Stem cell study seeks to wean non-related transplant recipients from anti-rejection drugs

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The immunosuppressive drugs required by organ transplant recipients after surgery can have serious side effects with prolonged use, including infection, heart disease and cancer. In an effort to reduce, or potentially eliminate the need for anti-rejection medications, researchers at Northwestern Memorial Hospital and Northwestern University's Feinberg School of Medicine are investigating the efficacy of a stem cell transplant after organ transplant. The study, which is the first to test the protocol on non-related living donor kidney pairs, involves transplanting stem cells from the kidney donor into the recipient one day following the organ transplant surgery.

"What's unique about this study is that the donor and recipient do not have to be related and do not have to be immunologically identical. If successful, the procedure will open the door for many people who could potentially benefit from the stem cell protocol and avoid life-long use of anti-rejection drugs post transplant," commented Joseph Leventhal, MD, PhD, transplant surgeon, director of the living donor kidney transplant program and associate professor of surgery at Northwestern University's Feinberg School of Medicine.

Stem cells are formed at the marrow and are common blood cells from which other specialized blood cells, like immune cells, develop. By transplanting stem cells from the kidney donor into the recipient, researchers hope to prove that the cells will mature in the recipient's

body and work to prevent rejection of the new organ, thus allowing the immune system to accept the organ as its own.

Similar studies involving stem cell transplants for organ recipients have included donors and recipients who are siblings and are immunologically identical, something that only occurs in about 25 percent of sibling pairs. "Since approximately one-third of living donor kidney transplant pairs are non-related, existing studies only target a small group of patients. Our goal is to identify a protocol that will expand the pool of patients who qualify for stem cell transplant post organ transplant and help patients achieve a better quality of life post organ transplant," commented Michael Abecassis, MD, chief of the division of organ transplantation and dean of clinical affairs for Northwestern University's Feinberg School of Medicine.

The process begins about one month before the kidney transplant, when stem cells are collected from the kidney donor using a process called apheresis. The recipient also undergoes apheresis to collect stem cells and undergoes a single dose of radiation one day prior to surgery to suppress the bone marrow so the donor's stem cells have more space to grow in the recipient's body. The kidney transplant then occurs in the standard manner and one day following the transplant surgery, the donor stem cells are infused into the transplant recipient.

"In a standard kidney transplant, the donor agrees to donate their kidney. In this situation, the individual is asked to donate part of their immune system as well, which we hope will build tolerance in the recipient's body," adds Dr. Leventhal.

Following surgery, the patient is monitored for rejection of the kidney and over time, is weaned off of anti-rejection medications.

The first subjects to participate in the research study underwent surgery

on Thursday, February 26th. A total of 30 subjects will be enrolled in the Phase I trial to test the safety of the procedure. In order to qualify, the donor and recipient pairs must be blood-type compatible and have a negative cross-match, which means that testing has been done to confirm the recipient does not have antibodies in the blood that would cause rejection of the kidney.

Source: Northwestern Memorial Hospital (news : web)