Stem Cell Transplant for Stroke: A 25 Year Journey from Preclinical Discovery to Clinical Translation

November 5

Tuesday, 12:30 pm

Billings Building—Rosedale Room

SPEAKER:

Gary K. Steinberg, M.D., Ph.D.

Bernard and Ronni Lacroute-William Randolph Hearst Professor of Neurosurgery and the Neurosciences

Founder and Co-Director, Stanford Stroke Center

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Host: Rajiv R. Ratan, M.D., Ph.D.

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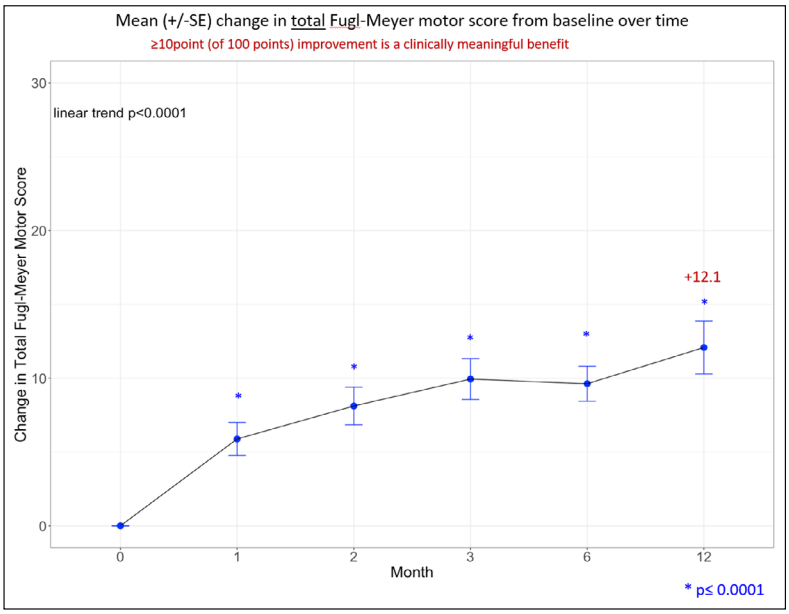
Abstract

Except for vagal nerve stimulation, no treatment exists to restore function in chronic stroke patients. NR1 is a human embryonic derived neural stem cell that improved motor-sensory function in rodent stroke models, and was expanded to produce GMP cryopreserved cell lots. In this First-in-human Phase 1/2a Study, the safety & efficacy of NR1 intracerebral transplantation in chronic stroke patients was assessed over 12 months. All 18 transplanted subjects demonstrated improved total FMMS and 11/17 with ≥ 3 mos f/u showed clinically meaningful recovery. At 12 mos, subjects increased 12.1 points for total FMMS, 7.4 points for UE FMMS, 4.7 points for LE FMMS, 7.7 points for Barthel Index, while NIHSS improved by 1.77 and gait speed improved substantially. fMRI revealed improved brain connectivity and FDG PET showed increased activity. Intraparenchymal transplantation of NR1 cells in chronic stroke patients appears safe and well tolerated. Results suggest improved motor function starting at 1 mos and increasing to clinically meaningful recovery in most patients at 12 mos post-implant.



Publications

Azevedo-Pereira RL, Manley NC, Dong C, Zhang Y, Lee A, Vu J, Berry JE, Bliss TM, Steinberg GK: Decoding the molecular crosstalk between grafted stem cells and the stroke-injured brain. Cell Reports, 2023; 42(4):112353.

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Steinberg GK, Kondziolka D, Wechsler LR, Lunsford LD, Coburn ML, Billigen JB, Kim AS, Johnson JN, Bates D, King B, Case C, McGrogan M, Yankee EW, Schwartz NE. Clinical Outcomes of Transplanted Modified Bone Marrow-Derived Mesenchymal Stem Cells in Stroke: A Phase 1/2a Study. Stroke. 2016;47(7):1817-24.

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