

February 11, 2009

## **Louisville test will try to re-grow heart muscle** *Louisville clinical trial will use cardiac stem cells to re-grow muscle after attack*

By: *LAURA UNGAR*

The University of Louisville and Jewish Hospital & St. Mary's HealthCare will conduct a clinical trial using adult cardiac stem cells to try to re-grow dead heart muscle after heart attacks -- research that's especially relevant in a state where cardiovascular disease kills at one of the highest rates in the nation.

Dr. Piero Anversa, a physician at Brigham and Women's Hospital in Boston who is collaborating with Louisville doctors, said it would be the only trial in the world to use cardiac stem cells.

"This would be, unequivocally, the first one," he said.

U of L and Jewish Hospital officials would not comment yesterday, saying they wanted to hold off until a news conference scheduled for this morning.

According to a description of the trial filed with the U.S. National Institutes of Health, the research will test whether cardiac stem cells -- from adult subjects, not embryos -- will regenerate dead heart muscle by turning into heart muscle cells and other cell types. The therapy involves injecting a patient's own stem cells into the heart as a treatment for coronary artery disease and congestive heart failure.

"Currently," the NIH document says, "there is no effective intervention to regenerate (re-grow) dead heart muscle after a heart attack."

John Daniel of Pleasure Ridge Park, a 56-year-old who suffered a heart attack in 1998 that he said almost killed him, was glad to hear about the research.

"If it works and helps people, that would be good," he said. "A lot of people have heart attacks."

According to the American Heart Association, coronary heart disease causes one of every five deaths in the United States, and an estimated 785,000 Americans will suffer their first coronary attack this year.

Heart disease is a particular problem in Kentucky, which has the nation's highest adult smoking rate and high rates of obesity and diabetes -- all risk factors. The state's death rate from coronary heart disease is higher than the national average, while Indiana's is just below that average.

In the new clinical trial, Anversa said Louisville doctors, including Dr. Roberto Bolli, Jewish Hospital Heart and Lung Institute distinguished chair in cardiology, would take a piece of heart tissue from a subject and send it to Brigham and Women's. There, he said, the stem cells would be isolated, expanded and prepared before being sent back to Louisville to be injected into the patient.

As a Phase I clinical trial, Anversa said, the major objective is to determine the safety of the procedure.

"That's the first thing we want to do -- do no harm," said Anversa, who described himself as a longtime friend and colleague of Bolli.

Anversa and his team have been working on the project for two decades -- and were responsible for identifying cardiac stem cells that could generate the growth of heart muscle cells as well as coronary arteries. Anversa said he is hopeful about this type of cell because "it's a cell which sits in the heart; it is destined to make heart."

Clinical trials elsewhere have used different types of stem cells to try to treat heart problems. For example, the University of California, San Diego Medical Center is researching the use of stem cells taken from the bone marrow of an adult donor to treat congestive heart failure.

In the medical journal *Circulation Research*, U of L's Bolli co-authored an article describing "an explosion of basic and clinical studies that support the notion that the diseased heart can be repaired by administration of stem cells." That article said the issue of which stem cells will work best remains unresolved.

"Although most of the clinical studies reported to date have used bone marrow- or skeletal muscle-derived cells, a host of other cells are being investigated in the experimental laboratory," the article said. "Among these, resident cardiac stem cells ... discovered by Anversa's group in 2003, hold great promise."

Anversa said the new clinical trial should provide some answers -- and could potentially have wide implications.

"If this works," he said, "the thought is that it could also work in many other types of conditions that affect the heart."