

Management of the recipient prior lung transplantation

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ABSTRACT

When a patient's lung disease has reached its latter stages, lung transplantation is seen to be a possible therapy option. Lung transplant patients have steadily increased in number over the past few decades; the number of cases has at least tripled in the past ten years. Additionally, patients on the waiting list are older and sicker than in the past due to the lengthening of the waiting list and the increase in elderly patients receiving lung transplants. Therefore,

effective pre-transplant management and careful candidate selection are crucial for both transplant success and patient survival.

Key Words: *Pulmonary rehabilitation*

COMMENTARY

Although referring and transplant centres should focus on a wide range of issues, the timing of referral, nutrition, pulmonary rehabilitation, critical care (including mechanical ventilation and extracorporeal membrane oxygenation), psychological support, and the management of pre-existing comorbid conditions should receive the majority of attention (coronary artery disease, diabetes mellitus, gastroesophageal reflux disease, osteoporosis, malignancy, viral infections, and chronic infections). The present article reviews and summarizes the pre-transplantation care plans for adult patients designated for lung transplantation in this context. For patients with severe lung illness who have failed to respond to the most effective medicinal or surgical treatment, lung transplantation is a well-established therapeutic alternative. The most frequent causes of lung transplantation today are Interstitial Lung Disease (ILD) and Chronic Obstructive Pulmonary Disease (COPD), though patients with other end-stage lung diseases, like lymphangioleiomyomatosis, sarcoidosis, pulmonary arterial hypertension, are also occasionally treated with lung transplantation. The ISHLT has created and updated criteria for recipient selection for lung transplantation, including patients with a high risk of dying from lung disease without transplantation and a high likelihood of living for at least 5 years after lung transplantation, provided that graft function is sufficient. However, non-transplantation doctors must recommend lung transplantation earlier for patients with advanced lung disease. Early referral could increase the likelihood that these patients would satisfy the requirements for transplantation and improve their outcomes by enabling the identification of modifiable risk factors, optimizing comorbidities, and improving nutritional and functional conditions. When deciding when to refer a patient with COPD, the following factors can be taken into account: Body Mass Index (BMI), airflow obstruction, dyspnea, and exercise capacity index of 5 or 6 or a forced expiratory volume in 1 second that is below the anticipated value.

It would be appropriate to refer patients with idiopathic pulmonary fibrosis when a certain radiologic or histologic diagnosis is made, regardless of lung function. The New York Heart Association functional classes III or IV, a forced vital capacity of the predicted value, a carbon dioxide diffusion capacity of the predicted value or the need for oxygen at rest can all be taken into consideration as referral criteria for other ILDs linked to connective tissue diseases. Every candidate for a lung transplant should be examined for psychological issues that could lead to noncompliance with their post-transplantation care. Additionally, a history of psychiatric illnesses and drug and alcohol abuse should be investigated. Long-term drug adherence may benefit from interventions like cognitive therapy and behavioral counseling. Candidates for transplantation may be more likely to acquire antibodies to the Human Leukocyte Antigen (HLA), which is linked to poorer graft and patient survival if they have had prior transplantation, been pregnant, or received blood transfusions. A multiplexed bead-based flow cytometric assay is currently widely employed in testing facilities, and Panel Reactive Antibodies (PRAs) have historically been used to gauge the degree of sensitization (i.e., Luminex). The ability to identify HLA-specific antibodies with high sensitivity and specificity has significantly increased with the introduction of this solid phase-based test. Having HLA antibodies increases the chance of hyper acute rejection, chronic rejection, or even mortality, even at low levels. According to earlier research, patients who have a prior lung transplant are more likely to pass away. According to a database analysis by the United Network for Organ Sharing, 17% of lung transplant candidates had positive PRA results. However, depending on the method, PRA test results can vary greatly. While other facilities found comparable overall or chronic lung allograft dysfunction-free survival rates, several centers reported poor post-transplantation results. Although avoiding donors with reactive HLA antigens can be a solution, sensitized recipients will wait longer and run a higher risk of dying while they are on the waiting list. Muscle wasting, deconditioning, and inactivity are common in patient

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with end-stage lung disease. Particularly in lung transplant patients, decreased muscle mass and quadriceps strength are typically seen. After a lung transplant, these reductions and the ensuing lower quality of life may last for many years. Due to their age, smoking history, and other risk factors, lung transplant candidates are frequently at risk of Coronary Artery Disease (CAD). In a study of people who had lung transplants, 15% of patients underwent revascularization before or concurrently with the procedure, and 21% of patients developed CAD. Pre-transplantation CAD was shown in another study to be a unique risk factor for cardiovascular events following lung transplantation. The pre-transplantation period should therefore include a CAD screening for lung transplant candidates. However, recent reports on individuals with CAD who underwent lung transplantation indicate that the results were satisfactory. Lung transplantation can be explored in individuals with CAD who do not have end-organ dysfunctions since the risk posed by CAD can be reduced with appropriate medication or surgical therapies. Individuals with retained left ventricular function may be candidates for percutaneous or surgical revascularization, but infrequently, carefully chosen patients with severe CAD may be

considered for heart-lung transplantation. Patients on the waiting list for lung transplants may be removed from the list if their clinical conditions significantly deteriorate. Common grounds for delisting are as follows: advancement of disease to the point where the patient becomes too unwell to undertake the operation, the development of new organ failure, sepsis, nonadherence to treatment, and improvement of clinical condition. Due to a sudden worsening of their condition, patients who are receiving ECMO or mechanical ventilation are especially at risk of being delisted. All lung transplant candidates should therefore undergo regular evaluations to determine whether they are suitable for lung transplantation. For a transplant to be successful and a patient to live, proper pre-transplant treatment is essential. Lung transplants are now being given to older, sicker patients. Therefore, maintaining lung transplantation eligibility requires early referral to transplantation institutions, nutritional status optimization, psychosocial support, rehabilitation to maintain good functional status, and management of concomitant illnesses. Additionally, mechanical ventilation or ECMO may be utilized as a bridge to lung transplantation to improve the chances of receiving acceptable organs.