Lung transplantation: the pros and the cons

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SUMMARY

With this summary, we aim to give insight in the indications for lung transplantation (as well in general as disease-specific) with regard to idiopathic pulmonary fibrosis (IPF) and sarcoidosis. We will briefly discuss the results after transplantation and end with the negative effects, owing to the transplantation and the medication that is required to prevent rejection.

Lung transplantation remains the ultimate treatment option for some well selected patients with end-stage pulmonary diseases such as COPD/emphysema, cystic fibrosis, interstitial lung diseases and pulmonary arterial hypertension.

A patient can be a valuable candidate for lung transplantation if his end-stage disease can no longer be treated, resulting in a low 2-y survival, provided the patient is within a certain defined age window, and there are no current contra-indications for a lung transplantation (1).

After initial contact with the transplant center, the patients will undergo a pretransplant screening to identify him/her as a good candidate, and to identify possible risk factors that need to be solved before putting the patient on the waiting list. These risk factors include diabetes, arterial hypertension, body weight, coronary artery disease, renal insufficiency.

For most of the current lung transplant indications, disease-specific referral and listing criteria have been established, based on factors that drive the prognosis of the specific disease. For IPF, the criteria are as follows (1):

Referral criteria:
* Radiographic evidence of IPF/NSIP,
* Histopathologic evidence of UIP, irrespective of lung function
* FVC ≤ 80% predicted, DLCO ≤ 40% predicted
* Dyspnea or functional limitation due to lung disease
* \( O_2 \) requirement, even if only during exertion
* Failure to improve after medical treatment in inflammatory ILD’s

Criteria to list for transplantation:
* Drop of FVC ≥ 10% during 6 m follow-up
* Drop of DLCO ≥ 15% during 6 m follow-up
* Desaturation to < 88% or
  * 6MWD < 250 m or
  * Decline of > 50 m on 6MWD during 6 m follow-up
* Pulmonary hypertension (re heart cat. or ultrasound)
* Hospitalization due to respiratory decline, acute exacerbation or pneumothorax

For other ILD’s and more specifically for sarcoidosis, the criteria are not that clear cut, but generally a patient with one of these conditions can be listed for lung transplantation if the lung disease has not...
responded to appropriate treatment and if there are no extrapulmonary contraindications to transplantation. Classically used general criteria are:

*NYHA class III or more
*FVC < 60-70%pred
*hypoxemia
*low diffusing capacity
*symptomatic and progressive disease despite adequate treatment

Lung transplantation for IPF and sarcoidosis constitute 23.7 and 2.5% respectively of all lung transplantations performed worldwide (2). The aims of lung transplantation are on the one hand to improve survival and also to improve Quality of Life (QOL). Therefore, patients should be well-selected and at present it is very well known that older patients (>65 y) have a worse prognosis, which has clearly been demonstrated in general but also for some indications such as IPF. Indeed according to the latest Registry report of the International Society for Heart and lung Transplantation, the current 5-y survival after lung transplantation for IPF is 45.4% for 50-65 y old patients, whereas it is decreased to 39.8% for patients > 65 y of age (2).

Amongst all indications for lung transplantation, patients with IPF have by far the worst prognosis, and this also depends on the type of procedure that has been performed. It is accepted now that IPF patients who received a double lung transplantation, do better than the ones who underwent single lung transplantation (5-y survival of 52.8% vs 43.3%). For sarcoidosis, the ISHLT reports a 5-y survival of 52.8%, whereas in our own experience, the 5-y survival for sarcoidosis is 70%. It is generally accepted that there is a significant increase in QOL after lung transplantation, which has also been specifically shown for IPF (3).

Transplantation not only improves the survival and the QOL, it also leads to several negative effects, such as the occurrence of arterial hypertension, hyperlipidemia, diabetes (calcineurin-induced), renal insufficiency (abnormal creatinine level in up to 36% of patients within 5 y) (2). The current mortality causes are chronic lung allograft dysfunction (with chronic rejection being the most important one), infections and an increasing prevalence of cancer (2). The emergence of bronchial carcinoma, which affects up to 10% of the native lung of patients who underwent a single lung transplantation (4), led our own team to systematically diverge from single to double lung transplantation. This may avoid the occurrence of a native lung cancer, but also infectious problems of the native lung (especially fungal infections), which have a high mortality rate. For sarcoidosis, recurrence in the transplant lung is rather common (up to 25%), although this does not seem to impact on survival (5).

In conclusion, in well-selected patients with IPF and sarcoidosis, lung transplantation may offer a substantial improvement in survival and in QOL, despite the occurrence of a whole lot of metabolic negative effects, mainly due to the current drug treatment.

REFERENCES


FURTHER READING


