

# Effect of Lumbar Spinal Point Injection on Sitting Function in Children with Cerebral Palsy

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## Abstract

**Objective:** To observe the effect of lumbar spinal point injection on sitting function in children with cerebral palsy. **Method:** Sixty-two children with post-confirmed cerebral palsy were randomly divided into control group and treatment group, 31 each. The control group was given conventional rehabilitation treatment, and the treatment group was given lumbar chiropractic acupuncture injection on the basis of the treatment method of the control group. After 3 consecutive courses of treatment, the sitting score of the two groups before and after treatment (GMFM88) was used to evaluate the sitting score before and after treatment. **Outcome:** Before treatment, the two groups were evaluated and the differences were not statistically significant ( $p > 0.05$ ), which was comparable. The two groups (GMFM88) after treatment had significantly increased the differential values, and the difference was statistically significant compared with the same group before treatment ( $p < 0.05$  or  $p < 0.01$ ), and the sitting area score in the treatment group was more significant, and the difference was statistically significant compared with the control group after treatment ( $p < 0.05$  or  $p < 0.01$ ). **Conclusion:** Conventional rehabilitation combined with lumbar spinal point injection can effectively improve the sitting motor function of children with cerebral palsy.

## Keywords

Children with Cerebral Palsy, Lumbar Segmentation of Spinal Points, Acupuncture Point Injection, Gross Motor Function (Sitting Area)

## 1. Introduction

Cerebral palsy (CP) is mainly manifested as abnormal posture and movement, and at the same time affects children's health of a class of brain injury diseases, is

one of the diseases with a very high rate of disability in children, such diseases bring a heavy burden to the family and society of the child, the annual incidence is about 2.48% [1]. The clinical manifestations are a group of persistent central motor and postural developmental disorder activity restriction syndromes, accompanied by hearing, speech, and intellectual disabilities, which is a syndrome of non-progressive brain damage and developmental defects caused by various factors of the brain [2]. The gross motor (sitting) function level of children with cerebral palsy is one of the important conditions that directly affect whether the child can crawl and stand alone in the future, and it is also an important reference condition for participating in social activities in adulthood.

## **2. Information and Methodology**

### **2.1. General Information**

A retrospective analysis was conducted on the clinical data of 62 children with cerebral palsy (aged 0 - 3 years) who underwent rehabilitation treatment in our hospital from December 2019 to July 2022, and divided into two groups with 31 cases in each group according to random numbers. Control group (given conventional rehabilitation), treatment group (combined with lumbar spinal point injection on the basis of conventional rehabilitation), 19 males and 12 females in the control group; Age 3 months 3 years, mean age ( $2.16 \pm 0.52$ ) years; There were 15 males and 16 females in the treatment group; Age 0 months 3 years, mean age ( $1.95 \pm 0.65$ ) years; The basic data of the two groups were not statistically significant ( $p = 0.05$ ), and the differences were comparable. There was no significant difference in age, sex and GMFM-88 items (sitting ability) between the two groups of children with cerebral palsy ( $p > 0.05$ ), which was comparable.

### **2.2. Diagnostic Criteria**

1) Central dyskinesia persists, and brain injury is non-progressive; 2) The diagnosis and classification conform to the definition, diagnosis and classification criteria of cerebral palsy discussed and approved by the National Pediatric Cerebral Palsy Rehabilitation Academic Conference [3].

### **2.3. Inclusion Criteria**

1) This study was approved by the Hospital Ethics Committee. 2) The children met the relevant diagnostic criteria for cerebral palsy [4]. 3) Each parent is aware of the content of the study, and informs the adverse situation and various reactions after injection and signs the relevant consent form.

### **2.4. Exclusion Criteria**

1) Congenital heart disease. 2) The study cannot be completed due to various reasons. 3) Those with immune diseases and bleeding tendency. 4) Patients with severe malnutrition, physical weakness, etc. who are not suitable for acupuncture

injection. 5) Movement disorders caused by cranial mass lesions and various progressive diseases.

## 2.5. Methods

62 children with cerebral palsy after diagnosis were randomly divided into control group and treatment group, 31 each. The control group was given conventional rehabilitation treatment, the treatment group was given lumbar spinal point injection on the basis of the treatment method of the control group, and the two groups were given 1 course of treatment for 20 days, and the rest of 1 course was 7 days, and after 3 consecutive courses of treatment, the sitting score before and after treatment (GMFM88) was used to evaluate the sitting score of the two groups before and after treatment and evaluate the efficacy.

1) Control group uses conventional rehabilitation methods. a) Core muscle strength training. The children's rehabilitation therapist conducted Vojta posture press pressure, roller leg split sitting training and Bobath ball assisted sitting ability training to exercise the child's lower back and trunk strength and pelvic area separation, stability and limb conversion coordination. b) Traditional medicine manipulation of the motherland: Repeated massage from bottom to top along the solar bladder meridian and pulse of the foot and bladder by lifting and pinching, holding, percussion, etc., to promote low back muscle strength training. c) Reflex inhibition of abnormal posture manipulation: Ueda Masa: pelvis and hip part separation method, separation of the child's overall posture and lower limb rigid pattern. d) Key point adjustment strengthens the child's motor control and induces correct movements. The above treatment: 1 time a day, 40 min each time, 20 days for 1 course of treatment, 1 course of rest for 7 days, continuous treatment for 3 courses.

2) Treatment group On the basis of the control group, with the lumbar chiropractic acupoint injection, vitamin B12 0.25 mg, vitamin B1 75 mg, 1 ml of 0.9% sodium chloride injection was added, and the three drugs were mixed for a total of 3 mL for acupoint injection. Take the acupoint: "waist segment huatuo clamp ridge point"; Operation method: the child takes the prone position, the parent stabilizes the child's hip joint, the doctor routinely disinfects the skin of the selected acupuncture point, directly pierces the needle with acupuncture and moxibustion needle holding technique, slightly lifts up and down to urge gas, does not twist and turn after qi, according to the child's physical development into the needle 1 - 2 cm, after redrawing no blood began to bolus the solution, 0.5 mL per acupuncture point, each time select the lumbar segment of the ridge point left and right 3 acupuncture points for injection, after the needle is removed, use a sterile cotton ball to press the local area for 1 min. 1 time every other day, 3 times a week, 20 days for 1 course of treatment, 1 course of treatment at the end of 7 days, continuous treatment for 3 courses.

## 2.6. Efficacy Observation Indicators

After three courses of treatment, GMFM-88 is suitable for the evaluation of

children with various types of cerebral palsy [5], mainly with the large exercise sitting area as the main assessment area; 10% < completed action; 2 points, 90% < completed action; 3 points, 100% completion of the action. Higher score levels indicate higher gross movements (sitting level energy zones). Changes in sitting ability in GMFM-88 items before and after treatment were assessed and compared.

### 2.7. Statistical Methods

The measurement data were expressed by mean  $\pm$  standard deviation ( $X \pm S$ ), and the t-test was used for the between-group comparison, and the paired t-test was used for the before-and-after comparison.

### 3. Results

1) Compared with the effect of the treatment group and the control group, it was found that the effective rate of the treatment group was significantly higher than that of the control group, and the effect of the control group was also improved to different degrees, and the difference was statistically significant ( $p < 0.05$ ), as shown in **Table 1** for details.

2) The GMFM-88 sitting energy zone assessment scores of the pretreatment group and the control group were not statistically significant ( $p > 0.05$ ), which were comparable. The GMFM-88 sitting energy zone assessment scores in the treatment group and the control group were significantly increased after treatment, and the difference was statistically significant ( $p < 0.05$  or  $p < 0.05$ ) compared with the same group before treatment, and the difference was significantly higher than that in the treatment group after treatment ( $p < 0.05$  or  $p < 0.05$ ), as shown in **Table 2**.

**Table 1.** Comparison of treatment group and control group [n (%)].

Constituencies	n	excellent	effective	void	Total efficiency
Treatment group	31	21 (67.74)	9 (29.03)	2 (3.11)	30 (96.77)
Control group	31	13 (41.94)	12 (38.71)	6 (19.35)	25 (80.7)
$X^2$	-	13.44	2.1	12.97	12.973
p	-	<0.01	>0.05	<0.01	<0.01

Note: - indicates this vacancy.

**Table 2.** Comparison of GMFM-88 items (sitting energy zone) scores between treatment group and control group ( $\bar{x} \pm s$ ).

Constituencies	n	Before treatment	After treatment
Treatment group	31	30.8 $\pm$ 4.4	62.4 $\pm$ 7.4
Control group	31	31.2 $\pm$ 4.7	51.9 $\pm$ 7.9
t	-	0.37	4.32
p	-	>0.05	<0.01

Note: - indicates this vacancy.

## 4. Discussion

Combined with the confirmed cerebral palsy children admitted to our hospital from December 2019 to July 2022, the average age is between 1 - 3 years old, in the early rehabilitation of cerebral palsy, age belongs to the category of early treatment, of which cerebral palsy is located in the brain, but can involve the trunk and limbs, and its manifestations are mainly motor dysfunction, posture abnormalities, etc., which will not only have a serious impact on the growth and development of the child, but also cause a huge burden on its family and society [6]. At present, there are many treatments in the clinical treatment of pediatric cerebral palsy, but their treatment efficacy is often uneven, so it is particularly important to explore a safe and effective treatment.

At present, the treatment of cerebral palsy in China is basically based on conventional rehabilitation, conventional rehabilitation includes sports therapy, vojta, physical therapy and traditional motherland massage techniques, etc., lumbar Huatuo chiropractic acupoint injection therapy is a new treatment, is a combination of Western medicine and traditional Chinese medicine, mainly refers to the child's treatment drug through its lesion-related parts for acupoint injection treatment, usually can continue to stimulate the waist segment Huatuo spinal acupuncture point to play a corresponding role, The effect of acupuncture treatment can be exerted by emphasizing and qi and blood unclogging meridian treatment at the same time, waist segment Huatuo chiropractic acupoint injection is based on the positioning injection method redefined by modern Chinese medicine Taidou Mr. Li Ding and the theory of back Yu point, Huatuo clamp spinal point is located in the cervical spine, under the thoracic vertebrae 0.5 inches from the side of the spine, a total of 36 acupuncture points, the chiropractic point in the back of the vein and the foot solar bladder meridian in the two meridians, and the corresponding connection has a certain specificity. Once the meridians in the "Yang Vein are abnormalized", the twelve meridians and motor functions of the whole body will be functionally impaired, so the Du pulse and related meridian lesions can affect the spinal points, and there are corresponding pathological reaction points on the spinal points. Therefore, acupoint injection of waist Huatuo clamp spinal point can not only adjust the epidermis, repair damaged nerves, regulate muscle coordination, but also balance yin and yang, adjust internal organs, regulate qi and blood. At the same time, the spine is a sensory and motor nerve impulse transmission pathway [7] [8] [9]. Strengthening acupressure not only strengthens the child's lower back, but also down-regulates limb muscle tension and relieves low back spasm and weakness [10] [11].

In this study, it was found that the combination of lumbar spinal point injection can effectively improve the function of GMFM-88 (sitting) energy zone, which is a kind of preliminary preparation for whether children with cerebral palsy can obtain more advanced motor mode ability, and plays an important role in improving the gross motor function of children with cerebral palsy through lumbar Huatuo chiropractic acupoint injection and conventional rehabilitation treatment.

Combined with the above, conventional rehabilitation training combined with lumbar Huatuo chiroptic acupoint injection is beneficial to improve the function of the (sitting) energy zone in the gross motor ability of children with cerebral palsy, with good efficacy, safety and reliability, and is worthy of promotion in the field of pediatric rehabilitation.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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