

Parental Perceptions of the Therapeutic Effect from Osteopathic Manipulation or Acupuncture in Children with Spastic Cerebral Palsy

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Summary: Fifty children were involved in a randomized, controlled trial to evaluate the effectiveness of either osteopathic manipulation or acupuncture as a 6-month therapeutic adjunct for children with spastic cerebral palsy. Exit interviews were used to obtain parental perceptions and form the basis of this report. Only 2 of 17 parents reported positive gains while their child was in a wait-list control period but all 17 reported gains while in the treatment phase of the study. Ninety-six percent (48 of 50) of the parents reported some improvement while their child was receiving treatments but the gains varied from child to child. The most frequent gains were seen in improvement in the use of arms or legs (61% and 68%) and more restful sleep (39% and 68%) in the osteopathic and the acupuncture groups, respectively. Improvement in mood and improved bowel function were also very common benefits noted by the parents in both groups.

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Introduction

In the United States, 24 of every 10,000 live-born children are affected by cerebral palsy (CP).¹ This condition is

caused by an insult or injury to the central nervous system (CNS) at a time when the brain is in its most rapid stage of development (prior to or shortly after birth) and results in some type of motor

dysfunction. The motor impairments range from mild to severe and often are major impediments to ambulation. Although the CNS insult is static and the condition defined as non-progressive, the peripheral manifestations of CP are far from static. A variety of different devices and orthopedic surgical procedures have been used to permit ambulation. Speech is also often impaired or non-existent; communication of needs and desires is frustrating not only for the child but also for the care providers. Swallowing difficulties are progressive and may necessitate medications and

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feeding tubes. Incontinence and epilepsy frequently accompany this disorder. Many are totally dependent on others for all of their needs. These problems often inflict severe emotional trauma and financial hardships on the families and far too often are a major factor in parental separation or divorce.

Osteopathic manipulation has been reported to improve function and quality of life in children with cerebral palsy (V. Romansky, personal communication).² In many East Asian countries, acupuncture is also widely used as complementary therapy for cerebral palsy, but it is not a standardized part of the therapeutic regimen for CP in the western world (Li-Ping Zou, Zhongli Lu, personal communication).³⁻⁵ There are, however, no randomized controlled trials that have assessed either of these practices.

We conducted a pilot study to evaluate the effectiveness of these two non-conventional treatment modalities as supplemental therapies for children with spastic cerebral palsy. The hypothesis of this randomized clinical trial (RCT) was that osteopathic manipulation or acupuncture, either individually or in combination, when added to the standard of care, will decrease the degree of muscle tone and/or improve function and the quality of life in children with spastic cerebral palsy as measured by multiple outcome variables. The purpose of this paper is to report an observational analysis of parental perceptions of the effects of therapy in their children.

Subjects

The study population was drawn from the entire pool of the

500 patients with CP currently enrolled at the Children's Clinic for Rehabilitative Services (CCRS) in Tucson, Arizona. Children were referred to the investigators by pediatricians working in that facility, physical or occupational therapists, pediatric neurologists, case-workers in the Division of Developmental Disabilities, or were self-referred. The parents of children agreed not to alter the dose of any muscle relaxant medications their child was taking for the duration of the study and not to use any other complementary/alternative therapy that may change muscle tone or coordination or improve function; e.g., Therapeutic Riding of Tucson (TROT), Conductive Education, hyperbaric chamber dives, acupuncture or osteopathy that was not a part of the study, and any structured or formal program using hypnosis, yoga, or music therapy. Children with a Baclofen pump or who received botulinum toxin injections during the study or in the preceding 4 months were excluded, as were children who had any orthopedic or any neurosurgical procedure while they were in the study.

The study had the approval of the University of Arizona's Institutional Review Board.

Methods

Following enrollment of the children, tests were performed to obtain a baseline assessment of function and quality of life. Each child was then randomly selected to either enter a wait-list control group, an osteopathic manipulation group, or an acupuncture group. The period for the wait-list control and for each of the treatment arms was 24 weeks. To assure groups' comparability with respect to the intention and inter-

vention time, the control group was exposed to non-therapeutic time with a volunteer. The osteopathic physician concentrated on craniosacral and myofascial release techniques. The Traditional Chinese Practitioner used a combination of scalp, body, and auricular acupuncture specific to the affected areas of the child and was inclusive of both sides of the body. Eight parents elected to have their children receive both osteopathic manipulation and acupuncture and were not part of the RCT. Evaluations were done at baseline, repeated at the midpoint, and again at the conclusion of the 24 weeks of therapy.

The research specialist interviewed each parent at the conclusion of the therapies and recorded their perceptions of what changes they saw in their child during the course of the study. The parents were simply asked an open-ended question: "Did you note any changes in your child as a result of the therapies, and if so, what were the changes?" Parents were also asked to mark their perception of their child's level of muscle stiffness and their child's level of happiness on 2 separate visual log scales, 100 millimeters in length.

Results

A total of 69 subjects (50 different children) between 11 months and 12 years of age were enrolled in the study: 19 in the wait-list control arm, 23 in the osteopathic arm, 19 in the acupuncture arm, and 8 in the combination arm (Table 1). Seventy-six percent (36/50) of the children were males. Only 2 children were younger than 24 months of age (one 11 months and one 21 months). Seventy-eight percent

Parental Perceptions of Manipulation or Acupuncture in Cerebral Palsy

Table 1

DEMOGRAPHICS OF THE ENROLLED CHILDREN				
Demographic	Control Arm (N=19) Number (%)	Osteopathic Arm (N=23) Number (%)	Acupuncture Arm (N=19) Number (%)	Combination Arm (N=8) Number (%)
Male/Female	14/5 (74% M)	16/7 (70% M)	13/6 (68% M)	7/1 (88% M)
Ages				
11–24 mo	1 (5%)	0	1 (5%)	1 (13%)
25–48 mo	3 (16%)	7 (30%)	1 (5%)	1 (13%)
4–8 yr	6 (32%)	7 (30%)	10 (53%)	6 (75%)
9–12 yr	9 (47%)	9 (39%)	7 (37%)	0
Verbal: yes/no	5/14 (74% No)	11/12 (52% No)	10/9 (47% No)	3/5 (63% No)
GMFCS I	2 (11%)	5 (22%)	5 (26%)	1 (13%)
GMFCS II	2 (11%)	2 (9%)	2 (11%)	2 (25%)
GMFCS III	1 (5%)	3 (13%)	1 (5%)	0
GMFCS IV	1 (5%)	2 (9%)	4 (21%)	2 (25%)
GMFCS V	13 (68%)	11 (48%)	7 (37%)	3 (38%)

(39/50) were 4 years of age or older. A pediatric neurologist confirmed the diagnosis of spastic CP in all children enrolled in the study. The Gross Motor Functional Classification System (GMFCS),⁶ was used to determine the severity of the motor disturbance; level I (mildest) to level V (most severe). At the time of enrollment, 22% (11/50) were classified as level I, 42% (21/50) were level V, and 58% (29/50) were level IV or level V.

Specific Comments from the Parents

Control Group

After 24 weeks in the control phase, only 2 of 17 parents reported general but nonspecific improvement in any of these areas (Table 2). One child reported

improvement in speech and in mood and the other reported improvement just in mood. Five of the parents of children in the control group reported worsening of mood. Some parents indicated a decrease in the degree of muscle stiffness and an increase in happiness on the visual analog scale. Eight children who were in the wait-list control group were randomly assigned to the acupuncture group and nine were randomly assigned to the osteopathic group. Parents of all 17 of these children reported positive changes in their children following the 24 weeks of receiving those respective therapies.

Osteopathic Group

Twenty-one of the 23 parents of the children in the osteopathic group reported improvement in

their child during the course of therapies. Specific comments included:

- Improved “dramatically” with walking, runs without holding onto furniture—age 32 months
- Stood for the first time, climbs everywhere—age 34 months
- Running for first time; chases boys; very coordinated; kicked ball for first time—age 8 years
- No surgery needed on his hips “The orthopedist was stunned”—age 12 years
- Able to use a skateboard for first time—age 12 years

Acupuncture Group

All of the 19 parents of children in the acupuncture group reported improvements in their child. Specific comments included:

- Legs no longer were locked in the scissoring position—2 children ages 6 and 9 years
- No longer toe walking—2 children ages 6 and 12 years
- Able to run and jump with both feet for first time in her life and starting to dance—age 5
- “Progress with acupuncture treatment was greater and more rapid than with traditional therapies”
- Able to sleep through the night for the first time in their lives—4 children ages 6 to 12 years
- Marked decrease in drooling—2 children ages 4 and 11 years
- Vocabulary increased from a single word to 17 words—age 6 years
- Passed her first winter without need for supplemental oxygen—age 6 years

Combination Group

All 8 of the parents who elected to place their child in the combination group reported positive changes. Specific comments included:

- Appetite improved—gained 7 pounds and “escaped” a G-tube—age 4 years
- Less angry and able to sit down and read a book—age 7 years

Discussion and Conclusions

This report describes the changes reported by the parents of children enrolled in a RCT of osteopathic or acupuncture therapy for children with CP. These parental observations are of major importance, yet are often not

“captured” by standard instruments that measure change. Only 2 of the 17 parents reported any positive gains (improved mood) while their child was in the wait-list control group, whereas all 17 reported gains after their child had completed treatment in either the osteopathic or the acupuncture group. On the other hand, all but 2 of the 50 parents whose children (96%) received therapies reported improvement. Most frequently noted was the use of their legs or hands: 14/23 in the osteopathic group, 13/19 in the acupuncture group, and 5/7 in the combined group. An increase in restful sleep was the next most frequently reported positive change reported: 9/23 in the osteopathic group, 10/19 in the acupuncture group, and 3/7 in the combination group. Not unexpectedly, most of the children

Table 2

CHANGES REPORTED BY PARENTS AT THE EXIT INTERVIEW

Area of Improvement	Control Arm (N = 17)	Osteopathic Arm (N = 23)	Acupuncture Arm (N = 19)	Combination Arm (N=19)
Leg or hand use	0 of 17	14 of 23 (61%)	13 of 19 (68%)	5 of 7 (71%)
Sleep	0 of 17	9 of 23 (39%)	10 of 19 (53%)	2 of 7 (29%)
Improved mood	2 of 17 (12%)	7 of 23 (30%)	6 of 19(32%)	3 of 7 (43%)
Worsened mood	5 of 17 (29%)			
Speech or drooling	1 of 17 (6%)	1 of 23 (4%)	7 of 19 (37%)	2 of 7 (29%)
Bowel movements	0 of 17	6 of 23 (26%)	4 of 19 (21%)	2 of 7 (29%)
Cognition	0 of 17	1 of 23 (4%)	4 of 19 (21%)	1 of 7 (14%)
Visual log: muscle stiffness: decreased >10 baseline to end	7 of 18 (39%)	9 of 21 (43%)	11 of 18 (61%)	4 of 8 (50%)
Visual log: level of happiness: increased >10 baseline to end	4 of 18 (22%)	8 of 21 (38%)	3 of 18 (17%)	1 of 8 (13%)

who were sleeping better also showed an improvement in mood. Improvement in bowel movements was reported in approximately one fourth of the children in each therapeutic group. Many parents in each of the 4 groups indicated a decrease in muscle stiffness: 39%, 43%, 61%, and 50% in the control, osteopathic, acupuncture, and combination groups, respectively. The "level of happiness" improved to a greater extent in the osteopathic group: 8/21 (38%) as compared to 4/18 (22%), 3/18 (17%), and in 1/8 (13%) in the control, acupuncture, and combination groups, respectively.

Previous studies by Frymann and colleagues, and Romansky documented improvement in children with CP using osteopathic manipulation treatments.² Measurements of improvement have included speech, balance, improved concentration and attention span, decreased spasticity, and improved mobilization of respiratory secretions, pulmonary function, and fluid balance in general. Remarkable improvements have been seen in quality of life as reflected in the above parameters.

Drs. Li-Ping Zou and Zhongli Lu at the Beijing Children's Hospital used the Gesell developmental test to evaluate 228 children with spastic CP and report clinical improvement in 222 (97%) after 1 month of daily physical therapies and acupuncture treatments.

Their findings were similar to those published by Tong and Ying-yuan from the Beijing Charity Hospital using an Activity of Daily Living score.⁵

However, both osteopathic physicians (V. Romansky, personal communication)² and practitioners of Traditional Chinese Medicine (Li-Ping Zou, Zhongli Lu, personal communication)³⁻⁵ emphasize that the greatest benefit is seen in the younger and in the less involved children. Only 2 of the children in this study were younger than 24 months at the time of enrollment in the study and 58% (29/50) had a GMFCS level of IV or V, the highest level of ambulatory dysfunction. Because of the high proportion of severely involved children and their relative older ages, the children enrolled in this investigation were not optimal candidates. Another limitation of this study was the fact that no acupuncturist in Tucson, including the one we used, had had experience treating children with CP and a standard protocol was not available.

We accept the subjective nature of parental reports because they were responses to an open-ended question or to in-depth interviews. However, we contend that parental perceptions are important and often more sensitive than those of the physician. In addition, these perceptions were frequently corroborated by the physical and occupational therapists working with the children. Al-

though it is difficult to capture many of the qualitative changes using quantitative measurement instruments, it must be recognized that the impact of the changes for these children and their families was significant.

We anticipate a follow-up investigation with a larger cohort of younger and proportionally less severely involved children to enable us to perform a more quantitative assessment of the effects of osteopathic and acupuncture treatments for children with spastic CP.

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