

Clinical efficacy of TCM directional permeation combined with Jin's three-needle acupuncture in the treatment of insufficiency of renal sperm intellectual and developmental disability

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Abstract: To observe the clinical efficacy of TCM directed permeation combined with Jin's three-needle acupuncture in the treatment of insufficiency of renal sperm intellectual and developmental disability. A total of 84 children with insufficiency of renal sperm type intellectual and developmental disability were randomly divided into 42 patients in the treatment group and 42 cases in the control group. The treatment group was treated with TCM directional permeation combined with Jin's three-needle acupuncture with cognitive training, while the control group was given only conventional cognitive training. Before and after treatment, the Chinese Revised Merriam-Webster Intelligence Scale for Children (WISC-III) was used to blindly assess the intelligence level of the two groups, and then the efficacy was compared. The overall efficacy of 42 patients in the treatment group was better than that of the control group, and the comparison between the groups was statistically significant ($p < 0.05$). The combination of TCM directional permeability combined with Jin's three-needle acupuncture can effectively improve the intelligence level of children with insufficiency of renal sperm intellectual and developmental disability, which is worth promoting.

Intellectual and developmental disability (IDD), also known as intellectual disability or mental retardation, refers to the mental development disorder manifested by the existence of deficit disorders in both intelligence and adaptability, mostly occurring between 0 and 18 years old [1-2]. The prevalence of IDD in children younger than or equal to 6 years old in China is 0.931%, and the average annual incidence rate is 0.133%. It is equivalent to 13 million cases of IDD children in China, 136,000 new cases every year [3], and the incidence is still increasing, and because people lack effective understanding of this disease, children cannot get early diagnosis and related diagnosis and treatment, resulting in a disability rate of about 50%, which has become one of the main diseases of childhood disability [4]. It has a personal impact on the physical and mental health of the majority of children, as well as the happiness index of family and society, so in recent years, the world's medical research on intellectual disability has been increasing and deepening, especially in the treatment of

traditional Chinese medicine [5]. At this stage, the treatment methods of children with intellectual development disorders are mostly drug treatment, acupoint application therapy, transcranial magnetic therapy, etc., due to the young age of the child, less acceptable drugs, and low degree of cooperation, so the hospital began to use traditional Chinese medicine directional permeation combined with Jin's three-needle acupuncture treatment, the effect is more satisfactory, now reported as follows:

1. Clinical data

1.1 General Information

The children with intellectual disabilities admitted to the Department of Intellectual Disability of Encephalopathy of our hospital from May 2022~October 2022 were all 84 cases of patients with insufficiency of renal sperm in traditional Chinese medicine, which were divided into two groups according to the random number table method, and the results were as follows: 42 cases in the treatment group, including 25 cases in men and 17 cases in women, aged 3 years 6 months ~ 7 years and 4 months, with an average of 5 years and 5 months, 11 cases of hypotonia, 23 cases of spastic type, and 8 cases of involuntary movement type; There were 42 cases in the control group, including 27 males and 15 females, aged 3 years 3 months ~ 7 years and 7 months, with an average age of 5 years and 5 months, 10 cases of hypotonia, 25 cases of spasmodic type, and 7 cases of involuntary movement. There were no significant differences in age, sex and condition between the two groups, which were comparable. The child's family members signed the informed consent form.

1.2 Diagnostic criteria

1.2.1 Diagnostic criteria in Western medicine: refer to Zhufutang Practical Pediatrics (8th Edition) [6]

- 1) Intelligence is significantly lower than the average, that is, the intelligence quotient (IQ) is 2 standard deviations below the population average, and the general IQ is below 70;
- 2) There is a defect in adaptability;
- 3) Manifested in the developmental age stage, that is, under 18 years old;

1.2.2 Diagnostic criteria of TCM certificate type (renal insufficiency type) [7]

The patient's response is dull, the expression is dull, the mind is scattered, the speech is slow, the movement is more and less quiet, the impulsivity is willful, the muscles and bones are soft, the body is thin, the hands and feet are hot. The sleep is poor, night sweats, the tongue is light or dark red, the moss is less, the pulse is fine or fine, and the fingerprints are light.

1.3 Inclusion criteria

- 1) Meet the diagnostic standards of Western medicine and the diagnostic standards of traditional Chinese medicine;
- 2) Those who are less than 8 years old (the younger the age, the greater the value of treatment and observation);
- 3) The child has good persistence and compliance, and obtains the consent of the child's parents or guardians.

1.4 Exclusion Criteria

- 1) Patients who do not meet the inclusion.
- 2) Patients with other diseases such as epilepsy, autism and severe lung infection.
- 3) Patients with skin diseases during inpatient examination.
- 4) Children with severe heart disease and children who have been implanted with electronic or metal devices are prohibited from using this therapy.

1.5 Removal and shedding criteria

- 1) Drugs or treatments of other than observational methods were used after inclusion criteria.
- 2) The patient did not complete the prescribed observation period.

2. Treatment

2.1 Treatment group: TCM directional dialysis + Jin's three-needle acupuncture + cognitive function rehabilitation training

2.1.1 TCM directed dialysis therapy

The instrument adopts the JBR-1A type TCM directional permeation therapy instrument provided by Xi'an Jinbairun Medical Equipment Co., Ltd. The method used: connects the electrode with the disposable physiotherapy electrode, routinely disinfects the treatment site, and applies the cotton tablets in the positive and negative electrode tablets to the potion soaked in the brain nourishing nootropic formula and fixes it on both sides of the Shenshu point, Ganshu point, Quchi point, Neiguan point, Sanyinjiao, Zusanli and other acupoints. The permeable formula is a self-formulated tonify the kidney, strengthen the brain and nootropic formula: 6g of Tortoise-plastron Glue, 6g of antler glue, 12g of prepared Rehmanniae Radix, 6g of Chinese yam, 12g of dogwood, 9g of peony peel, 9g of Zexie, 9g of Fushen, 9g of Lycium, 6g of Huangjing, 6g of Yuanzhi, 6g of Shichangpu, it is a concentrated decoction, the auxiliary materials only include water, without any additives and additional ingredients. After boiling the above Chinese medicinal materials for 20min, the liquid was placed in a container, soaked with sterile cotton pads, and applied to the Ganshu and Shenshu points on both sides of the child for treatment. Instrument setting: before starting, the intensity of electrotherapy must be zeroed, and then the electromagnetic thermal pad is placed in the treatment site, and then the time is selected 20~30min/time, the temperature gradually increases from 1 gear, and the intensity is 0~10 gears, which needs to be adjusted according to the tolerance of the child. In addition, when choosing a back acupressure treatment, the back is fixed with bandage pressure to increase the stability of the child during the treatment, so as to maximize the treatment effect, once a day, 5 days a week, 5 days for 1 small course of treatment, 1 month for 1 large course of treatment, and the efficacy was evaluated after intervention of 3 large courses. If skin irritation such as skin redness, burning, and blisters occur at acupuncture points during treatment, stop treatment in time and treat the symptoms immediately.

2.1.2 Jin's three-needle acupuncture treatment

Main acupoints: Sishen needles (located 1.5 inches each in front, back, left and right of Baihui Acupoint), Zhi sanzhen (composed of Shenting acupoint and the Benshen acupoint on both sides), Nie sanzhen (two inches straight up the tip of the ear is the first needle, and the front and back a inch are the second and third needles respectively), Shou zhizhen (Neiguan, Shenmen, Laogong);

Supporting points: those with insufficient kidney essence and deficient in the myeloid sea are

equipped with Shenshu point, Ganshu point, Xuanzhong point, Fulu point and Taixi point.

Operation: the child takes the sitting position and parents help fix the head and limbs. Routine disinfection of local skin. We use 0.30×25mm Andy brand stainless steel disposable sterile acupuncture needle (Guizhou Andi Medical Equipment Limited). We adopt twirling reinforcing-reducing manipulation to acupuncture the point, mainly reinforced and the secondly weakened. Quickly prick the needle flat along the acupuncture points on the head. Among them, the Sishen needles are obliquely pricked inward, the Zhi sanzhen is flat pricked backward, the Nie sanzhen is flat pricked downward, the Shou zhizhen is directly pricked downward, the Bei shu acupoint is selected oblique prick, and the limb acupuncture point is selected to be straight prick. The depth of needle is determined according to the child's fat and thin. Every 15 minutes according to the principle of "false supplementation" to twist the needle angle range of 180 °~ 360 °. Each needle is performed for about 1 minute, and the needle is left for 30 minutes. Treatment 3~5 times a week, 4 weeks for 1 small course of treatment, treatment for 3 courses.

2.1.3 Cognitive function rehabilitation training

According to the child's condition, an individualized plan was formulated, and attention, memory, calculation, thinking and perception training were selected, once a day, 30min each time, 5 times a week, 1 month for 1 course of treatment, 3 months of treatment, a total of 3 courses of training.

The above rehabilitation therapies were used in both the treatment group and the control group.

2.2 Control group

Cognitive function rehabilitation training is in the same treatment group.

2.3 Observe indicators

The observation indicators are attention, memory, calculation, comprehension, imagination and other basic elements of intelligence and total efficiency.

2.4 Efficacy evaluation criteria

Refer to the efficacy evaluation standards and methods specified by the National Clinical Key Specialty Collaboration Group in 2022 (revised version) about Wu chi and Wu ruan. The Chinese revised Merriam-Webster Intelligence Scale for Young Children and Children (WISC-III.) was used to score before and after treatment, and the IQ score was calculated according to the nimodipine method to evaluate the efficacy [8]: IQ score improvement rate = (pre-treatment IQ score - post-treatment IQ score) / pretreatment IQ score × 100%. Effective: IQ score improvement rate \geq 30%; Effective: IQ score improvement rate \geq 10%; Invalid: IQ score improvement rate <10%.

2.5 Statistical processing

SPSS 26.0 statistical software was used for relevant data analysis, and the measurement data were expressed by average \pm standard deviation ($\bar{x} \pm s$), and t-test was used. The comparison of counting data rates was carried out using the χ^2 test. The difference was statistically significant with $P < 0.05$.

3. Results

3.1 Comparison of WISC-III score changes before and after treatment in treatment group and control group

Table 1: Comparison of the change WISC-III score between treatment group and control group before and after treatment ($x \pm s$)

Constituencies examples		Before treatment	After treatment
Control group	42	50.71 ±14.97	58.45 ±20.75
Treatment group	42	53.07 ±10.62	67.02 ±15.67

It can be seen from Table 1 that there was no significant difference in the WISC-III score and sex comparison before treatment between the two groups ($P > 0.05$); The WISC-III scores in the treatment group were compared before and after treatment, and the results were significantly different ($P < 0.05$).

3.2 Comparison of the treatment efficacy of intellectual development disorders between the two groups

Table 2: Comparison of the treatment efficacy of intellectual development disorders in the two groups

Constituencies	examples	Effective	effective	void	Total Efficient Rate (%)
Control group	42	6	20	16	61.9
Treatment group	42	16	22	4	90.5

Note: Compared with the control group, the difference was statistically significant ($\chi^2=9.45$, $P=0.02$, $P < 0.05$)

It can be seen from Table 2 that the difference in total effective rate between the two groups was statistically significant ($P < 0.05$), and the efficacy of the treatment group was better than that of the control group.

3.3 Security Observation

During the whole treatment process, through the peripheral skin, liver and kidney function tests of all children, no obvious adverse reactions occurred in both groups, and the safety was good.

4. Summary

Modern medicine believes that pediatric intellectual development disability is a disease caused by non-progressive damage and defects in brain development in fetal and infant stages [9], which have a great negative impact on children's daily life communication, physical activities, thinking cognition, and production and life. According to investigations, 25%~50% of the causes of IDD can be attributed to genetic factors [10], so early protection is crucial. Pediatric intellectual development disorders correspond to the "Wu chi, Wu ruan" of traditional Chinese medicine. *Lingshu Jinmai* recorded: "When a person is born, he becomes refined first, and the brain is born." On the contrary, if the child's kidney essence is insufficient, the sperm deficiency cannot meta-prise qi and blood, the bone marrow is not full, and the brain is not nourished, the child is stunted, the fontanelle is closed, the body is short, the bones are soft, and the intellectual development is delayed. *Huang Di Nei Jing*: "The kidney is the main bone marrow." The medicine of the motherland believes that Kidney essence insufficiency

is the primary factor among the congenital pathogenic factors [11].

Our hospital opened up new thoughts, expanded new ideas, and introduced TCM directional permeation device treatment under the premise of ensuring treatment. And in view of the kidney essence deficiency type, our hospital uses Liuwei Dihuang Pill as the basis to make a supplementing kidney, strengthening brain and improving intelligence prescription. The main drug components and dosages of this prescription are: 6g of turtle plate glue, 6g of deer antler glue, 12g of radix rehmanniae preparata, 6g of huai yam, 12g of dogwood, 9g of peony peel, 9g of alismatis rhizoma, 9g of poria with hostwood, 9g of lycium, 6g of rhizome polygonati, 6g of polygala tenuifolia, 6g of acorus tatarinowii schott. Among them, dogwood, ripe ground yellow, wolfberry, and Fushen are the king's medicine, nourishing the yin and kidney, and filling the essence. Dogwood flavor acid, into the liver, nourish liver yin, liver and kidney homologous, at the same time can nourish kidney yin, and because of acid convergence, its astringent power is also strong, so this drug can be protecting kidney essence; Turtle plate gum, deer antler gum, and huaiyam are the medicines, replenishing the essence and filling the essence, and replenishing the essence and blood. *"Jing Yue Quanshu Zuo Gui Pill"* [12] recorded: "Deer antler glue warms the kidney yang, with Wu turtle plate glue to fill in the true yin, take the meaning of "seeking yin in the yang", cure the evidence of insufficient kidney water in the true yin, the turtle plate glue and deer antler glue are flesh and blood sentient goods, and the invisible essence to help tangible essence and blood." peony peel, alismatis rhizoma、 rhizome polygonati、 polygala tenuifolia, acorus tatarinowii schott as the supportcan, not only dissolve the dampness and turbidity, clear the diarrhea and hypothermia, but also prevent the radix rehmanniae preparata from being too greasy, and play a counter-role. The five drugs are all adjuvants, and the prescription of the drugs directly reaches the liver and kidney lesions and harmonizes the drugs. The essence of this side lies in nourishing the liver and kidneys, the whole party is mainly to nourish yin, replenish yang from yin, make yang born from it, reconcile yin and yang, fill the kidney essence and the marrow is adequate. After many textual research and dialectical exploration of the etiology, the author finally determined the drug composition and dosage of the prescription for tonifying kidney, strengthening brain and improving intelligence, from the selection of medicinal materials to the preparation of medicinal materials and the final processing of medicinal materials, screening and reviewing the selected authentic medicinal materials to refine excellent prescription.

Directional drug penetration therapy of traditional Chinese medicine is to form an electroporation in the skin instantaneously through a high-voltage pulsed electric field and conduct it directly to the corresponding acupoints through an electromagnetic hot sheet, so that the traditional Chinese medicine components in the prescription can reach the affected part through the skin [13]. The huai yam of medicinal patch can enhance immune regulation, strengthen the spleen, invigorate qi and solidify essence[14]. Modern pharmacological research[15], Yuanzhi has a prominent role in calming the mind, nootropic and invigorating essence. acorus tatarinowii schott, *"Notes on the Classic of Materia Medica"* once stated: "eat for a long time not forget, not confuse, prolong the life time, and benefit the mind." "In addition, the Shen Shu point is an important acupuncture point for the treatment of renal essence deficiency, and the treatment of this acupoint can effectively alleviate the symptoms of yin essence deficiency and fluid deficiency in children. Traditional Chinese medicine directional permeation is one of the external treatment methods, not the usual internal decoction treatment, no taste concerns, less pain, high acceptability and higher compliance of children, and no obvious adverse reactions have been found in the process of clinical use, and the safety is relatively high.

In view of this disease, starting from the cause, most scholars believe [16], the pathogenesis of this disease is responsible for the lack of yang. So, acupuncture selects acupuncture points on the yang meridian. And the treatment group uses Jin's three-needle acupuncture is exactly this mechanism. The Sishen point are located on the Du pulse and the foot solar bladder meridian, the Du pulse is the sea of Yang veins, the governor's six Yang meridians, and the bladder meridian is widely followed,

connecting multiple internal organs and branches, and all of them are in the brain, reflecting the characteristics of treatment from the cause. The second is the Zhi sanzhen, taking the Shenting acupoint and the Benshen acupoint on both sides. Shenting acupoint is the intersection of the three meridians of the stomach meridian, bladder meridian and du vein, which is the place where the three meridians subtly converge, and is the important point of the Du vein. The acupuncture can awaken the brain and adjust the mind, and improve the eyes [17]. Benshen acupoint is located on the Gallbladder meridian of foot shaoyang, which has the effect of calming the mind and quenching the wind. It can be used in combination with Shenting acupoint to complement each other, and can treat insomnia, headache, cognitive impairment and other brain diseases [18]. Temporal three-needle technique are located in the place where the Three-Jiao Channel of Hand Shaoyang and Gallbladder Channel of Foot Shaoyang, the acupuncture can not only encourage the qi of Shao yang, but also unblock the yang meridians of the whole body, so as to achieve the effect of curing diseases and dispelling evil spirits. Hand acupuncture includes: Neiguan, Shenmen and Laogong. Indications: mentally handicapped children, ADHD (hyperactivity and less rest), epilepsy, insomnia. Other supporting points: Shenshu acupoint, Ganshu acupoint, Xuanzhong acupoint, Fulu acupoint, Taixi acupoint can all replenish the kidney, yang qi and essence. Some scholars have found that "brain three needles-wisdom three needles-temporal three injections" have a strong correlation in the treatment of cerebral palsy, and a relatively complete treatment system has been formed [19]. Therefore, taking acupoints in connection with each other in treatment can significantly improve the intelligence level of children. The method of medicine and needle in this study is mainly to fill in lean wisdom, cultivate the innate foundation, and combine the two methods to play the effect of nourishing the liver and kidneys, and calming the mind.

Compared with traditional rehabilitation therapy, the TCM directional permeation combined with Jin's three-needle acupuncture has been significantly improved, and the treatment group has not only enabled acupuncture technology from ancient times to the present, but also organically combined with modern high-tech TCM directional permeation device treatment, which fully reflects the idea of integrating traditional Chinese and Western medicine. However, since this study is only for children with renal insufficiency, the differentiation is relatively single, and if it is to be widely implemented, it is necessary to distinguish and treat, so the further treatment of children with intellectual development disorders still needs to be explored.

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