

Clinical Observations

Acupuncture for Promoting Intelligence of Children — An Observation on 37 Cases with Mental Retardation

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Objective: To observe the effect of acupuncture on intelligence quotient (IQ) in children with mental retardation (MR). **Methods:** One hundred children with MR were randomly divided into an acupuncture group and a control group, 50 in each. There were 37 and 36 cases with complete data in the former and latter group respectively. Four-week treatment constituted a course, the comprehensive therapeutic effect of two groups was compared after 3 courses of treatment, and the influence of acupuncture on IQ was estimated. **Results:** The total effective rate in the acupuncture group was 78.4%, better than 30.56% in the control group, the difference being significant ($P < 0.01$). Both groups were improved in IQ but the effect of the former group was better than that of the latter group ($P < 0.05$). **Conclusion:** Acupuncture can obviously improve IQ of children suffering from MR.

Key words: mental retardation (MR); acupuncture therapy; intelligence quotient (IQ); acupuncture for intelligence-promotion; clinical trial

Mental retardation (MR) refers to lower intelligence of children under 18 years with defect in adaptable behaviors. As one of the main causes leading to handicaps, MR jeopardizes children's physical and mental health seriously and brings about heavy burden for society and families. The authors used the intelligence-promotion acupuncture in the treatment of 37 MR cases and the report is as follows.

CLINICAL DATA

General Data

All of the 100 cases were from the Departments of Acupuncture and Neurology, Affiliated Hospital of Gansu College of TCM. They were randomly, based on a randomized table, divided into an acupuncture group, treated by intelligence-promotion acupuncture, and a control group, treated by taking *Naofukang* (脑复康) Capsule, 50 cases in each. Among them, 73

cases insisted on treatment with complete data records, including 37 cases in the acupuncture group and 36 cases in the control group. Of the other 27 cases, 1 passed away due to acute pneumonia and 26 without finishing 90-day treatment or without examination of intelligence quotient (IQ) after treatment. In the acupuncture group, 24 cases of 37 were male and 13 cases female, aged from 1–16 years with a mean of 4.7 years, 26 cases under 6 years and 11 cases over 6 years, 20 mild cases and 17 moderate cases. In the control group, 28 cases of 36 were male and 8 cases female, aged from 1–14 years

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with a mean of 4.6 years, 27 cases under 6 years and 9 cases over 6 years, 20 mild cases and 16 moderate cases. There was no significant difference in gender, age and course of disease between the two groups ($P>0.05$), showing their comparability.

Criteria for Diagnosis

Diagnosis was made according to *Children's Psychological Behavior and Maldevelopment - Mental Retardation*: obvious lower intelligence than that of the normal at the same age, lower development quotient (DQ) or IQ by over 2 times of standard deviation, usually being <70 in IQ; defect in adaptive behavior, poor than the standards for activities in society; and its onset in the developmental age, <18 years old.¹ The criteria of TCM syndrome differentiation were made referring to the five kinds of tardy growth and five kinds of flaccidity in infants of *Zhongyi Erkexue* (中医儿科学 TCM Pediatrics).

Criteria for Inclusion

The children aging from 1–18 years, either male or female, who were in accord with the above-mentioned criteria for diagnosis, with their parents' agreement for treatment, were included in this observation.

Criteria for Exclusion

The cases complicated with severe primary cardiovascular disease, cerebrovascular disease, hepatic disease, nephritic disease, or disease in hematopoietic system, those with very severe disorder in IQ or DQ <30 , those blinded or with deaf, those not being able to insist on treatment for 90 days, and those without compliance were excluded.

METHODS

Treatment Methods

Sishenchong (EX-HN1), Baihui (GV 20), Naohu (GV 17), Benshen (GB 13), Fengchi (GB 20), Neiguan (PC 6), Hegu (LI 4) and Zusanli (ST 36) were selected as main points in the acupuncture group. Yamen (GV 15) and Lianquan (CV 23) were added for the cases with glossolalia, Xinshu (BL 15) and Shenmen (HT 7) added for those with slow reaction, Taichong (LR 3) and Sanyinjiao (SP 6) added for those with restlessness, Shenshu (BL 23) and

Guanyuan (CV 4) added for those with enuresis, Dicang (ST 4) and Yinlingquan (SP 9) added for those with salivation, and Tianzhu (BL 10) and Dazhui (GV 14) added for those with feeble neck. Based on syndrome differentiation, Pishu (BL 20) and Qihai (CV 6) were used for the cases with weakness of spleen and stomach, Ganshu (BL 18) and Shenshu (BL 23) added for those with deficiency of liver and kidney, and Zhongwan (CV 12) and Fenglong (ST 40) added for those with obstruction of meridians by phlegm. All the above points were bilaterally selected except those of the Conception and Governor Meridians. Six to eight main points and 4–6 auxiliary points were used each time. Acupuncture needles 0.35 mm in diameter and 25 mm in length were used. After local routine sterilization, transcutaneous insertion was adopted for Sishenchong (EX-HN1), Baihui (GV 20), Naohu (GV 17) and Benshen (GB 13), oblique insertion for Xinshu (BL 15), Ganshu (BL 18), Pishu (BL 20) and Shenshu (BL 23), and perpendicular insertion for the other points. Depth of needling was depending on body configuration of the children treated and the points inserted. A reinforcing maneuver was used for the cases with deficiency, and a reducing maneuver used for those with excess, and an even maneuver used for those without obvious deficiency or excess. The needles were retained for 30 minutes after arrival of *qi*. During the retaining, the needle manipulation was made once. Treatment was given 5 times weekly, and 4 weeks of treatment constituted a therapeutic course. Three courses of treatment were given, with an interval of one week between two courses.

Naofukang Capsule (made in Xi'an Jiaotong University Pharmaceutical Co. Ltd., 020318 in batch number) were administered orally in the control group, 0.2 g each time for the cases aged 1–3 years, 0.4 g for those aged 4–5 years and 0.6 g for those aged 6–12 years, 3 times a day for continuous 4 weeks as one course. Three courses of treatment were given, with an interval of one week between two courses.

In the duration, all other Western and Chinese medicine treatment, which might impact on this

observation, were stopped.

Criteria for Estimating the Effect

Examination of IQ: IQ was determined before and after treatment by a fixed person according to internationally authorized and nationally standardized *Mental Developmental Scale for Infants and Children*, including *Gesell's Rating Scale for Child Development* for children under 6 years and *Wechsler Intelligence Scale for Children at School Age* (WISC) for children over 6 years.³

Comparison of comprehensive effect: Comprehensive effect was estimated according to criteria shown in reference 4. Changes in slow reaction, dull facial expression, glossolalia, limb spasm, feeble and weak limbs, clumsy actions, restlessness, salivation, enuresis and convulsion were observed before and after treatment. Remarkably effective: obvious improvement of clinical symptoms, IQ improved by over 15 scores, disappearance or remarkable alleviation of symptoms. Effective: improvement of clinical symptoms, IQ improved by 8–15 scores.

Failed: some improvement or no changes of clinical symptoms, IQ improved by <8 scores.

Statistical Analysis

SPSS11.0 software was used for data analysis. All measurement data were shown by ($\bar{x} \pm s$), enumeration data made by χ^2 test, and the measurement data in accord with Gaussian distribution compared by *t*-test.

RESULTS

Comparison of IQ Before and After Treatment

IQ improvement after treatment was significant ($P<0.01$) in both groups, indicating that both acupuncture and medication could raise IQ. IQ values after treatment were significantly different between the two groups ($P<0.05$), and the difference in IQ before and after treatment in two groups were significant ($P<0.01$), indicating that acupuncture was superior to medication in promoting IQ of children suffering from MR.

Table 1. Comparison of IQ before and after treatment between two groups (score, $\bar{x} \pm s$)

Group	Cases	Before	After	Difference
Acupuncture	37	52.30±10.66	64.78±11.92 ^{*△}	12.49±4.19 ^{**}
Control	36	49.58±11.85	56.53±12.61 [△]	6.94±1.90

Note: Compared with before treatment, [△] $P<0.01$; compared with the control group, ^{*} $P<0.05$, ^{**} $P<0.01$.

Comparison of the Effect in Different Ages in Acupuncture Group

Clinical symptoms were improved to various extents: slow reaction, speech disorder, clumsy actions, enuresis and feeble and weak limbs were obviously improved, dull facial expression, restlessness and

convulsion were improved in most cases, but limb spasm and salivation were improved only in some cases. The effect in cases aged under 6 years was significantly better than those over 6 years ($P<0.05$), indicating that the earlier the treatment given, the better the effect achieved.

Table 2. Comparison of the effect in different ages in acupuncture group (cases (%))

Age	Cases	Remarkably effective	Effective	Failed	Total effective rate
<6	26	7 (26.92)	16 (61.54) [△]	3 (11.54)	23 (88.46)
>6	11	1 (9.09)	5 (45.45)	5 (45.45)	6 (54.55)

Comparison of Comprehensive Effect

Of the 37 cases in the acupuncture group, 8 cases were remarkably effective (amounting to 21.62%), 21 cases were effective (56.76%), and 8 cases were failed (21.62%), with a total effective rate of 78.4%. Of the 36 cases in the control group, none were remarkably effective, 11 cases were effective

(30.56%), and 25 cases were failed (69.44%), with a total effective rate of 30.56%. There was a significant difference in comprehensive effect between the two groups ($P<0.01$).

DISCUSSION

Mental retardation is manifested since babyhood. It is a lifetime illness once it appears. According to TCM,

MR falls into the category of dementia, five kinds of tardy growth in infants and five flaccid syndromes. It is mostly caused by dystrophy of heart-spirit and brain marrow due to congenital deficiency, birth injury or invasion of exogenous pathogen. As stated in *Lingshu · Hailun* (灵枢 · 海论 Miraculous Pivot · Sea Treatise), the brain is the sea containing marrow, which is distributed up to skull. Acupuncture for promoting intelligence is applied by selecting the points on head. Located at the vertex, Sishenchong (EX-HN1) and Baihui (GV 20) were used to induce resuscitation, dredge the Governor Meridian to reinforce marrow and promote intelligence. As the points of Governor Meridian running to the brain, i.e. the house of mentality, Baihui (GV 20) and Naohu (GV 17) were punctured to benefit the brain and reinforce marrow. Pertaining to Gall Bladder Meridian, Fengchi (GB 20) and Benshen (GB 13) were used to make free flow of *qi* in the brain to improve brain functions. As the Luo-connecting point of Pericardium Meridian, Neiguan (PC 6) was used to calm the mind to relieve mental stress and regulate functional activities of vital energy of triple energizer, which is the basis for maintaining normal mental and spiritual activities. As an important point for strengthening the body, Zusanli (ST 36) was used to compensate congenital deficiency by strengthening acquired condition. As one of the important four-gate points, Neiguan (PC 6) could be used to make resuscitation. Auxiliary points were selected according to symptoms such as Yamen (GV 15) and Lianquan (CV 23) for speech disorder, Conception and Governor points for dredging meridians to make resuscitation, Xinshu (BL 15) and Shenmen (HT 7) for slow reaction by nourishing the heart, Taichong (LR 3) and Sanyinjiao (SP 6) for restlessness by regulating *qi*, Shenshu (BL 23) and Guanyuan (CV 4) to invigorate the kidney for enuresis, Dicang (ST 4) and Yinlingquan (SP 9) to strengthen spleen and remove damp for salivation, and Tianzhu (BL 10) and Dazhui (GV 14) to dredge meridians for feeble and weak neck. Besides, on the basis of syndrome differentiation, Pishu (BL 20) and Qihai (CV 6) were added to invigorate the spleen and supplement *qi* for those with deficiency of spleen and stomach; Ganshu (BL 18) and Shenshu (BL 23) were added to tonify

the kidney to strengthen tendons for those with deficiency of liver and kidney; and Zhongwan (CV 12) and Fenglong (ST 40) were added to invigorate spleen to remove phlegm.

As mentioned above, the compatibility with local points, symptomatic points and points according to syndrome differentiation functioned together to nourish the heart and benefit the brain, achieving a good result in promoting intelligence.

From the study, it was found that acupuncture achieved obviously better effect on MR children aged under 6 years than those over 6 years, indicating that its effect closely related to age, which was in accord with the study of YUAN Qing, et al.⁵ The younger the MR children were treated, the better the effect was obtained. In the present study, selecting scalp acupoints to treat MR was practical for children. Acupuncture for intelligence-promotion considerably improved clinical symptoms and IQ, and its effect was better than that of medication. The cognitive abilities such as memory, comprehension and ability to make judgment were greatly improved in children with MR. In case the appropriate training by parents and school teachers was given, the rehabilitation of patients would be surely enhanced.

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