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Stem cell study pumps life back into dying hearts - Man's resurgence surprises doctors

By JACQUE HILLMAN
Gannett Tennessee

JACKSON, Tenn. - Gay Gregson wanted her husband back.

Bobby Gregson didn't want to die in his 50s from congestive heart failure.

Today, he is a pioneer in a research study that - if the results continue to look promising - might change heart treatment forever.



Last fall, Bobby, a city employee, received shots in his heart of 100 million stem cells grown from his own leg muscle in an experimental procedure called myoblast cell transplantation. There is no rejection problem because he received his body's cells.

Although it will be many more months, perhaps years, before this treatment might be approved by the FDA and enter public health care, this much is known now - Bobby's scarred and dying heart muscle is regrowing.

There are only 24 people enrolled in this study nationwide, and Bobby, who has had four heart attacks, was the first one to receive 100 million cells. Others have received 30 million, 300 million and 600 million in phase one, which is testing safety through escalating doses. The study focus is very narrow - only patients with congestive heart failure caused by heart attacks were eligible.

Bobby Gregson's results were "phenomenal," said Dr. Nabil Dib, who performed this research at The Arizona Heart Institute in Phoenix.

"I didn't expect to see such improvement with 100 million cells. ... Patients will respond differently, but the results are extremely encouraging, even with small doses."

This procedure, which uses cells cultured from the patient's leg muscle, has nothing to do with embryonic stem cell research, so it bypasses the issues raised in political advertisements before elections earlier this month.

"Over the last five years, we have developed a method to transplant the cells by catheter, like an angiogram. The patient can be awake and discharged the next day to go home," Dib said.

The researchers have proved they can isolate stem cells from the skeletal muscle, "that the cells survive and make new muscle in a matter of three months," he said.

The Arizona Heart Institute and the Arizona Heart Hospital were the first two research centers in the United States to receive FDA approval to use 3-D guidance technology. The three-dimensional color mapping system allows the doctors to pinpoint the damaged parts of the heart and then inject myoblasts into the area.

Dib will present a conference on the early study results in Washington to cardiologists from around the world in February.

In August 2005, after Gay Gregson's research led her to Dib, Bobby traveled to Phoenix to be tested for the study. He failed an initial test after getting badly sunburned, but he passed a subsequent test and had a heart catheterization to map his heart.

In March 2006, Bobby flew back out for a biopsy of his thigh muscle. They took out a marble-sized sample of the muscle and flew it to Mytogen in Boston, where they grew the cell culture during the next four to six weeks.

His cells grew quickly and by April 6, he was back in Arizona for the injection of 100 million cells on April 7.

During tests last month, he had doubled the amount he could walk in six minutes. He had photos of his heart taken and an echocardiogram and a stress test. "After lunch I met with Dr. Dib and Bee (White, a research coordinator) and they gave me my stats. They were as excited as they could be.

"He's keeping an eye on me because they can't figure out how I have so much stamina. I'm healthier than other patients he's been working with," Gregson said.

Dr. Stacie Davis, who was head of the cardiology and heart transplant unit at Vanderbilt University when Gregson was referred there in 2002, said he was judged too weak for a heart transplant and his heart's "ejection fraction" was down to 18 percent. That's the rate at which the heart pumps.

The average rate that a heart contracts is 55 percent.

Since his stem cell injections, his ejection fraction is up to 25 percent, a major improvement. "He's in the early phases of something really big, and I view him as a pioneer," Davis said. "What Bobby is doing will help every patient who comes after him."