Acupuncture decreases ischemia-induced apoptosis and cell proliferation in dentate gyrus of gerbils


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Background: Acupuncture has been used for the enhancement of functional recovery from various disorders. In the present study, the effect of acupuncture on the apoptosis and new cell proliferation in the hippocampal dentate gyrus of gerbils (n=525) following transient global ischemia was investigated.

Methods: To determine the level of apoptosis and cell proliferation, terminal deoxynucleotidyl transferase-mediated dUTP nick end-labeling (TUNEL) assay and immunohistochemistry for 5-bromo-2-deoxyuridine (BrdU) were employed respectively.

Results: In the dentate gyrus of ischemic gerbils, the number of both TUNEL- and BrdU-positive cells (66.01 ± 2.45/mm² and 514.38 ± 44.90/mm²) was significantly increased compared to that of the sham-operated gerbils (11.25 ± 1.85/mm² and 111.47 ± 10.95/mm²). Among the acupuncture (ST36, LI1 or non-acupoint) treated groups, ST36 acupoint treated group showed the most potent apoptosis (20.52 ± 2.40/mm²) and proliferation (159.38 ± 24.05/mm²) suppressive effects (70% decreases in both apoptosis and cell proliferation).

Conclusion: These results may suggest that acupuncture treatment alleviates ischemia-induced apoptosis and presents possible therapeutic potentials in the recovery from ischemic cerebral injury. [Neurol Res 2007; 29: S23-S27]

Keywords: Acupuncture; ischemia; apoptosis; cell proliferation; hippocampus; gerbil