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### Repair and remodelling of cerebral nerve in children with cerebral palsy by acupuncture

**Objective:** To observe the effects of acupuncture at different acupoints in yin meridians and yang meridians on lower limb muscle tension in children with spastic cerebral palsy.

**Methods:** Ninety children with spastic cerebral palsy aged between 2 to 6 years old were divided into a yin-meridian group, a yang-meridian group and a rehabilitation group, 30 cases in each one. The patients in the rehabilitation group were treated with routine rehabilitation treatment; the patients in the yin-meridian group were treated with routine rehabilitation treatment and acupuncture at Xuehai (SP 10), Yinlingquan (SP 9), Sanyinjiao (SP 6), Taixi (KI 3) and Taichong (LR 3) along yin meridians; the patients in the yang-meridian group were treated with routine rehabilitation treatment and acupuncture at Futu (ST 32), Zusanli (ST 36), Yanglingquan (GB 34), Guangming (GB 37) and Xuanzhong (GB 39) along yang meridians. All three groups were treated once each other day, 10 times as one course, and a totally of 20-day treatment was given. Before and after treatment, modified Ashworth scale (MAS), clinical spasm index (CSI) and integrated electromyography (iEMG) of surface electromyogram of gastrocnemius muscle were evaluated.

**Results:** Compared before treatment, the MAS and CSI in the yin-meridian group and the yang-meridian group were improved after treatment ( $P < 0.05$ ,  $P < 0.01$ ); the differences before and after treatment in the rehabilitation group were not significant (both  $P > 0.05$ ). After treatment, the differences between the rehabilitation group and yin-meridian group, yang-meridian group were significant ( $P < 0.05$ ,  $P < 0.01$ ); the differences of MAS and CSI between the yin-meridian group and yang-meridian group were not significant (both  $P > 0.05$ ). Compared before the treatment, the right-side iEMG and left-side iEMG were reduced in the yin-meridian group and yang-meridian group (all  $P < 0.05$ ); the right-side iEMG was increased in the rehabilitation group ( $P < 0.05$ ). After treatment, the iEMG in the yin-meridian group and the yang-meridian group were lower than that in the rehabilitation group (all  $P < 0.05$ );

the differences in iEMG before and after treatment in the yin-meridian group and the yang-meridian group were higher than that in the rehabilitation group (all  $P < 0.05$ ); the differences of iEMG between the yin-meridian group and yang-meridian group were not significant (both  $P > 0.05$ ).

**Conclusion:** Acupuncture at yin meridians and yang meridians could reduce muscle tension of lower limb and improve limb spasticity in children with spastic cerebral palsy, and the two acupuncture methods have similar clinical curative effects.

#### Recent Publication

1. Liu, Zhenhuan et al. "The effect of combined transcranial pulsed current stimulation and transcutaneous electrical nerve stimulation on lower limb spasticity in children with spastic cerebral palsy: a randomized and controlled clinical study." *BMC pediatrics* vol. 21,1 141. 24 Mar. 2021, doi:10.1186/s12887-021-02615-1
2. Jin, Bingxu et al. *Zhongguo zhen jiu = Chinese acupuncture & moxibustion* vol. 36,7 (2016): 709-714. doi:10.13703/j.0255-2930.2016.07.009
3. Zhang, Malan, and Zhenhuan Liu. *Zhongguo zhen jiu = Chinese acupuncture & moxibustion* vol. 38,6 (2018): 591-5. doi:10.13703/j.0255-2930.2018.06.006.

#### Biography

Zhenhuan Liu, professor of paediatrics, chief physician, doctoral supervisor, chief expert of Nanhai Maternity and Children's Hospital Affiliated to Guangzhou University of Chinese Medicine. Enjoy The State Council special allowance famous children rehabilitation medical experts. The first batch of leading medical talents in Guangdong Province. He was appointed as Visiting Professor of the Faculty of Medicine of the Chinese University of Hong Kong and honorary director of the California Autism Treatment Center. Evaluation expert of National Science and Technology Progress Award, Vice Chairman of Child Health Care and Health Education Professional Committee of World Federation of Chinese Medicine.

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