventions will be compared in the future when more than one prospective clinical trial would be available.

CONCLUSIONS

Patients with progressive pulmonary fibrosis require a holistic multidisciplinary approach. Multidimensional assessments include emotional, physical, social and cultural aspects. Exploring the different unmet needs for the individual patient requires specific training and sensitivity that currently is more akin to the oncological field than to other types of chronic respiratory diseases. An early referral to an ILD centre offers the advantages of comprehensive diagnostic and disease-management expertise. However, advances are required for improving symptom relief, psychological support, and standardizing the most beneficial programs of physical activity and pulmonary rehabilitation. Furthermore, once the holistic approach in patients with pulmonary fibrosis is optimised, the next step is to create a sustainable network model that allows comprehensive care for every ILD patient, wherever the patient lives. Such a collaborative effort will represent a milestone in overcoming the huge inequities in treatment that are present world-wide.

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