Long-Term Study Shows Endothelial Progenitor Cells Are Safe for Treating Stroke Patients

A new study recently published in STEM CELLS Translational Medicine demonstrates the long-term safety of laboratory-expanded endothelial progenitor cells for treating ischemic stroke. This could be good news for the 15 million people who, according to to the World Stroke Organization, suffer from this dangerous condition each year.

DURHAM, N.C. (PRWEB) August 29, 2018 -- A new study recently published in STEM CELLS Translational Medicine demonstrates the long-term safety of laboratory-expanded endothelial progenitor cells for treating ischemic stroke. This could be good news for the 15 million people who, according to to the World Stroke Organization, suffer from this dangerous condition each year.

Ischemic stroke is the most common type of stroke, affecting nearly 90 percent of all cases. It is caused by a blocked blood vessel in the brain. In the normal central nervous system, endothelial progenitor cells (EPCs) play an active role in building blood vessels. This has led researchers to wonder whether EPCs circulating in the blood could be recruited after a stroke to assist in repairing damaged vessels in the brain. However, there is one major problem with this idea: The number of circulating EPCs is too low to provide much regenerative capacity – a number that further decreases in the aging or in those with heart problems.

This makes ex vivo (lab) expanded EPCs an attractive alternative.

“Transplantation of EPCs was already determined in animal experiments to be a safe and effective method for treating ischemic stroke. However, their safety and efficacy had yet to be determined in humans,” said Zhenzhou Chen, M.D., Ph.D., Southern Medical University, Guangzhou, China, and a corresponding author on the study. “In our trial, we tested the safety and feasibility of transplanting an acute ischemic stroke patient with his or her own (autologous) ex vivo expanded EPCs.”

Eighteen patients were recruited for the randomized, single-blinded study. Each received conventional treatment after their stroke then, seven days after symptom onset, underwent a bone marrow aspiration to collect EPCs and bone marrow stromal cells (BMSCs) for expansion in the lab. The patients were divided into three groups and, beginning at week four after the aspiration, one group was intravenously infused with their own EPCs, while the other two groups received either their own BMSCs or a saline placebo as the controls.

Each patient was then monitored for 48 months. Study co-author Xiaodan Jiang, M.D., Ph.D., also from Southern Medical University, explained, “We watched for mortality of any cause, adverse events and any new-onset diseases or conditions. Changes in neurological deficits were also assessed at different time points.”

In the end the researchers found no toxicity events nor did they see any infusional or allergic reactions in any of the patients. “The EPC group had less serious adverse events compared to the placebo-controlled group, although there were no statistical differences in mortality among the three groups,” Dr. Chen reported. “Ex vivo expansion always raises concerns that it may cause instability in the chromosomes or maybe lead to tumors. However, in our long-term study we observed no increased tumorigenicity. This safety indicator was also confirmed by many animal studies and other trials using expanded bone marrow-derived stem cells for treatment of ischemic stroke.”
The researchers did note limitations in their study, including lack of patient-centered quality of life outcomes. “Moreover, because of the small size of the cohorts involved, we could neither identify the neurological or functional benefits of EPCs on ischemic stroke, nor determine the pros and cons between EPCs and BMSCs for stroke treatment,” Dr. Jiang said. “Thus, we believe a larger phase 2 trial is warranted.”

“This is a promising line of cell therapy research using a novel treatment method that is simple and non-invasive,” said Anthony Atala, M.D., Editor-in-Chief of STEM CELLS Translational Medicine and director of the Wake Forest Institute for Regenerative Medicine. “We look forward to larger phase 2 trial results.”


About STEM CELLS Translational Medicine: STEM CELLS Translational Medicine (SCTM), published by AlphaMed Press, is a monthly peer-reviewed publication dedicated to significantly advancing the clinical utilization of stem cell molecular and cellular biology. By bridging stem cell research and clinical trials, SCTM will help move applications of these critical investigations closer to accepted best practices. SCTM is the official journal partner of Regenerative Medicine Foundation.

About AlphaMed Press: Established in 1983, AlphaMed Press with offices in Durham, NC, San Francisco, CA, and Belfast, Northern Ireland, publishes two other internationally renowned peer-reviewed journals: STEM CELLS® (www.StemCells.com), celebrating its 36th year, is the world's first journal devoted to this fast paced field of research. The Oncologist® (www.TheOncologist.com), also a monthly peer-reviewed publication, entering its 23rd year, is devoted to community and hospital-based oncologists and physicians entrusted with cancer patient care. All three journals are premier periodicals with globally recognized editorial boards dedicated to advancing knowledge and education in their focused disciplines.

About Wiley: Wiley, a global company, helps people and organizations develop the skills and knowledge they need to succeed. Our online scientific, technical, medical and scholarly journals, combined with our digital learning, assessment and certification solutions, help universities, learned societies, businesses, governments and individuals increase the academic and professional impact of their work. For more than 200 years, we have delivered consistent performance to our stakeholders. The company's website can be accessed at www.wiley.com.

About Regenerative Medicine Foundation (RMF): The non-profit Regenerative Medicine Foundation fosters strategic collaborations to accelerate the development of regenerative medicine to improve health and deliver cures. RMF pursues its mission by producing its flagship World Stem Cell Summit, honouring leaders through the Stem Cell and Regenerative Medicine Action Awards, and promoting educational initiatives.
Contact Information
Chelsea Kekahuna
AlphaMed Press
http://www.stemcellstm.com
+1 (919) 680-0011

Online Web 2.0 Version
You can read the online version of this press release here.