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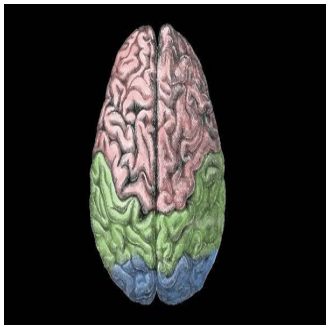
Treating Uninjured Side of the Brain May Aid Stroke Recovery



Scientists report that it would be more effective to focus on the side of the brain where the injury did not occur to maximise stroke recovery.

According to Dr. Adviye Ergul, Vascular Psychologist at the Medical College of Georgia at Georgia Regents University, most studies focus on the stroke area and how to reduce the damage there. However, Ergul and collaborator Dr. Susan S. Fagan, stroke pharmacist at MCG and the University of Georgia as well as a number of other scientists find that the opposite side of the brain can aid the injured side.

Endothelial cells line blood vessels on both sides of our brain and release growth hormones which protect neurons. These neurons help ailing ones recover and prompt the growth of new blood vessels to the stroke site. Even if the new blood vessels do not actually carry blood, scientists report that they create a regenerative niche that can minimise stroke damage. In addition, the uninjured side also benefits with a boost of growth factors and more blood vessels.

This topic was in focus at the recent session of the American Heart Association International Stroke Conference in Nashville. The scientists were the first to report vascular changes in the opposite hemisphere following a stroke.

"We know that blood vessels react a lot to the injury in distant parts of the brain," Ergul said. "Within a few days of a stroke, the non-damaged side becomes more active and starts taking up, we think, some of the functions of the damaged side," Fagan said. "If you do functional MRIs in humans, you can see other hemispheres starting to light up more in the recovery phase within a few days of stroke."

GRU graduate Dr. Maha Coucha also presented pieces of evidence that the uninjured side is an active player in stroke recovery. Coucha's team found increasing expression of the enzyme superoxide dismutase in the uninjured side of a rat stroke model. The enzyme enabled blood vessels on the injured side to better control blood flow. Superoxide dismutase is a naturally occurring antioxidant that can neutralise reactive oxygen species which are usually produced in abundance before and after a stroke. The enzyme either kills the cells or causes them to commit suicide.

Ergul points out that any improvement is mainly because of manipulation of the other side. If that is done, the injury from the stroke is limited and the outcome for the patient is better.

Since blood vessels in both sides of the brain communicate and are connected at the base of the brain up into the right and left sides of the brain, there is a possibility that the remote impact seen in stroke is also present in brain injuries, brain haemorrhage and brain tumours.

Source: Medical College of Georgia at Georgia Regents University

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