University Hospital and the doctors affiliated with the UC Heart & Vascular Center are part of an early stage, three-center trial of a human growth-factor protein called FGF1. The first three of 32 people to be studied this year were treated in Cincinnati.

Constance Donley, 51, of Cold Spring, was treated in November. By December, Claudia Robertson, 54, of Kettering, Ohio, and James Duke also had been treated.

"This is one of the most exciting things I've ever been involved with. I think this is going to be a really big treatment in years to come," said Dr. Lynne Wagoner, director of cardiac services at University Hospital.

More than 6 million Americans suffer angina, a type of chest pain caused by decreased blood flow to portions of the heart. . Untreated, the poor blood flow that causes angina can lead to heart failure and the need for a heart transplant.

This study was intended primarily to look for harmful side effects of using the growth factor - such as unwanted vessel growth in the eyes or kidneys.

So doctors were surprised to see actual treatment benefits in the first three patients, all of whom got the lowest of four planned doses. All three experienced sharp reductions in pain and clear improvement in blood flow.

"I'm more excited about the study now than I was when it started because we didn't expect to see any benefits at first," said Dr. Daniel Snavely, an interventional cardiologist at UC. "I'm trying not to be giddy, because this is still just three patients. But the benefits were significant."

Beyond heart disease, Dr. Wagoner predicts that diabetics who often suffer poor blood flow in their legs - and sometimes need foot amputations - also could benefit from this treatment.

Regenerating damaged tissue

John Dumford, 60, of Mount Carmel, survived a heart attack in May 2003 only to discover several months later that about a third of the tissue in his left ventricle was destroyed.

While preparing for a quadruple bypass operation, his doctors referred him to a study being conducted by the Lindner Center. Dumford became one of a half-dozen in Greater Cincinnati and 22 so far nationwide to get cells grown from his own leg muscle injected into the damaged part of his heart.

Once barely able to cross a room without running out of breath, Dumford is back at work as a machinist in Florenc.

"I feel better than I've felt in years," Dumford said. "The shortness of breath is gone. I'm not feeling any pain."

Follow-up testing in other patients has shown that the leg-muscle cells do function in the heart. And patients enjoyed 10 to 15 percentage-point improvements in ejection fraction (a key measure of the heart's pumping power).

Five patients suffered irregular heartbeats after treatment, and one patient needed a defibrillator. But researchers say these side effects fall within expected levels for patients with advanced heart disease - patients who have few better options.

"Less than 2 percent of the people who could benefit from a heart transplant ever get one," said Dr. Dean Kerieakes, the leading Cincinnati researcher in the study. "This treatment could help hearts maintain function for years, and prevent the progressive decline into heart failure."

High hopes get setback

While the muscle-cell approach appears to have promise, a study co-authored by a researcher at Cincinnati Children's Hospital threw cold water on hopes that stem cells culled from bone marrow could be used to regenerate damaged heart tissue.

Stem cells are primitive cells that can morph into other types of cells throughout the body - such as nerves, bone, muscle and organ tissue.

This study - involving mice - was one of two related reports published in the latest issue of the science journal *Nature*. Both reported that the bone-marrow cells failed to morph into heart-muscle cells.

"It's a disappointment, because this is the type of stem cell that most research has been focused on," said Dr. David Williams, director of experimental hematology at Cincinnati Children's.

The disappointment may be greatest for those who hoped that adult stem cells would show as much potential as embryonic stem cells, Williams said.

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