Acupuncture Reverses Brain Damage After Stroke

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A new MRI study finds acupuncture and electroacupuncture effective for treating brain tissue injuries and neurological disorders caused by cerebral ischemia/reperfusion injury (CIRI). This type of brain damage is caused by the return of blood circulation to the brain after a period of ischemia, restricted blood supply. The sudden return of blood to oxygen and circulation deprived brain tissues causes inflammation and oxidative stress. Acupuncture biochemically ameliorates this condition and reduces infarct (tissue necrosis due to circulation obstruction) size. Consequently, acupuncture and electroacupuncture benefit the brain after a stroke due to ischemia.

Cerebral ischemia/reperfusion causes brain edema and swelling. This is caused by sequelae including increased permeability of the blood brain barrier, tissue inflammation and upregulation of the biochemicals matrix metalloproteinase 2 (MMP2) and aquaporin (AQP). Researchers have discovered that acupuncture and electroacupuncture successfully regulate MMP2, AQP and inflammatory cell infiltration caused by CIRI. The researchers added that acupuncture and electroacupuncture “significantly reduced infarct size and improved neurologic function.” As a result, the researchers conclude that acupuncture and electroacupuncture exert “neuroprotective actions” and may “find utility as adjunctive and complementary treatments to supplement conventional therapy for ischemic stroke.”

Scientific Data
Several types of evaluations confirmed the decrease in infarct size and successful regulation of biochemicals by acupuncture and electroacupuncture after CIRI. The researchers used microscopic evaluation, fMRI, hematoxylin-eosin staining, quantitative real-time polymerase chain reaction evaluation, immunofluorescence analysis, immunohistochemical analysis and western blot analysis. Subjective evaluation of neurological deficits was also evaluated. The researchers conclude, “acupuncture and electroacupuncture are effective treatments for brain tissue injury and neurological deficits following CIRI in rats. Therefore, this study adds to the growing arsenal of research supporting the view that acupuncture and electroacupuncture, which are derived from Traditional Chinese Medicine, can serve as complementary and alternative treatments to supplement the conventional management of ischemic stroke.”
The study design was a laboratory rat experiment of middle cerebral artery occlusion causing cerebral ischemia/reperfusion. Acupuncture points GV20 and ST36 were applied. The results demonstrated several repeatable scientific phenomena in fMRI imaging and biochemical analyses. GV20 and ST36 reduced infiltration of inflammatory cells, downregulated expression of proinflammatory enzyme MMP2, reduced expression of water channel proteins AQP4 and AQP9, reduced brain ischemia and decreased brain edema due to inflammation. Neurologic function was increased and verified by improved motor tests such as muscle status and movement capabilities; sensory tests including visual, tactile and proprioceptive evaluation; improvements in balance tests and improvements in reflex tests. Additionally, infarct size significantly reduced.

References:
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