Clinical Research

Effect of acupuncture combined with rehabilitative training on neural functional recovery of stroke patients during recovery phase: a randomized controlled trial

针刺治疗结合康复训练对恢复期脑卒中患者神经功能恢复的影响：随机对照研究

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ABSTRACT

Objective To compare the influences of acupuncture combined with rehabilitative training and simple rehabilitative training on neural functional recovery of stroke patients during recovery phase. **Methods** Sixty-seven stroke patients during recovery phase were randomly divided into an acupuncture combined with rehabilitative training group (group A) and a simple rehabilitative training group (group B) through random number table method, with 34 cases and 33 cases respectively; 33 cases and 31 cases were respectively completed actually other than cases dropped out during the observation. Rehabilitation methods such as motion control and functional exercise training were primarily used for rehabilitative training, once daily for 45 min at a time, and 6 times a week; Bǎihuì (百会 GV 20) and Fēngchí (风池 GB 20) on the head and relevant acupoints on limbs were selected for acupuncture, once every other day, and 3 times a week. Both groups were treated for 8 weeks, National Institnte of Health Stroke Scale (NIHSS) was used to assess neurologic impairment, Fugl-Meyer scale was used to assess motor function, Barthel was used to assess activity of daily living, and comprehensive assessment was finally made to patients. **Results** NIH score, Fugl-Meyer scale scores of upper and lower limbs, Barthel score, and comprehensive assessment of group A after treatment were respectively: 12.78±2.99, 37.55±2.09 and 25.67±3.93, 63.76±4.65, 11.33±1.98, superior to 16.06±4.57, 28.71±4.07 and 20.41±2.98, 53.82±4.35, 15.18±1.72 of group B. Indices of both groups were significantly improved compared with those before treatment ($P<0.01$, $P<0.05$), but improvement of indices of group A was more obvious that that of group B after treatment subject to comparison (all $P<0.05$). **Conclusions** Acupuncture combined with rehabilitative training has definite therapeutic effect on recovery of various functions such as neural functional recovery of stroke patients during recovery phase, obviously superior to simple rehabilitative training.

KEY WORDS: stroke; rehabilitative training; acupuncture; neurological function

Hemiplegia is the most common sequela after stroke, and some patients even cannot take care of themselves in their daily life, which has a strong impact on life quality of patients. Study on rehabilitation of hemiplegia has been a hot topic at home and abroad. Many researchers have combined

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rehabilitation technologies of modern medicine with traditional medicine of our country to conduct useful studies on reducing neural functional recovery period of stroke patients, recovering limb functions of patients at the maximum, and improving life and survival quality of patients, and great achievements have been made [1-3]. Research group of the authors has achieved relatively satisfactory clinical efficacy of acupuncture combined with rehabilitative training on stroke patients during recovery phase, the report is as follows.

CLINICAL DATA

General data

Sixty-seven cases were included totally, and all of them were stroke patients from Department of Cerebral Surgery and Rehabilitation, the Seventh People's Hospital of Suzhou and Department of Acupuncture Rehabilitation, Suzhou Hospital of TCM from March, 2008 to March, 2013. The patients were randomly divided into an acupuncture combined with rehabilitative training group (group A) and a simple rehabilitative training group (group B) through random number table method, with 34 cases and 33 cases respectively; data of both groups in terms of gender, age, course of disease, and primary disease were similar, without significant difference after subjected to statistical treatment (all $P>0.05$), but with comparability (see Table 1 for details). One case and two cases were respectively dropped out in the group A and B during observation, and completion rate of the two groups was respectively 97.1% and 93.9%, meeting the requirements of data statistics.

Diagnostic criteria

Diagnostic criteria revised in the 4th National Cerebrovascular Disease Academic Conference by Chinese Medical Association in 1995 were satisfied by both groups [4]: ① with hemiplegia and other focal neurological symptoms; ② with past medical history of hypertension or cerebral arteriosclerosis; ③ all cases confirmed to be cerebral infarction or cerebral hemorrhage subject to CT or MRI.

Inclusion criteria

① Patients satisfying diagnostic criteria of stroke and subject to cerebral infarction or cerebral hemorrhage for the first time; ② conscious patients after stroke with stable vital signs; ③ patients with limb function defect score ⩾10 in neurologic impairment severity score; ④ patients of 35–75 years old; ⑤ patients subject to examination by the thesis ethics committee, and having signed the Informed Consent.

Exclusion criteria

Those under one of the following circumstances: ① patients with transient ischemic attack, reversible neurological impairment, or limb function defect score ⩾10 in neurologic impairment severity score; ② patients with neurological impairment caused by cerebral tumor, cerebral trauma, cerebral parasitic disease, heart disease, etc; ③ patients with severe primary diseases such as combined liver, kidney and hemopoietic system or endocrine system; ④ psychopaths; ⑤ patients unwilling to be observed.

METHODS

Rehabilitative training

Methods: rehabilitation methods for recovery of hemiplegia disease during recovery phase related to motion control and functional exercise training in *Rehabilitation Medicine* (the 2nd edition of new century textbook for national higher medical colleges, People's Medical Publishing House) were accorded with, ① to be specific, including limb position: shoulder blade of upper limb of the patient was asked to extend forward, and lower limb was bent at hips and knees; ② normal range of motion of joint was kept: maximum motion radian of joint of the patient losing functional motion was achieved through passive movement; ③ neuromuscular facilitation: basic neuromuscular facilitation was achieved through methods such as hand contact, oral instruction and visual stimulation according to elements of human motion, muscle stretching and reflex, etc, completing with some methods to promote muscle contraction, such as continuous repeat of joint traction and compression, contraction and contraction and relaxation; ④ cutaneous sensation stimulation: paralyzed limbs were gently patted with soft articles; ⑤ functional electrical stimulation: a group or groups of muscles were stimulated through preset procedure by using low frequency pulse current

Table 1 Comparison of general conditions of stroke patients between the two groups

Groups	Patients	Gender (cases)		Age ($\bar{x}\pm s$, years)	Average course of disease ($\bar{x}\pm s$, days)	Protopathy (cases)	
		Male	Female			Cerebral infarction	Cerebral hemorrhage
A	33	18	15	65±4	42.6±13.4	24	9
B	31	16	15	63±4	39.3±13.0	21	10