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Stem cells for kidney failure

IMC and a Utah biotech company test the safety of placing them in humans

BY HEATHER MAY

Utah researchers are testing whether they can safely inject adult stem cells into patients to prevent and treat acute kidney failure.

Intermountain Medical Center and AlloCure, a Utah-based biotech company, have teamed up to test AlloCure's patented cells in patients who have had open-heart surgery. That kind of major operation can lead to acute kidney injury, which can be deadly.

"These cells enable an organ to defend itself against injury," said Christof Westenfelder, AlloCure's chief medical officer.

The researchers are recruiting 15 patients in what they say is the first use of adult stem cells for such kidney problems.

The cells are obtained from healthy adult donors' bone marrow. AlloCure grows and processes them in a lab, making them essentially invisible to the patient's immune system so that the patient and donor don't have to match blood or tissue types.

The cells are injected through a catheter into the bloodstream. Chemical signals lead the cells to the kidney, where, according to AlloCure, animal studies have shown they promote the survival and growth of kidney cells so that the organ can repair itself.

After that work is done, Westenfelder said, the stem cells enter the circulatory system, where they self-destruct. That's important so that they cells don't create bone, fat or muscle - which is what bone marrow stem cells do - in the wrong place.

The clinical trial is in the first of three phases, which means researchers are studying whether or not the cells are safe in humans. If the study proceeds, researchers will determine if the stem cells protect and heal kidneys.

Two Utah patients have been injected so far with "no obvious complications," said John Doty, a cardiovascular surgeon at IMC and the study's principal investigator. AlloCure is funding the study.

Possible side effects include complications with the catheter and blood vessel blockages from the stem cells.

The researchers said doctors need a better way to treat kidney damage after heart surgery. For the serious cases, patients must go on dialysis. But half of those dialysis patients will die before leaving the hospital, Doty said.