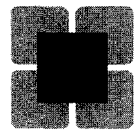

WILLIAM S. WILKE, MD, EDITOR

OUTCOME IMPROVING FOR LUNG TRANSPLANT PATIENTS

The 1- and 2-year survival rates following single-lung transplant now approach the rates associated with heart transplants. At Washington University in St. Louis, Dr. Joel Cooper reports 78% survival after 1 year, and 74% after 2 years. These figures are truly remarkable when we consider that until 1983, only 1 of 40 lung transplant patients even survived the hospitalization. With the improvements in graft preservation and immunosuppressive therapy that are anticipated, the survival rates for lung transplantation could approach 90% by the end of the century.

The number of heart-lung transplants in the United States plateaued in the late 1980s at approximately 60 per year. In the last 2 years, however, both single- and double-lung transplants have proliferated. More than 100 lung transplants should be performed in the United States this year.

CANDIDATES FOR LUNG TRANSPLANT

The typical candidate for single-lung transplant is a patient with pulmonary fibrosis, emphysema, or primary or secondary pulmonary hypertension (such as Eisenmenger's syndrome). More emphysema patients are being considered for lung transplantation, especially those patients with alpha-1 antitrypsin deficiency. Patients with cystic fibrosis or bronchiectasis benefit from double-lung transplant. Heart-lung transplants, which are severely limited due to donor-organ availability, are currently reserved for patients with complicated congenital heart defects associated with Eisenmenger's syndrome.

Most patients with these diagnoses are young, in their 20s or 30s, and acceptable candidates are younger than 60 years. Patients who are ventilator-dependent, in general, have been poor candidates for lung transplantation; however, results are improving in this group of patients. Current steroid use in the potential recipient, which used to be an absolute contraindication, is currently a relative contraindication. Successful transplantation has been performed for pulmonary fibrosis patients on prednisone therapy. Previous cardiothoracic surgery is another relative contraindication, but cases are reviewed on an individual basis. Finally, some patients who become truly end-stage are simply "too sick" to withstand the rigorous recovery required early after the operation.

RECOGNIZING THE "TRANSPLANT WINDOW"

The life expectancy for patients with these disorders is highly variable. Whereas most patients with primary pulmonary hypertension die within 2 years after the diagnosis is made, some may die within weeks after diagnosis, and others may be stable for many years. Early referral of patients with these diagnoses is helpful for patient education and to determine the proper timing for transplantation (the "transplant window").

The transplant team informs the patient regarding the nature of the disease process and the development of symptoms which indicate progression of the disease. Many patients have a slow, gradual decline and enter the transplant window with the onset of progressive disability (unable to work, or attend school), progressive dyspnea, hemoptysis, syncope, or progressive hypoxemia. Ideally, the patient enters the transplant window and is added to the transplant registry before right ventricular failure develops. Early, and even moderate, ventricular dysfunction can be reversed following single- and double-lung transplant.

SURGICAL OPTIONS

A variety of surgical procedures is available for lung transplantation. A single-lung transplant (generally for pulmonary fibrosis, emphysema, and primary pulmonary hypertension) can be performed on either the right or left lung depending on the recipient's disease and the condition of the donor. In addition, for selected patients with Eisenmenger's syndrome, the operation may include repair of a congenital heart defect (such as atrial septal defect, patent ductus arteriosus, or ventricular septal defect).

Double-lung transplantation is useful for patients with pulmonary infection, such as cystic fibrosis, in

whom transplantation of a single lung is contraindicated because the remaining contralateral lung would infect the newly transplanted lung. Transplantation of the heart and both lungs is effective therapy for patients with Eisenmenger's syndrome with complicated congenital heart defects which cannot be repaired (eg, truncus arteriosus, complete arteriovenous canal, transposition of the great arteries). Considerable experimental work suggests that living-related donor lung transplants will be offered soon for selected children with respiratory failure; this would involve removing the lower lobe from a parent and transplanting it into the chest of the child.

RESULTS

These very debilitated patients often show dramatic improvement within 24 to 48 hours after transplantation. Patients are generally extubated 48 hours after the transplant and are completely off oxygen by the end of the first week. Most patients are hospitalized for 2 to 3 weeks following transplant.

Lung rejection and infection are most likely within the first 3 months. The differentiation of rejection from infection usually requires transbronchial lung biopsy with bronchial washings. The clinical diagnosis is substantiated by chest radiograph findings (pulmonary infiltrates and pleural effusion with rejection) and pulmonary function changes (hypoxemia, decreased FEV_1).

At selected centers with the most experience, 1-year survival averages 75% for heart-lung, single-, and double-lung transplantation. Rehabilitation, in general, is excellent. Long-term complications, such as obliterative bronchiolitis, appear to be decreasing in frequency and severity with the use of triple drug immunosuppression (cyclosporine A, prednisone, and azathioprine).

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GALLSTONE THERAPY: RETURN TO THE GOLD STANDARD

Despite the growing number of nonsurgical therapies for symptomatic gallstones, cholecystectomy remains the standard, accepted treatment. Enthusiasm has waned for some nonsurgical alternatives—particularly biliary lithotripsy. Clinical experience with others, such as bile acid therapy and contact dissolution, has shown them to be effective only for selected patients. The newest alternative, laparoscopic cholecystectomy, may prove to be a viable option, but the results to date are still preliminary.

LIMITATIONS OF NONSURGICAL THERAPIES

Bile acid therapy

The bile acids chenodiol (Chenix) and ursodiol (Actigall) work primarily by lowering the cholesterol:bile acid ratio in gallbladder bile, with gradual gallstone dissolution. These agents appear to have other, complementary mechanisms of action, including lowering hepatic cholesterol secretion.

Chenodiol never gained widespread acceptance, partly because of reports of limited efficacy and partly because of a significant incidence of unacceptable side effects, including diarrhea and hepatotoxicity. Ursodiol, which has been used in conjunction with biliary lithotripsy, is much less frequently associated with clinically significant side effects.

The gallstone dissolution rate with bile acid therapy is, on average, 1 mm per month. A patient with a single, 1-cm gallstone can expect to be on bile acid therapy for approximately 10 months. Compliance may be a problem. This duration may be acceptable if symptoms are minimal or colics are infrequent, but symptoms and complications may occur during therapy. Patients with frequent colic or a history of gallstone complications are not good candidates for dissolution therapy.

Lithotripsy

The recent enthusiasm for biliary lithotripsy has diminished. Lithotripsy was envisioned as a noninvasive method of effective, ambulatory treatment of gallstones, with inherent cost savings. However, this technology is appropriate only for a limited subgroup of cholelithiasis patients. Furthermore, when the costs of the lithotripter, adjuvant bile acid therapy, and possible re-treatment of recurrent gallstones are factored in, there appears to be limited potential for cost savings when compared to standard cholecystectomy.