Regenerative stem cell therapy offers new hope for treating cardiovascular disease

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Northwestern Medicine physician researchers are revolutionizing treatment of cardiovascular disease by utilizing patients' own stem cells to regenerate heart and vascular tissue. Northwestern Medicine is the lead site for a study examining stem cell transplantation as treatment for critical limb ischemia. Chief investigator Douglas Losordo, MD, director of the Program in Cardiovascular Regenerative Medicine at Northwestern Memorial Hospital and the Eileen M. Foell Professor of Heart Research of Northwestern University's Feinberg School of Medicine, will present the findings of this study at the American Heart Association's Scientific Sessions in Chicago, on Wednesday, November 17.

"Traditionally, cardiovascular medicine has focused on repairing damaged tissues with medication or surgery," said Losordo, also director of the Feinberg Cardiovascular Research Institute. "For some patients, their cardiovascular disease is advanced to the point that standard treatment options are not effective. Regenerative cardiovascular medicine strives to redevelop cardiac and vascular tissue and stimulate new blood supply to areas like the heart and legs by using stem cells already present in the patient's body."

Losordo's limb preservation study examined the effectiveness of stem cell therapy in limb preservation for patients with critical limb ischemia (CLI). CLI develops in patients with severe obstruction of the arteries which limits blood flow to the extremities. CLI results in more than 100,000 amputations annually in the United States. The trial tested the

ability of CD34+ cells to stimulate new blood vessel formation in ischemic limbs, which can improve perfusion and salvage function.

The phase II, double-blind placebo controlled trial had a total of 28 patients randomized at 18 U.S. sites. The patients enrolled in this study were Rutherford class 4 and 5, meaning they were in the later stages of peripheral artery disease and at heightened risk for amputation. Patients in the randomized group had CD34 injected at eight locations in the ischemic limb and were followed for 12 months.

"Stem cell treatment was associated with a significant reduction in amputation rate," said Losordo. "Treatment was associated with a 50 percent reduction in the total amputation rate compared to control. Although further study is needed, these results provide evidence that CD34 cell therapy is an effective treatment for critical limb ischemia."

Losordo and his Northwestern Medicine team are leading the field of stem cell therapy for cardiovascular conditions and bringing it to the forefront of medicine. "The results of this study are encouraging and provide evidence for that stem cell therapy can significantly repair cardiac and vascular tissues," said Losordo. "As study of stem cells continues, I believe we're on the verge of a rebirth in the practice of medicine. Using a patient's own cells to regenerate their body has enormous potential to treat conditions that have previously been considered irreversible."

Provided by Northwestern Memorial Hospital