Organ Rejection

Heart and Lung Rejection

The human body has a built-in defence mechanism called the immune system. The immune system helps the body to destroy germs, such as bacteria and viruses, and helps to fight other diseases such as cancer. Lymphocytes are important components of the immune system. They are the white blood cells which are sub-divided into B cell lymphocytes and T cell lymphocytes. The B cell lymphocytes make antibodies which kill germs. The T cell lymphocytes directly destroy foreign invaders. Unfortunately, the immune system views the transplanted organs the same way as harmful diseases, and attempts to destroy the organ as a foreign substance. Rejection occurs when the transplanted organ is attacked by the immune system. Without detection and intervention, the transplanted organ will be damaged and subsequently destroyed.

Following an organ transplant patients are given three drugs to prevent organ rejection. This makes them more prone to infection so particular care is taken to prevent and treat infection.

Rejection is a common occurrence and it is anticipated that in the majority of patients, at least one rejection episode will occur. This will be treated by either increasing your doses of immunosuppressive drugs or using additional drugs. You should reduce your exercise level for a short time while you are being treated for rejection.

TYPES OF REJECTION

A. HYPERACUTE REJECTION

This type of rejection occurs rarely. It is an immediate rejection that happens within the first several hours after transplantation. It occurs because the body has previously been exposed to the same or similar antigens (or stimulants) found in the donor organ. Antigens are proteins that stimulate lymphocytes to become active. Previous exposure to these antigens may have occurred through blood transfusion, , pregnancy, or previous organ transplant. The body's immune system reacts swiftly and strongly in hyperacute rejection. Because the immune system remembers the previous exposure, an instantaneous, sometimes overwhelming response occurs to the new organ, and failure can occur within a few hours.

Hyperacute rejection occurs rarely, because transplant recipients undergo testing to determine if they have preformed antibodies which place them at risk for this problem. This test is called a PRA (panel of reactive antibodies) test.

B. ACUTE REJECTION

Acute rejection usually does not occur for several days after transplantation. Acute rejection does not occur immediately, because it takes time for the recipient's lymphocytes to realise that the transplanted organ is foreign, in order to mount a

defence against it.

Immunosuppressive drugs help overcome acute rejection by blocking the immune system's reaction to the transplanted organ. Without immunosuppressive medications, transplanted organs would probably fail within 2 to 4 weeks as a result of acute rejection.

The chances of acute rejection are greatest during the first 6 months post-transplant. Most transplant recipients experience one or more episodes of acute rejection during this time. The chance of acute rejection diminishes with time and remains very low after the first year because of immunosuppressive medications and tolerance to the transplanted organ.

C. CHRONIC REJECTION CORONARY ARTERY DISEASE (Heart Transplant)

Coronary artery disease, a type of rejection, is sometimes called chronic rejection. It usually does not occur until several years after transplant. The coronary arteries develop progressive and diffuse narrowing throughout their entire length. The diagnosis is made by coronary angiogram or intravascular ultrasound. The mechanism of this problem is not fully understood, although considerable research is directed to prevention and treatment of this problem. Coronary artery disease may result in slow deterioration of organ function as a result of silent heart attacks, and eventually may cause failure of the transplanted organ.

D. OBLITERATIVE BRONCHIOLITIS (Lung Transplant)

This is characterised by progressive airway obstruction due to damage of the cells lining the airways. This is the most serious long term complication of lung transplantation. It causes severe deterioration of lung function. The cause of this is not clear but severe acute rejection, recurrent rejection and viral infection are risk factors to the development of this process. Progression of the ,process may be arrested with increased immunosuppression.

DETECTION OF REJECTION

Rejection is diagnosed by taking a biopsy of some tissue from the heart or lung and examining it under a microscope in the laboratory. These biopsies are performed on a regular basis following transplant to detect early rejection.

CARDIAC BIOPSY

This is performed under local anaesthetic through a vein in the side of the neck. The procedure is performed under x-ray control and takes about 10 to 30 minutes. They will be performed weekly for 6 weeks following transplant then less frequently throughout the first year, depending on the amount of rejection you experience.

LUNG BIOPSY - BRONCHOSCOPY

Performed under sedation, a bronchoscope is inserted into the lungs. They are performed at least seven times in the first year depending on the amount of rejection experienced.