

Neurosci Lett. 2006 Jan 23;393(1):45-50. Epub 2005 Oct 19.

Acupuncture prevents cognitive deficits and oxidative stress in cerebral multi-infarction rats.

Liu CZ, Yu JC, Zhang XZ, Fu WW, Wang T, Han JX.

The aim of this study is to investigate the effects of acupuncture on cognitive deficits and oxidative stress in cerebral multi-infarction rats. The results showed that acupunctural treatment attenuated memory impairment induced by cerebral multi-infarction, as evaluated by shortened escape latency and increased swimming time of rats with memory impairment in the target quadrant. The data additionally suggested that acupunctural treatment ameliorated oxidative injuries induced by cerebral multi-infarction by increasing the activities of superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px) in the hippocampus. Further investigation by in situ hybridization and immunohistochemistry revealed that acupunctural treatment significantly increased the expression of CuZnSOD mRNA and protein in the hippocampus of the impaired rats. The findings demonstrate that acupuncture can exert beneficial effects on spatial memory and antioxidant status of cerebral multi-infarction rats.

Physiol Behav. 2009 Jan 8;96(1):155-61. Epub 2008 Oct 9.

Acupuncture protected cerebral multi-infarction rats from memory impairment by regulating the expression of apoptosis related genes Bcl-2 and Bax in hippocampus.

Wang T, Liu CZ, Yu JC, Jiang W, Han JX.

Vascular dementia (VaD) is the second most common cause of dementia in the world today. In this paper, we observed the effect of acupuncture on memory impairment, apoptosis and expression of Bcl-2 and Bax in hippocampus of cerebral multi-infarction rats. The results indicated that acupuncture significantly improved memory impairment induced by cerebral multi-infarction, as evaluated by shortened escape latency and increased swimming time in the target quadrant. Meanwhile, based on the observation in hippocampal CA1 region through methods of the terminal deoxynucleotidyl transferase nick end labeling (TUNEL), immunohistochemistry and in situ hybridization, acupuncture decreased the number of apoptotic cells and expression of the proapoptotic Bax gene, on the contrary, it increased expression of the antiapoptotic gene Bcl-2. The result of the research suggested that acupuncture can exert antiapoptotic effect through counter-regulating Bcl-2 and Bax gene expression.

Neurosci Lett. 2008 Feb 20;432(2):111-6.

Acupuncture improves cognitive deficits and regulates the brain cell proliferation of SAMP8 mice.

Cheng H, Yu J, Jiang Z, Zhang X, Liu C, Peng Y, Chen F, Qu Y, Jia Y, Tian Q, Xiao C, Chu Q, Nie K, Kan B, Hu X, Han J.

Tianjin Key Laboratory of Acupuncture and Moxibustion, Molecular Biology Laboratory, Acupuncture and Moxibustion Research Institute, First Teaching Hospital of Tianjin University of Traditional Chinese Medicine, Tianjin 300193, China.

Senescence-accelerated mouse prone 8 (SAMP8) is an autogenic senile strain characterized by early cognitive impairment and age-related deterioration of learning and memory. To investigate the effect of acupuncture on behavioral changes and brain cell events, male 4-month-old SAMP8 and age-matched homologous normal aging SAMR1 mice were divided into four groups: SAMP8 acupuncture group (Pa), SAMP8 non-acupoint control group (Pn), SAMP8 control group (Pc) and SAMR1 normal control group (Rc). By Morris water maze test, the cognitive deficit of SAMP8 was revealed and significantly improved by "Yiqitiao xue and Fubenpeiyuan" acupuncture. Meanwhile, by 5'-bromo-2'-deoxyuridine (BrdU) specific immunodetection, the decreased cell proliferation in dentate gyrus (DG) of SAMP8 was greatly enhanced by the therapeutic acupuncture, suggesting acupoint-related specificity. Even though no significant differences were found in ventricular/subventricular zones (VZ/SVZ) of the third ventricle (V3) and lateral ventricle (LV) between groups, we obtained interesting results: a stream-like distribution of newly proliferated cells presented along the dorsum of alveus hippocampi (Alv), extending from LV to corpus callosum (CC), and the therapeutic acupuncture showed a marked effect on this region. Our research suggests that acupuncture can induce different cell proliferation in different brain regions of SAMP8, which brings forth the need to explore further for the mechanism of cognitive deficits and acupuncture intervention in this field.

Neurol Res. 2006 Jan;28(1):97-103.

Effect of acupuncture treatment on vascular dementia.

Yu J, Zhang X, Liu C, Meng Y, Han J.

OBJECTIVE: Recent studies have suggested that acupuncture can ameliorate some symptoms commonly associated with vascular dementia (VaD). The study was carried out to observe the clinical therapeutic effects for VaD of 'yi qi tiao xue, fu ben pei yuan' acupuncture method (supplementing vital force-matter and regulating blood, supporting the root and fostering the source). **METHODS:** Sixty inpatients with VaD were randomly assigned to the treat group (TG) or control group (CG). Both the TG and the CG received routine treatment as other inpatients with VaD, including medication and traditional acupuncture treatment. After that, the TG was

given the treatment of 'yi qi tiao xue, fu ben pei yuan' acupuncture, which included five body acupoints, namely, tanzhong (CV17), zhongwan (CV12), qihai (CV6), zusanli (ST36) and xuehai (SP10). The Treatment was performed once daily for 6 weeks. The mini-mental status examination (MMSE), the revised Hasegawa's dementia scale (HDS-R) and activities of daily living (ADL) exam were carried out before and after the experiment, to evaluate therapeutic effects of the acupuncture method. RESULTS: The MMSE, HDS-R and ADL scores were significantly improved in the TG and CG ($p < 0.001$). But the overall scores of MMSE and HDS-R for the subjects in the TG were notably higher than those in the CG ($p < 0.05$). Patients in the TG showed remarkable improvement in memory, orientation, calculation and self-managing ability in daily living after treatment. The total effective rate was 80.0% in the TG versus 46.7% in the CG, where significant difference between the two groups exhibited ($p < 0.05$). CONCLUSIONS: These results suggested that 'yi qi tiao xue, fu ben pei yuan' acupuncture method had significant therapeutic effects and well tolerated in ameliorate the key clinical symptoms of VaD.

Gerontology. 2009;55(3):322-32. Epub 2009 Apr 23.

Changes in histomorphometric and mechanical properties of femurs induced by acupuncture at the Shenshu point in the SAMP6 mouse model of senile osteoporosis.

Zhang X, Peng Y, Yu J, Liu C, Cheng H, Liu L, Han J.

BACKGROUND/OBJECTIVE: The effect of acupuncture on the changes in the histomorphometric and mechanical properties of femurs in senescence-accelerated mice strain P6 (SAMP6) was evaluated in this work. METHODS: Six-month-old male SAMP6 and SAMR1 mice were allocated to 1 of 4 groups: SAMP6 control group (Pc), SAMP6 non-acupoint control group (Pn), SAMP6 acupuncture group (Pa) and SAMR1 control group (Rc). The Pa group was acupunctured at the Shenshu point (BL23) once daily for 8 weeks. Two non-acupoints at the hypochondria were needled for the Pn group. Mice in the other 2 groups were grasped using the same method as for the Pa group. The serum testosterone and osteocalcin (OC) levels were determined by radioimmunoassay. The histomorphometric data were obtained from undecalcified specimens, and the mechanical properties of the femur were assessed by the 3-point bending test. RESULTS: After acupuncture treatment, the decreased serum testosterone level in SAMP6 mice increased markedly, whereas the increased OC concentration declined sharply. The bone histomorphometric and mechanical indexes of SAMP6 mice also improved significantly. The values of trabecular thickness, trabecular bone volume, osteoid volume, mineral apposition rate and bone formation rate in Pa mice increased by 20.4, 18.1, 14.1, 9.9 and 14.7%, respectively, compared with Pc mice. The scores for

ultimate force, yield force, elastic stress, ultimate stress and energy to yield force for Pa mice were significantly higher than those of Pc and Pn mice. CONCLUSION: Therefore, acupuncture at BL23 was effective in promoting bone formation, restoring the amount of bone volume, improving bone architecture and reversing osteoporosis in SAMP6 mice to some degree by enhancing the secretion of testosterone and declining bone turnover. Copyright 2009 S. Karger AG, Basel.