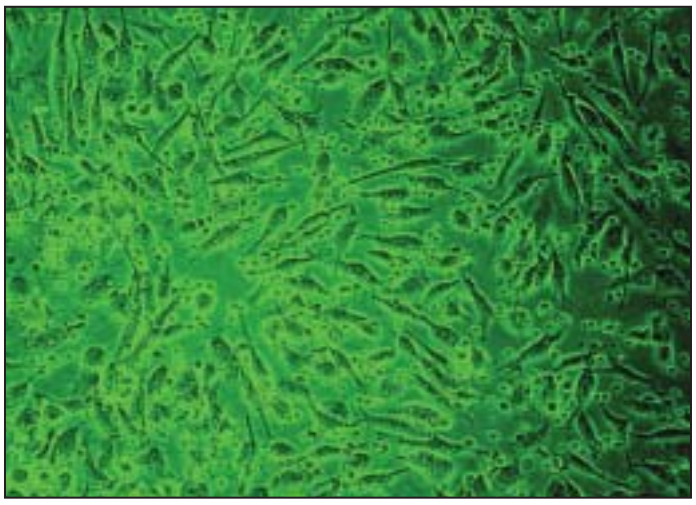

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The cells used in this study were from peripheral blood, which has the capacity to self-renew and differentiate into one or more cell types. The stem cells produced were injected directly into the patients' ventricles.

Stem Cells Reversed Heart Failure in a Small Study

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — Patients with end-stage heart failure who received cardiac injections of autologous endothelial progenitor cells showed significant improvements in function and ejection fraction 3 months later, Dr. Kitipan V. Arom reported.

The stem cell therapy treated 32 patients with ischemic cardiomyopathy and 21 with nonischemic dilated cardiomyopathy. Forty-three patients received the cell injections alone, eight underwent coronary artery bypass grafting with the cell injections, and two had a redo CABG with the cell injections, he said at the annual meeting of the International Society for Minimally Invasive Cardiothoracic Surgery.

One patient died 3 days after treatment, most likely from pulmonary emboli. The rest of the patients improved their New York Heart Association functional class from an average of class III to less than class II, said Dr. Arom of Bangkok Heart Hospital, Thailand, and associates.

The NYHA class improved in patients with ischemic cardiomyopathy from an average of 2.7 before cell injections to 1.4 at the 3-month follow-up. In the dilated cardiomyopathy group, the average improved from class III before treatment to II at the 3-month follow-up. Preoperative left ventricular ejection fractions averaged 26% in the ischemic cardiomyopathy group and 23% in the dilated cardiomyopathy group. Cell injection therapy improved ejection fractions significantly by an absolute 10% and 11%, respectively, he said.

Perfusion defects were seen in 19 patients before treatment and 11 patients at follow-up. Patients were able to walk farther in the 6-minute walk test after treatment, and scores on quality-of-life measures improved. Improvements in regional wall motion after therapy could be seen on cardiac MRI and four-chamber echocardiography.

The results are short term, and no one yet has data on outcomes longer than 2 years after stem cell transplants, Dr. Arom noted. So far, however, results are encouraging. "Hopefully, some time in the future, cell therapy can replace heart transplantation for end-stage heart failure," he said.

Stem cells can come from many sources; this study used peripheral blood, which has the capacity to self-renew and differentiate into one or more cell types, Dr. Arom said. A week before surgery, patients donated 250 cc of blood that was sent for cell separation and growing. The stem cells produced were returned in 15-cc vials, each containing 1.5 million cells. All patients underwent cardiac MRI, echocardiography, and coronary angiography to help plan the injections.

In the dilated cardiomyopathy group, surgeons made 30 injections into multiple areas of the left ventricular wall using 0.5 cc per injection. Patients with ischemic cardiomyopathy received injections directly into the scar area and surrounding tissue.

The treatment was the last hope for these patients, who were much sicker than the average patient undergoing CABG is, he said. They had run the course of medical and surgical therapies. They suffered from mitral or tricuspid regurgitation, renal insufficiency, or other problems, and had been turned down for redo CABGs, valve replacements, or other surgeries.

The use of autologous progenitor cells avoids rejection concerns, and so far, there has been no evidence with these cells of the arrhythmogenic side effects seen with bone marrow cell transplant, he said. ■

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