



Case Study

CONVENTIONAL AYURVEDIC MANAGEMENT IN SPASTIC CEREBRAL PALSY: A CASE STUDY

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ABSTRACT

Cerebral palsy is a non-progressive but crippling neurological disorder in children. The prevalence rate of cerebral palsy has risen to well above two per thousand life birth. Spastic cerebral palsy is a disorder that causes muscle tightness. This condition prevents the normal development of motor function. It makes up over 70% of all cases of cerebral palsy. As per *Ayurvedic* classics, the spasticity is termed as *Jadatwam* and is one of the *Vatha* predominant *Lakshana*. The important causative factors are the improper diet and regimen followed during pregnancy, *Akalapravahanam* (untimely contractions during labour), head injury during delivery, *Garbha sosham* (Intrauterine Growth Retardation) etc. Due to these aetiology *Dhadhu*, *Kshaya* occurs followed by *Vata dosha prakopa* and produces symptoms like *Praseka*, *Sosha*, *Jadatwam* etc. In this study, based on the concept of *Vathavyadhi chikitsa*, *Snehana*, *Swedana*, *Sodhana* and *Brimhana* therapy with appropriate *Panchkarma* procedure was done. Physiotherapy was provided along with treatment, it helped to improve motor functions and activities of daily living of the patient. The spasticity was assessed through the range of motion of joints (ROM) by using the instrument Goniometer while the motor and mental developments were assessed by developmental assessment scales for Indian infants (DASII). Considering the ROM of joints of upper and lower limb, spasticity was reduced in the extension movement of the ankle, hip, knee, elbow, and shoulder. The motor and mental developmental quotient of the baby was improved after the treatment. This article is an attempt to highlight the efficacy of conventional *Ayurvedic* management in spastic cerebral palsy with Kerala specialties.

KEYWORDS: Cerebral palsy, *Jadatwam*, Goniometer, Spasticity, *Vathavyadhi Chikitsa*, *Panchakarma*.

INTRODUCTION

Cerebral Palsy is a non- progressive but crippling neurological disorder in children. The main cause of cerebral palsy is the result of brain damage or injury occurring before, during or within few years after birth. The exact cause of this condition is not yet known. Major causes are generally divided in to three: prenatal, natal and postnatal. Cerebral palsy can be divided in to four distinct types, spastic, ataxic, athetoid and mixed cerebral palsy. Spasticity can manifest as quadriplegia, diplegia, or hemiplegia depending up on the site and severity of the lesion^[1]. Spasticity can range from mild to severe depending on the progression of the disease and it is more pronounce in the lower extremities than the upper. Muscle stiffness is the chief complaint of the spastic cerebral palsy. As per the *Ayurvedic* classics, this condition is termed as *Jadatwam* which is not considered as *Roga*. It is one of the *Vatha* predominant *Lakshana*. The word meaning of *Jadatwam* is *Sthaimithyam*, *Apatavam*, *Sthambha*, and *Mourkhya* ^[8]. The *Dhadhus* of the affected children are in *Aparipakwavastha*, they are *Akleshasaha* and *Sukumara* ^[14, 15]. The disease is due to *Vatha prakopa*, therefore they require *Dhadhukshayaja vatha roga chikitsa* and it aims at *Brimhana chikitsa* by giving more importance to the brain.

Presenting complaints

A 2.5 year girl was admitted to our hospital with the complaints of delayed developmental milestones, Head holding was not fully attained, cannot sit, stand or walk without support, bowel and bladder control was not

attained and the child was also suffering from delayed speech and language. She was also suffering from muscle tightness on the upper and lower limbs.

History of presenting complaints

Case history revealed that she was the first child of non-consanguineous parents (NCP), born as a preterm baby through Lower segment caesarean section (LSCS). The mother was having hypertension from third trimester onwards and she had one episode of seizure at 32 weeks (eclampsia) of gestational period, hence undergone LSCS. The child was a low birth weight baby (1.3 kg), not cried soon after birth and required resuscitation. The child was shifted to neonatal intensive care unit (NICU) for 22 days immediately after birth and expressed milk was given for 45 days and the breast feeding was initiated only after 45 days of delivery. Later parents noticed delayed achievement of developmental milestones and she was taken to child development center at Trivandrum medical college Kerala, where the patient had under gone two months of physiotherapy and speech therapy. After this treatment, the spasticity reduced a little bit but no marked improvement was noticed. At the age of one and half years, she was admitted to the department of *Kaumarabhrithya* for her first course of ayurvedic treatment. After the first course of treatment, neck holding was slightly improved and was able to attain the prone position by herself and thereafter she had completed her 2nd course of treatment in our hospital.

Ante natal history

Age of mother at the time of conception was 27 years and the father was 32 years. The mother took regular antenatal checkups. Hypothyroidism was noticed during the first trimester and took medication thereafter. No history of mental stress was reported. She had a history of hypertension and one seizure episode (eclampsia) was present at 32 weeks of the gestational period.

Natal history

The patient was born as a preterm (35th week) baby through LSCS due to the premature rupture of the membrane. Her cry was delayed soon after birth and had a birth weight of 1.3 kg. Respiratory distress was noticed and shifted to NICU and stabilized her condition in NICU.

Post natal history

The child was shifted to NICU for 22 days and expressed milk was given for 45 days.

Developmental history

Gross Motor: Head holding - Partially attained (2 years),

Turning over- Attained (2Years),

Sit with support- 11/2 years,

Sit without support- not attained,

Crawling- Not attained,

Stand with support- 2 years,

Walk with support- Not attained

Fine motor: Grasping (palmar)- 21/2 years,

Social smile- 6month,

Language: Adds 2or 3 words to the vocabulary.

Vision: Affected

Hearing: Normal

Family history

Nothing relevant.

Immunization history

Adequate for the age.

Dietic history

Exclusive breast feeding was done till 6 months of age and weaning began with porridge, banana powder etc.

Personal history

Diet	:	Mixed
Appetite	:	Reduced
Bowel	:	Constipated
Bladder	:	Within normal limit (WNL)
Sleep	:	Sound

General examination

General Comment: Child was comfortable, malnourished and conscious. Lying posture was semi flexed elbow, legs partially flexed and internally rotated.

Gait	:	Scissoring
Vital signs	:	Pulse rate (PR) - 100/min
Heart rate (HR)		- 100/min
Respiratory rate (RR)		- 24/min

Anthropometry

Head circumference (HC) - 44.5,
Chest circumference (CC) - 48 cm,
Mid arm circumference - 16 cm,
Height - 79 cm, Weight. - 9.2 kg.

Central nervous system (CNS) examination**Higher functions**

Appearance- normal, Conscious level- good awareness, Emotional state- normal, Gait- scissoring, Intelligence- reduced, Speech- bisyllable, not clear.

Cranial nerves

Optic nerve- field of vision- left side affected. All other nerves are intact

Motor system

The bulk of muscles- wasting present in all upper and lower limb muscles

Tone- Hypertonic, spastic, power- reduced

Deep tendon reflexes are exaggerated

Lateral column Sensations - sensitive to touch, pain and temperature

Posterior column sensations - unable to do the test

Cerebellar signs - NAD

Signs of Meningeal Irritation - Nil

Ashta Sthana Pareeksha

The patient was having *Nadi vathapitha* predominant, *Prakritha mootra* and *Prakritha mala*, *Jihwa Kharasparsam*, *Ksheena swaram*, *Anushna sitha sparsam* *Madyamakrithi*, *Drik- Jalardram*.

Vyadhi Visleshanam (Analysis of Case)

Dosha - Vatha pithika vridhi (*Vyana vayu* and *Udana vayu* affected, *Sadhaka pitham* affected) with *kapha kshaya* (*Tharpaka kapha kshyam*) was present [11].

Dooshya - Saptha dhadhus are involved, with a predominance of *Rasa*, *Mamsa*, *Asthi*, *Majja*, *Snayu*, and *Kandara*.

Agni - Jadaragni and *Dhthwagni mandyam*.

Srothas - Rasavaha, *Raktavaha*, *Mamsavaha*, *Medovaha*, *Ashtivaha*, *Majjavaha*.

Rogamarga - Madyama roga marga

Diagnosis - Spastic cerebral palsy (*Sarvanga vatham*).^[4]

Samprapthi

Nidana is considered as *Akalaprasava* (premature birth), due to this premature birth, all *Dhadhus* are in *Aparipakwavastha*, *Praana*, *Udana*, *Vyana Vatha* are involved along with *Sadhaka pitha* and *Tharpaka kapha* so the condition gradually affected the brain development and the aggravated *Vatha* and *Pitha* may cause constriction of vessels and ligaments of upper and lower limbs [7]. It later causes stiffness of both upper and lower limbs, head, back and hips associated with delayed developmental milestones, pain, and loss of speech.

Investigations

Routine studies of blood, urine, renal functions, CPK within normal limits.

Management**Internal treatments**

Samana medicines selected were all *Vathasamana* *Brumhana* type.

Rajnyadi choorna - 5gm BD before food

Aswagandharishta - 10 ml BD after food intake.

Sahacharadi thailam 21 avarthy - six drops with milk at the morning after food.

Kalyanavaleha choorna - 5gms mix with honey in morning before food.

Guloochi satwam – two pinches with honey BD after food intake.

Shadangam thoya pakam used as drinking water daily.

Kalyanaka Ghritham – 5 ml melted ghee twice daily after food.

External treatments

Udwarthana with *Kolakulathadi choornam* – 5 days

Abhyngam (massage) on the whole body with *Mahanarayana thailam* along with *Kheera dhoomam (Bala ksheeram)* – 7 days

Sarvanga dhara with *Ashtavargam Ksheera Kashayam* – 7 days

Siropichu with *Dhanwantharam thailam* – 28 days.

Upanaha swedam on all spastic major joints with a thick paste of *Vathahara* drugs – 28 days.

Kayasekam with *Rasathailam* -7 days,

Mridu virechanam with *Eranda sukumaram* -10ml at bed time.

Shashtika lepam with *Aja mamsam* – 7 days.

Mathra vashy with *Dhanwantharam mezhukupakam* – 30 ml for 7 days.

Started Physiotherapy from the first day of treatment and continued throughout the treatment.

Observation

The spasticity was assessed through the range of motion of joints by using the instrument Goniometer [9]. The improvement was noticed in between after the first and second course of treatment. Improvements in motor and mental developments were assessed by using developmental assessment scales for Indian infants (DASII) [2].

Table1: Improvement in the range of motion of major joints by assessing through Goniometer

Joint	Movement	1 1/2year		2 1/2year	
		Right side	Left side	Right side	Left side
Hip	Abduction	10	10	20	20
	Adduction	30	30	25	25
	Internal rotation	15	20	35	35
	External rotation	15	20	35	35
	Flexion	120	120	120	120
	Extension	20	20	20	20
Knee	Flexion	150	150	150	150
Ankle	Dorsi flexion	10	5	15	10
	Plantar flexion	35	35	35	35
Shoulder	Flexion	180	120	180	150
	Extension	40	40	60	50
	Abduction	180	60	180	110
Elbow	Flexion	150	150	150	150
	Extension	0	40	0	20

Table2: Improvement in motor and mental development assessed by using Developmental Assessment scales for Indian infants (DASII)

DASII	11/2year	2 ½ year
Developmental motor quotient	66.6	110
Developmental mental quotient	258	416

RESULT

Considering the range of motion of major joints (ROM) of upper and lower limbs (ankle, hip, knee, elbow, and shoulder) was improved after the second course of treatment than the first course of treatment. The ROM hip joint (adduction, abduction, internal rotation, external rotation) was improved after the second course of treatment. Considering the ROM of ankle joints, spasticity was reduced in dorsiflexion, but no improvement was noticed in plantar flexion. ROM of all movements of shoulder joints and extension of left elbow joint was increased after the second treatment. Considering the plantar flexion of ankle joints and flexion of hip, knee and elbow joints, the spasticity was not reduced. DASII (Developmental assessment scale for Indian infants) is a widely used developmental tool. Based on the observations the motor and mental developmental quotient of the baby was improved after the second course of treatment.

DISCUSSION

Cerebral palsy presenting with spastic diplegia demands a variety of interventions including *Abhyanthara*

and *Bahya Snehana, Swedana, Shodhana, Samana, and Brimhana*. Maintain the stability of *Jadaragni*, internally gave *Rajanyadichoorna, Aswagandharishta* and *Shadanga panam (Thoyapakam)*, it's also continued throughout the treatment. *Aswagandharishta* also cures the *Karsya* and *Agnimandya* [5]. After gradually attaining the *Agnibala*, gave the internal administration of *Snehana* with *Sahachradi 101 Avarty* and *Kalyanaka Ghritha* [9], it is very useful for improving the muscle strength. This *Vicharana Snehapana* is administered in smaller dosage for a longer period and it relieves the spasticity and boosts the strength of the body. *Guloochi satwam* is *Vatha pitha Samana* and helps to improve the general health [3]. *Kalyanavaleha choornam* contains *Vacha, Yashti, Madhukam*, etc. and it can improve the speech and intelligence. [7]

Considering the *Bahya karma*, the *Udwarthana* is the *rookshana poorvakarma* used with powders of medicines it brings the *Rukshana* at the level of superficial *Dhadhus* especially at the level of *Twak, Raktha, Mamsa* and *Meda* [10]. The child is undernourished so need mild *Rookshana* for 5 days. *Snehana* followed by *Swedana* is one

of the prerequisites for any of *Sodhana therapy*. The *Bahya Snehana Swedana* procedures are *Abhyanga* with *Ksheeradhoomam*, *Kayasekam* etc. The *Sarvanga Kshayadhara*, are the different type of *Sweda* procedures. This *Snigdha Sweda* procedure relieves the rigidity of joints, heaviness, and brings proper *Snehasweda* to the whole body. *Siropichu* is a topical application of oil on the head especially on the fontanel region for a particular time interval. It is one of the *Bahyasnehana* procedures [12]. This also helps to improve the delayed developmental milestones, vision and reduces the spasticity of joints. *Upanaha sweda* is one of the *Ashtasweda* in which medicines are applied in poultice form on the major spastic joints of the upper and lower limbs [16,18]. It is covered with *Eranda* leaves and removed after 6 hours. After attaining the proper *Snigdasweda* done *Mridu virechana* with *Sukumaraeranadam*. After getting proper *Sodhana* done *Shashtika lepam* and *Mathravasthi* which give more nourishment to the deeper *Dhadhus*[6]. Physiotherapy is done in throughout the treatment to improve the range of motion of joints and flexibility of muscles. Here the physiotherapy is mainly concentrated to improve the joint integrity, muscle flexibility, attaining the delayed developmental milestones as early as possible. The other benefits are increased circulation to all four limbs and temporary relief of pain[13]. Consider the spasticity the joint mobility and flexibility was attained through the Range of Motion exercises (ROM), passive stretching and peripheral joint mobilization [8].

CONCLUSION

Cerebral palsy is neither a disease nor a progressive disorder. Modern medical science only provides either costly or complicated procedures such as Baclofen pump implantation, Botulinum toxin injection, Selective posterior Rhizotomy etc which have their own limitations. The cost of these treatments is beyond the limit of the lower and middle class population. Cerebral palsy can be incorporated into a clinical variety of *Sarvangavatha* as it shows the major symptom the *Jadatwa* or spasticity of muscles which prevent the child from normal motor development. *Garbhinicharya* which is explained in our classics has got great importance in preventing the diseases. Following the concept of *Vathavyadhichikitsa* like *Sneha*, *Sweda*, *Brimhana* therapies with appropriate *Panchakarma* procedures are found to be effective in a better extent. Here the Proper Ayurvedic management along with speech therapy, physiotherapy, and other rehabilitation measures spasticity and help the patient to become self-sufficient. Spastic cerebral palsy can be managed effectively through Ayurveda with a structured protocol.

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