

Zhongguo Zhen Jiu. 2011 May;31(5):435-40.

[Effects of penetration therapy with scalp electroacupuncture on gene expressions of nerve growth factors in substantia nigra of rats with Parkinson's disease].

[Article in Chinese]

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Abstract

OBJECTIVE: To explore the protective mechanism of penetration therapy with scalp electroacupuncture on Parkinson's disease (PD).

METHODS:

Thirty-six Wistar rats were randomly divided into a normal group, a sham operation group, a model group and a penetration therapy group, 9 rats in each group. The sham operation group was operated by micro-injection with normal saline in the left corpus striatum. The model group and penetration therapy group were generated by micro-injection with 6-hydroxydopamine in the left corpus striatum to prepare rotation model of PD. The penetration therapy group was treated by penetration therapy with scalp electroacupuncture through "Baihui" (GV 20) to "Taiyang" (EX-HN 5), once each day, 6 days for one course, altogether 2 courses, and there was no treatment in the other two groups. (1) Immunohistochemical method was used to test the morphology and count of positive cells of tyrosine hydroxylase (TH). (2) In situ hybridization histochemistry was applied to detect the mRNA expression of brain-derived neurotrophic factor (BDNF).

RESULTS: (1) The areal density (AD), numerical density (ND) and integrating optic density (IOD) of the positive neurons of TH in substantia nigra in the penetration therapy group were 0.065 ± 0.011 , 0.014 ± 0.003 and 0.470 ± 0.099 , respectively, which were higher than 0.039 ± 0.008 , 0.008 ± 0.002 and 0.266 ± 0.065 in the model group (all $P < 0.05$). (2) The AD, ND and IOD of the mRNA expression of BDNF in substantia nigra in the penetration therapy group were 0.100 ± 0.012 , 0.014 ± 0.003 and 1.158 ± 0.130 , respectively, which were higher than 0.047 ± 0.012 , 0.007 ± 0.001 and 0.602 ± 0.108 in the model group (all $P < 0.05$).

CONCLUSION: The penetration therapy with scalp electroacupuncture has a better protective effect on dopaminergic neurons in substantia nigra of rats with PD. The protective mechanism is related to the provocation of neural nourishment so as to improve the morphous of dopaminergic neurons and increase the number of dopaminergic neurons.

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[Effect of electroacupuncture scalp point-through-point therapy on the expression of tyrosine hydroxylase and dopamine transporter mRNAs in substantia nigra of Parkinson's disease model rats].

[Article in Chinese]

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Abstract

OBJECTIVE: To explore the mechanism of electroacupuncture scalp point-through-point therapy in the treatment of Parkinson's disease.

METHODS: Thirty-six Wistar rats were randomly divided into a normal group, a sham-operation group, a model group and a point-through-point therapy group. 6-()HDA was injected into left striatum to made lateralization Parkinson's disease rat model. The point-through-point therapy group was treated with electroacupuncture at "Baihui" (GV 20)-through-"Taiyang" (EX-NH 5), once each day, 6 days constituting one course, for 2 courses, and the rats of other groups were not treated. HE staining method was used for observation of the histo-morphologic changes of the substantia nigra neurons, and RT-PCR for the expression of tyrosine hydroxylase (TH) and dopamine transporter (DAT) mRNAs.

RESULTS: The expressions of TH mRNA (1.22 +/- 0.19) and DAT mRNA (0.62-0.11) in the point-through-point therapy group were significantly higher than (0.65 +/- 0.17) and (0.41 +/- 0.08) in the model group, respectively (all P < 0.05). As compared with the model group, the number of neurons in the substantia nigra increased and degeneration of the neurons relieved in the point-through-point therapy group.

CONCLUSION: The electroacupuncture scalp point-through-point therapy can increase expressions of TH mRNA and DAT mRNA in the substantia nigra in the Parkinson's disease model rat, and promote synthesis and reuptake of dopamine, hence Parkinson's disease is cured.

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[Effect of electroacupuncture on morphological changes and apoptosis of substantia nigra cells in Parkinson's disease rats].

[Article in Chinese]

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Abstract

OBJECTIVE: To observe the influence of electroacupuncture (EA) of "Fengfu" (GV16) and "Taichong" (LR3) on morphological changes and apoptotic percentage of substantia nigra cells so as to explore its underlying mechanism in relieving Parkinson's disease.

METHODS: Forty Wistar rats were randomly divided into normal control, sham-operation (sham), model and EA groups, with 10 rats in each. The Parkinson's disease model was established by micro-injection of 6-hydroxyl-dopamine (6-OHDA) into the right striatum. EA (2 Hz, 1 mA) was applied to "Fengfu"(GV16) and "Taichong" (LR3) for 30 min, once daily for 2 weeks. HE staining, Nissl staining and immunohistochemical staining were conducted for observing the morphological changes of substantia nigra pars compacta (SNc) and striatum, and the tyrosine hydroxylase(TH) immuno-reaction (IR) positive neurons and nerve fibers. The apoptosis was detected by flow cytometry.

RESULTS: Compared to the normal control and sham groups, the total number of TH-IR positive neurons and Nissl-stained cells, and OD value of TH-IR positive nerve fibers in the SNc on the 6-OHDA-lesioned side were significantly lower in the model group ($P < 0.01$). Compared with the model group, the aforementioned 3 indexes of the EA group were increased obviously ($P < 0.01$). The percentage of apoptosis of SNc on the 6-OHDA-lesioned side was obviously lower in the EA group than in the model group ($P < 0.01$), but still obviously higher than in the normal group and sham group ($P < 0.01$).

CONCLUSION: Electroacupuncture therapy can significantly increase the number of neurons of substantia nigra and the density of striatum nerve fibers, and reduce the apoptotic percentage of substantia nigra cells in the Parkinsonian rats, which may contribute to its effect in relieving Parkinson's disease.

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