Original Article

Swedish massage and abnormal reflexes of children with spastic cerebral palsy

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Objectives: Massage therapy is one of the most widely used complementary and alternative medicine therapies for children. This study was conducted to determine the effect of wedish massage on abnormal reflexes in children with spastic cerebral palsy (CP).

Material and Methods: This study was a single blind clinical trial conducted on forty children with spastic CP who were recruited from clinics of the University of Social Welfare & Rehabilitation Sciences. They were randomly assigned to intervention and control groups. The routine occupational therapy (OT) techniques were performed during a 3 month-period in both groups. The intervention group also received Swedish massage for 30 minutes before every OT session. Primary, spinal, brain stem, midbrain, cortical and automatic reflexes were evaluated at the beginning of the study and 3 months later. The data analysis was done by parametric and nonparametric tests.

Results: Finally, thirteen subjects in the intervention group and 14 subjects in the control group were remained and studied. The average ages in the intervention and control groups were 49.5 and 42.1 months respectively. There were no statistically significant differences in abnormal reflexes in the intervention group in comparison to the control (P>0.05).

Conclusion: Adding Swedish massage to traditional OT techniques had no significant effects on abnormal reflexes in children with spastic cerebral palsy. Evidently more research is required in order to completely reject the effects of Swedish massage on abnormal reflexes of children with CP.

Key Words: Spastic cerebral palsy- Abnormal Reflexes – Swedish massage.

Introduction:

Massage therapy (MT) is one of the most widely used complementary and alternative medicine (CAM) therapies (1). Studies indicate that parents are becoming increasingly more interested in CAM therapies, including MT, for their children. One study found that 33% of parents reported using CAM for their child within the past year, with MT being one of the most popular therapies (2). CAM is now frequently used, even in many medical settings [e.g. 49% of university-affiliated pain management centers in the US and Canada offer MT (3)], however pediatricians and other health care professionals are often not informed about the CAM therapies that are being used by their patients (2).

Complementary medicine such as massage therapy has also been used in treatment of pediatric neuro-developmental disorders. In one study (4) the frequency and type of CAM therapies used by families of 376 children with special health care needs (like cerebral palsy) were assessed. In general, this population of children used CAM at moderately high

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rates, and especially the use of "healing/blessings/ prayers" (40%) and "massage" (38%) were more frequent than other CAM therapies.

In order to assess patterns of usage of CAM in families of children with cerebral palsy (CP), 213 families with a CP child, 0 to 18 years of age were recruited at the university medical center in Ann Arbor, MI, USA as part of a descriptive survey (5). Of the families, 56% used one or more CAM techniques. Massage therapy (25%) and aquatherapy (25%) were the most common. Children with quadriplegic CP, with plasticity, and those who could not walk independently were more commonly exposed to CAM.

Some studies have showed the effect of massage on muscles. In one study (6) conducted in the University of Glascow, UK, the effect of massage on the mechanical behavior of muscles in adolescents with spastic diplegia was studied. After massage, the range of movement was not consistently increased but, on average, greater force was needed to stretch the muscle than before massage. They suggested that this phenomenon could be explained such that massage resets sarcomere lengths which in turn correct thixotropic effects.

MT effects can be divided into two groups: single-dose and multiple-dose. Single-dose effects include MT's influence on psychological or physiological states that are transient in nature and that might reasonably be expected to be influenced by a single session of MT. Multiple-dose effects are restricted to MT's influence on variables that are considered to be more enduring, or that would be more likely influenced by a series of MT sessions performed over a period of time, and not only by a single dose (7).

There are hardly any studies reported on the effect of massage on abnormal reflexes in children with spastic cerebral palsy, especially in Iran. So, we conducted this study in order to observe whether adding Swedish massage to traditional occupational therapy had any effects on abnormal reflexes in children with spastic cerebral palsy.

Materials and Methods:

Following ethical approval from the University of Social Welfare and Rehabilitation Sciences (USWRS) Ethics Committee, a single blind clinical trial study was carried out. The study was conducted at the Saba Developmental Disorders Center affiliated to the USWR, Tehran, Iran, in 2005. Inclusion criteria were mild to moderate spastic cerebral palsy, age of 1-7 years, and cooperation. Exclusion criteria were severe mental retardation (IQ<40), convulsion, other disabilities such as blindness and deafness and genetic disabilities like Down syndrome. All parents received written information about the aims and plans of the research. Then, they were asked to sign a consent form voluntarily. Parents not willing to participate would receive services as usual.

Forty subjects were recruited during the study. The subjects were randomly assigned to intervention and control groups. We focused on forms of MT that are concordant with the traditional Swedish styles of massage. Swedish massage uses five main strokes to stimulate the circulation of blood through the body; petrissage (kneading), effleurage (stroking), friction, tapotement (tapping) and vibration. For the purposes of this study, MT is typified by the manual manipulation of soft tissue, performed by a person other than the recipient. The intervention group was given Swedish massage for thirty minutes, three times a week for three months by a trained occupational therapist. Intervention and control groups were received routine occupationaltherapy (Rood and Bobat techniques) for three months. The primary, spinal, brain stem, midbrain, cortical and automatic reflexes in both groups were assessed and scored before treatment and three months later in a blind fashion by another occupationaltherapist in 3 grades(0, 1, and 2). The score 0 is an abnormal, 1 is a borderline, and 2 is a normal reflex. The results of reflexes assessment with this scale were entered in check list that coded 3 grades from 0 to 2.

Data was collected by physical examination; direct observation and assessment of subjects based on check lists comprise demographic characteristics and reflexes. Parametric (t test, and paired t test) and non-parametric (Mann Whitney, and Wilcoxon) tests were used to analyze data. The data were analyzed using SPSS statistical software (11th version).

Results:

With seven losses in the intervention group and six losses in the control group, finally thirteen and fourteen subjects remained in intervention and control groups respectively. The average age in the intervention and control groups was 49.5(SD=15. 7), 42.1(SD=11.8) months respectively (P = 0.181). 84.6% of the intervention group and 35.7% of control group were male. There were statistically no significant differences in abnormal reflexes before intervention (Table 1).

Table 1: Abnormal reflexes before intervention in two groups

Reflexes		Intervention			Control			PV
		Mean	SD	Median	Mean	SD	Median	
Primary	Grasp _ Palmar	0.31	0.48	0.00	0.29	0.47	0.00	0.943
	Grasp _ Plantar	0.31	0.75	0.00	0.00	0.00	0.00	0.519
	Walking	1.08	0.49	1.00	1.14	0.77	1.00	0.756
Spinal	Crossed Extension	0.46	0.52	0.00	0.50	0.76	0.00	0.867
Brain stem	Tonic Labyrinthine Prone	1.08	0.49	1.00	0.79	0.89	0.50	0.302
	Negative Support Reaction	0.38	0.65	0.00	0.14	0.53	0.00	0.350
Midbrain	Body Righting	0.15	0.38	0.00	0.43	0.76	0.00	0.519
	Optical Right side tilt	0.31	0.48	0.00	0.29	0.47	0.00	0.943
	Amphibian	0.08	0.28	0.00	0.07	0.27	0.00	0.981
Cortical	Four Foot kneeling	0.31	0.63	0.00	0.21	0.43	0.00	0.905
	Sitting	0.31	0.63	0.00	0.36	0.74	0.00	1.000
	Kneel Standing	0.00	0.00	0.00	0.00	0.00	0.00	1.000
Automatic	Moro	0.00	0.00	0.00	0.00	0.00	0.00	1.000
	Parachute	0.00	0.00	0.00	0.00	0.00	0.00	1.000

Table 2 shows the abnormal reflexes after intervention in two groups. There were statistically no significant differences ($P > 0.05$).

Table 2: Abnormal reflexes after intervention in two groups

Reflexes		Intervention			Control			PV
		Mean	SD	Median	Mean	SD	Median	
Primary	Grasp _ Palmar	0.31	0.48	0.00	0.29	0.47	0.00	0.943
	Grasp _ Plantar	0.31	0.75	0.00	0.00	0.00	0.00	0.519
	Walking	1.08	0.49	1.00	1.14	0.77	1.00	0.756
Spinal	Crossed Extension	0.46	0.52	0.00	0.50	0.76	0.00	0.867
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	Negative Support Reaction	0.38	0.65	0.00	0.14	0.53	0.00	0.350
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	Amphibian	0.08	0.28	0.00	0.07	0.27	0.00	0.981
Cortical	4 Foot kneeling	0.31	0.63	0.00	0.21	0.43	0.00	0.905
	Sitting	0.31	0.63	0.00	0.36	0.74	0.00	1.000
	Kneel Standing	0.00	0.00	0.00	0.00	0.00	0.00	1.000
Automatic	Moro	0.00	0.00	0.00	0.00	0.00	0.00	1.000
	Parachute	0.00	0.00	0.00	0.00	0.00	0.00	1.000

Discussion:

Based on the results of this study, there were no significant differences in abnormal reflexes between the two groups.

In some studies massage combined with other techniques has been used to treat children with cerebral palsy. In one study (8) on 140 CP children in China a combined treatment package based on traditional Chinese medicine (including massage), western medicine and rehabilitation techniques and family therapy was adopted. The majority of CP patients improved greatly in motor and social adaptation capacities after treatment ($P<0.01$).This combined therapy method is an effective and practical treatment strategy for CP children in China.

One of the methods used in combination with rehabilitation is increasing touch between parents and children with disabilities through the massage. A study conducted in Conventory University (9), UK studied this method and they came to the conclusion that it may be of clinical benefit. In this study 42 parents of children completed the program. Therapists taught parents simple massage techniques during one-hour sessions held once a week for eight weeks. The children had a range of disabilities including cerebral palsy, asthma, sensory impairments and Down's syndrome. Parents reported improvements in children's muscle tone, joint mobility, sleep patterns, bowel movements and response to other forms of therapy, e.g. physiotherapy.

Two recent studies assessed the effect of MT on muscle tone (7, 10). The first study provided MT for children with cerebral palsy who received 30 min of MT 2 times per week for 12 weeks and who were assessed for changes in spasticity, motor functioning, facial expressions and limb activity. The second study provided 30 min of MT 2 times per week for 8 weeks for children with Down syndrome. Children's development, and fine and gross motor functioning, was evaluated. Both studies used the Arms, Legs and Trunk Muscle Tone Scale (ALT Muscle Tone Scale), which was designed during the pilot phase of the Down syndrome study. There is modest support that MT improves muscle tone, though it must be pointed out that the two studies diverge greatly in their individual results. The first study had virtually no effect, while second study had a huge effect. It must be noted that because these results come from a newly developed measure, the validity of the measure is not yet well-established. This may account for the divergent results across studies.

The present research indicates that MT is not a panacea for improvement of abnormal reflexes in children with CP but the encouraging results of other studies on children who have CP indicate that further studies are required for reaching a clear conclusion. As adult consumers continue to explore and utilize all the health care options for their children, children will increasingly be recipients of MT. With this in mind, it is essential that we continue to study the benefits of MT for children with CP.

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