

# Endovascular Stem Cell Therapy

The impact of increased **BDNF** expression in the brain by endovascular delivered **mesenchymal stem cells** (MSCs) post stroke towards modulating **endoplasmic reticulum** (ER) stress-mediated neuronal remodeling has not been directly studied. Therefore, the present study investigates ER stress-mediated neuronal remodeling following IA MSCs infusion in a rodent model of ischemic stroke.

**Methods:** Ovariectomized Sprague Dawley rats were subjected to MCAO followed by  $1 \times 10^5$  IA MSCs administration at 6 h. Infarct and functional outcomes at different time points post-stroke were evaluated. Further, various gene and protein expression studies were performed to determine the underlying mechanisms of the effect of IA MSCs towards ER stress-mediated neuronal remodeling.

**Results:** Post-stroke IA MSCs administration significantly increased BDNF expression and decreased ER stress markers expression at day 1 post-stroke. A gradual rise in the expression of growth associate protein-43 (GAP 43) and spinophilin were observed at 7, 14- and 28-days post-stroke indicating an increase in neuronal remodeling towards functional restoration.

The results suggest that IA MSCs post-stroke can modulate neuronal remodeling by BDNF-mediated reduction in ER stress that contributes towards functional recovery <sup>1)</sup>.

<sup>1)</sup>

Kaur H, Sarmah D, Datta A, Borah A, Yavagal DR, Bhattacharya P. Endovascular **Stem Cell Therapy** Promotes Neuronal Remodeling to Enhance Post Stroke Recovery by Alleviating Endoplasmic Reticulum Stress Modulated by BDNF Signaling. Stem Cell Rev Rep. 2022 Oct 17. doi: 10.1007/s12015-022-10461-6. Epub ahead of print. PMID: 36251114.

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Last update: **2024/06/07 02:59**

