

UTHealth, Athersys preclinical research on stem cell therapy for stroke presented at AHA conference

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Medical researchers from The University of Texas Health Science Center at Houston (UTHealth) presented new research results at the American Heart Association International Stroke Conference that demonstrated how MultiStem, a novel stem cell therapy being developed by Athersys, Inc. provided multiple benefits when administered in preclinical models of ischemic stroke. The study, conducted by leading researchers from the Department of Neurology at the UTHealth Medical School working in collaboration with scientists at Athersys, illustrated the potential benefits of MultiStem therapy for treating stroke. Researchers observed that intravenous administration of MultiStem one day after a stroke reduced inflammatory damage in the brain and resulted in a significant improvement in motor skills.

"We are seeing a paradigm shift in the way some types of stem cells may enhance recovery from [stroke](#)," said Sean I. Savitz, M.D., principal investigator and associate professor of neurology at UTHealth. "The stem cells may actually exert some of their effects on other organs such as the spleen. The spleen seems to play an important role in some neurological disorders by contributing, for example, to ongoing inflammation and brain injury after stroke. We're finding these stem cells are working on dampening inflammation involving the spleen."

According to the American Heart Association, approximately 800,000 individuals suffer a stroke each year in the United States, and an

estimated 2 million individuals suffer a stroke each year in the U.S., Japan, and major European countries combined. Approximately 85% of strokes are ischemic, meaning they are caused by a blockage of blood flow in the brain, which occurs as a result of a clot or "thrombus". Currently there is only one FDA-approved drug therapy for the treatment of ischemic stroke, the thrombolytic tPA, which helps to dissolve the flow-impeding blood clot. However, tPA must be administered within several hours from when the stroke has occurred in order to be effective. Due to its limited window, only about 5% of all patients who could potentially benefit from therapy with tPA actually receive treatment. Given the lack of effective therapies, many patients who suffer a stroke require extensive physical therapy or experience significant or permanent disability, and as a result, must receive long-term institutional care or be cared for by a family member. As a consequence of an aging population, recent forecasts from the American Heart Association project that the prevalence of stroke will increase by 25% in the next 20 years, and the total estimated annual cost for treating and caring for stroke survivors will skyrocket from \$64 billion in 2010 to \$140 billion in 2030, representing a substantial increase in cost to the national healthcare system.

In the rat model of stroke used in the study, animals that received treatment with MultiStem showed statistically significant improvement in motor skills relative to animals that received placebo, and also showed reduced cell death, reduction of inflammatory cytokines and an increase in anti-inflammatory cytokines. Interestingly, researchers found that animals treated with placebo showed a reduction in spleen size and an increase in inflammatory cytokines in the blood, whereas animals that were treated with MultiStem showed normal spleen size and increased levels of anti-inflammatory cytokines in the blood. The spleen is believed to play a significant role in promoting and sustaining the inflammation that can result in substantial long-term damage following [brain injury](#).

"[Ischemic stroke](#) represents an enormous clinical, economic and social burden that is expected to increase dramatically in the years ahead as a result of an aging population, and the corresponding increase in the number of individuals that are susceptible to all forms of cardiovascular disease," said Gil Van Bokkelen, Chairman and Chief Executive Officer of Athersys. "MultiStem appears to have profound effects in multiple neurological injury models, by reducing inflammation, protecting at-risk brain tissue, and promoting tissue repair. If we can develop new, more effective therapies that meaningfully extend the treatment window for stroke victims, we can improve clinical care, reduce long-term health care costs, and improve the quality of life for millions of people."

Provided by University of Texas Health Science Center at Houston

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