

## EFFICACY OF AYURVEDIC MANAGEMENT IN SPASTIC CEREBRAL PALSY – A CASE STUDY

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### ABSTRACT

Cerebral palsy is caused by abnormal development or damage to the parts of the brain that control movement, balance, and posture. Most often, the problems occur during pregnancy, but they may also occur during childbirth or shortly after birth. In the *Ayurvedic* point of view, this being a *Vata* predominant condition, could be included under the *Sarvangavata* perspective. *Vatavyadhi* treatment like *Snehena*, *Swedana*, *Nasaya*, *Shirodhara* and *Brimhana* could bring about relief to the condition. As the objective of any treatment is to improve the limitations brought on by a disease. **Aims and objectives:** To assess the efficacy of *Pindsweda* and *Shirodhara* and *Shaman Aushadhi* in Spastic cerebral palsy. **Setting:** OPD and IPD of Kaumarbhritya department of M.A. Podar Hospital Worli, Mumbai Maharashtra. **Material and methods:** *Shirodhara* and *Pindsweda* were done for each 21 days for up to 90 days. Assessment was done before and after treatment. **Result:** improvement in growth and development, muscle tone, muscle strength, and also in quality of Life. **Conclusion:** It can be concluded that *Pindsweda*, *Shirodhara* and *Shaman Aushadhi* was effective in spastic cerebral palsy.

**KEYWORDS:** *Pindsweda*, *Shirodhara*, *Shaman Aushadhi*, Cerebral Palsy.

### INTRODUCTION

Cerebral palsy is caused by abnormal development or damage to the parts of the brain that control movement, balance, and posture. Most often, the problems occur during pregnancy, but they may also occur during childbirth or shortly after birth. Often, the cause is unknown.<sup>1</sup> Risk factors include preterm birth being a twin, certain infections during pregnancy, such as toxoplasmosis or rubella, exposure to methylmercury during pregnancy, a difficult delivery, and head trauma during the first few years of life, among others. About 2% of cases are believed to be due to an inherited genetic cause.<sup>2</sup> A number sub-types are classified, based on the specific problems present. For example, those with stiff muscles have spastic cerebral palsy those with poor coordination in locomotion have ataxic cerebral palsy, and those with writhing movements have dyskinetic cerebral palsy. Diagnosis is based on the child's development over time. Blood tests and medical imaging may be used to rule out other possible causes. The average incidence of cerebral palsy is estimated to range between 2.1 and 3.0 per 1000 live births; these values change among selected groups of patients<sup>3</sup>, depending on various risk factors. In the ayurvedic point of view, this being a *Vata* predominant condition, could

be included under the *Sarvangavata* perspective. *Sarvangavata* is the condition of *Vata* predominance that affects all over the body and associated with stiffness and difficulty in joint movements<sup>4</sup> including contractures. *Vatavyadhi* treatment like *Snehena*, *Swedana*, *Nasaya*, *Shirodhara* and *Brimhana*<sup>5</sup> could bring about relief to the condition as the objective of any treatment is to improve the limitations brought on by a disease.

### Case Discussion

#### Basic information of patient

Age / sex	18-month, male
Cast	Yadav
Weight	10.3 kg
Length	82 cm
OPD no.	52564
Socioeconomic status	Middle

**Chief complaint** – Patient came with complaining of continuous excessive cry, fisting of hands during cry, unable to respond any sound, hypertonia of both limbs, complete head lag, unable to speech. **Past illness** - patient suffering from septicaemia with meningitis, convulsions, with MODS with typhus before one and

half month. Patient was admitted in KEM hospital Mumbai Maharashtra.

### Treatment History

Medicine	Duration
Inj. ceftriaxone	7days
Inj Vancomycin	7days
Acyclovir	14days
Syrup. phenytoin	Till continue
Syrup. Baclofen	Till continue

Investigation: Dated on 03/10/2022

Serum Bilirubin	Total-1.49mg/dl Direct -0.08mg/dl
SGOT	56.7
Total proteins	7.5
Total albumin	3.26
BUN	6.02
Serum creatinine	0.57
Serum sodium	140
Serum potassium	3.7
Serum calcium	10.4
CSF	Albumin -153 Glucose – 58 Leucocyte -35
COVID -19	Negative
MRI	Features of periventricular white matter T2/FLAIR hyper intensive, T1 hyperintense basal ganglia and generalised cerebral atrophy are likely represent postencephalitic sequelae.

**Family history** -Nil, No H/O consanguinity., Contact TB /HIV -No, Drug allergy and major illness any – No.

**Birth History** – Full term normal vaginal delivery with birth weight 2.5 kg., No H/o of NICU stay, No H/o birth asphyxia., Immunisation – completed till according to age as per schedule.

### Central Nervous System Examination

Higher mental functions	Motor system
Level of consciousness -Conscious	Tone of muscle-Hypertonic
Memory -Not able to examine	Muscle power - Decreased
Speech -Diminished	Symmetry - Normal
Gait - Not able to walk	Reflexes - Diminished
Shape of head -Normal	

**Developmental milestones** – Before illness, all developmental milestones achieved according to age, but now all milestones diminished.

**Diagnosis:** Postencephalitic cerebral palsy. It is the *Mashtishkavarana Shotha* (Meningitis) that have led to the condition here. The *Aganthu Nidana* -Klebsiella infection caused a *Mashtishkavarana Shotha* which lead to *Sheershamburoga*. This caused a *Srotovaigunya* further causing a *Pratiloma gati* of *Vayu*. This *Vata Vaigunya* is of *Prana Pradhan Pancha Vayu* with *Sthanasamsraya* at *Shiras*. The vitiated *Doshas* Affected normal brain functioning, caused stiffness of Joints and ligaments of upper and lower limbs causing Difficulty in

**Examination of patient:** General examination – vitals are normal, cardiovascular and Respiratory system were normal, per Abdomen examination revealed tightness of abdomen.

movements and abnormal presentation of the limbs. Thus, resulting in the manifestation of *Sarvangavata*. The condition caused the delay in Achieving the developmental milestones.

### MATERIALS AND METHODS

Cerebral palsy is *Vata Pradhan Vyadhi* hence, treatment planned according to *vata vyadhi Samanya chikitsa Siddhant, Agnideepan and Anuloma*, then *Bahya* and *Abhyantara Snehana* and *Brimhana* therapies.

**Total duration -90 days.**

Started with *Deepan Pachan* for 7days, followed by *Sarvanga Abhyanga* and *Pindsweda* for 21days along with *Pratimarsha Nasaya* 7 days, and 8days *Dashmuladi*

*Yog Basti*. Total three courses of 21days schedule with 10 days interval between.

#### Procedure done externally with Duration

Sr.no.	Procedure	Duration
1	<i>Abhyanga</i> with <i>Bala Tail</i> for 10 min.	21 days
2	<i>Shirodhara</i> with <i>Til Tail</i> -500ml, <i>Brahmi Tail</i> -200ml <i>Jyotishmati Tail</i> -200ml	21 days
3	<i>Shalishastik Pindsweda</i> for 20 min. <i>Bala</i> , <i>Ashwagandha</i> , <i>Dashmool</i> , <i>Rice</i> , <i>Milk</i>	21days
4	<i>Dashmuladi Yog Basti</i> - <i>Til Tail</i> for <i>Anuvasan</i> 20 ml <i>Dashmul kwath</i> for <i>Niruh</i> -60 ml	8 days.
5	<i>Pratimarsha Nasaya</i> - <i>Panchindrivardhan Tail</i> 2 drops	7 days

#### Internal medicines

Sr.no.	Medicine	Dose	Anupan
1.	<i>Hingwasthk Churn</i>	1 gm bd	<i>Koshna Jal</i>
2	<i>Trikatu Churn</i>	500mg bd	<i>Madhu</i>
3.	<i>Sarasvatarishta</i>	5ml bd	<i>Koshna Jal</i>
4	<i>Vagshudhikar Churna</i>	500mg bd	
5	<i>Bramhi Vati</i>	125mg od	<i>Madhu</i>
6	<i>Savardhan Ghrit</i>	5 ml bd	<i>Koshna Jal</i>

#### OBSERVATIONS AND RESULTS

Assessment of spasticity was done using the modified Ashworth scale. This is the most widely accepted clinical scale to measure the increase of muscle tone or spasticity.<sup>[6]</sup> As per this scale, spasticity is graded from 0 to 4, grade 0 being the normotonic scale and grade 4 being the most spastic.<sup>[7]</sup> On analysis before and after the treatment, the spasticity grades showed improvement. Muscle strength was evaluated using the Medical Research council manual muscle testing scale which is the most commonly accepted method of evaluating muscle strength.<sup>[8]</sup> In this method, the key muscles from the upper and lower extremities are tested against the examiner's resistance and the patient's strength is graded on a scale of 0 to 5, with grade 0 indicating no muscle strength and grade 5 indicating full power.<sup>[9]</sup> Hereafter

the treatment, the muscle power showed improvement in both limbs. Deep tendon reflexes are important parameters of neurological examination used to assess the degree of facilitation of spinal cord centre's.<sup>[10]</sup> In a normal person, when a muscle tendon is tapped briskly, the muscle immediately contracts due to a two-neuron reflex arc, involving the spinal or brain stem segment that innervates the muscle.<sup>[10]</sup> It is graded from 0 to 4+. Grade 0 indicates hyporeflexia which is an absent or diminished response. Grade 2+ indicates a normal reflex in all except the knee where grade 3+ is normal. Hyperreflexia indicated by grade 3+ (except knee) and grade 4+ refers to hyperactive or clonic reflexes.<sup>[11]</sup> The deep tendon reflexes were exaggerated in both limbs, before treatment. After treatment both limbs showed normal reflexes.

#### Grading of spasticity using modified Ashworth scale.

Body part		Before treatment	After treatment
Upper limb	Right	4	2
	Left	1	0
Lower limb	Right	3	2
	Left	1+	0

#### Grading of muscle strength using modified Research council manual muscle testing scale.

Body part		Before treatment	After treatment
Upper limb	Right	2	4
	Left	2	4
Lower limb	Right	2	4
	Left	2	4

#### Deep tendon reflex Assessment

Reflex	Before treatment		After treatment	
	Right	Left	Right	Left
Biceps	+2	+2	+3	+3
Triceps	+2	+2	+3	+3
Knee jerk	+2	+2	+3	+3
Ankle jerk	+2	+2	+3	+3

Plantar	+1	+1	exaggerated	exaggerated
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## OBSERVATION

Sr.no.	Parameter	Before treatment	After treatment
1	Weight	10.3 kg	13.85 kg
2	Length	82 cm	92 cm
3	Appetite	loss	Good
4	sleep	Disturbances +++	Absent
5	Excessive cry	+++	Absent
6	salivation	Present	Absent
7	fisting	Present	Absent
8	Neck holding	Absent	Present
9	Sitting with support	Absent	Present
10	cooing	Absent	Present
11	Respond to verbal commands	Absent	Present

## DISCUSSION

The condition of spastic cerebral palsy requires both internal and external interventions. Spastic cerebral palsy mainly the *Vat Pradhan Tridosha*, main *Dusya Asthi*, *Snayu Kandra*, *Madhyama Marga* and *Sthana Sarvang Sharir*, *Avar Rogi Bala*, and *Vishamagni*. Hence, the treatment principal beginning with *Agnideepan* and *Anulomana*. Then *Bahya* and *Abhyantara Snehana* and *Brimhana* therapies. In this spastic cerebral palsy patient *Vishmagni* is their so first aim to correct *Agni*, *Hingvasthak Churna* and *Trikatu Churna* used for 7 days to regularise the *Agni*. The medicated oil used in *Abhyanga* helps in preventing muscular atrophy and improving tone. *Bala Tail* is applied for *Abhyanga*. *Bala* is *Vatshamak* and *Balaya* thus provides nutrition to the muscular tissue and thereby preventing atrophy of muscle, which are in a state of excess tension. stretching of tight fascia and restoration of mobility of soft tissues also occurs. Spasticity is characterised by increased resistance by passive stretch, velocity dependant and asymmetric about joints.<sup>[12]</sup> In *Ayurveda* this may happen due to *Avarana* of *Vata*, where in due to *Avarana*, *Vayu* cannot perform its normal function that is normal movements of joints. So, *Abhyanga* along with *Shatikshali* might work directly on *Vata* to bring it back to normalcy. *Shastikshali* rice has the *Snigdha*, *Laghu*, etc *Guna* and *Brimhana* like karmas so *Shalishastik Pindsweda* nourishes the full body and it is strengthening fomentation which can be very useful in condition like malnutrition of limbs *Shali Shastik Pindsweda* enhances physical consistency and increases the muscular strength.<sup>[12]</sup> In *Shirodhara* oil form is used which has good dense concentration with longer duration of contact. Also, the skin over scalp is thin as compared to other part of body and absorption is faster and more from the scalp. prolonged pressure is applied to a nerve, impulse conduction is interrupted, and part of the body relaxes in *Shirodhara*'s procedure. Due to the trickling of medicated liquid over forehead, prolonged and continuous pressure causes tranquillity of mind and reduces stress by modulating nerve stimulation.<sup>[13]</sup> *Basti* has capacity to pacify regulate the force of *Vata Dosha*. Medicine given in the form of *Basti* spreads to the whole body just as water poured at the root reached all the parts

of the tree through micro and macro channels or it can be said that *Veerya* of the ingredients used in the *Basti* gets absorbed and then through general circulation reaches at the site of lesion and relieves the dosha. *Panchendriyavardhan Tail Nasya* (nasal drops) given which directly effect on the brain. As the name of oil suggested that it acts over all five *Indriya*'s and all these *Indriyas* having connection with the brain. *Nasa* is the portal route for administration of oil, this stimulates the olfactory nerve which is connected with the higher centres of brain which are damaged in cerebral palsy. The lipid content of oil absorbed through blood brain barrier and reached to damaged site and stimulates the nerves, increased blood supply that ultimately leads to nervous sensation in different parts of the body. *Sanvardhan Ghrita* might have worked on central nervous system (CNS) by crossing BBB (Blood Brain Barrier-*Majja Dhara Kala*) because of its lipophilic property, thus stimulating higher mental functions (*Medha*, *Smriti* and *Buddhi*). This *Ayurvedic panchakarma* procedure, *Medhya Dravya*'s shows improvement in muscle power, muscle strength, improvement in milestones, improvement in speech, and also shows improvement in growth parameters, it can be giving better quality of life.

## CONCLUSION

The management here has been done exclusively using *Ayurveda* medicines, appropriate *Panchakarma* procedures and supportive therapies. Spasticity of all limbs reduced, the improvement in muscle strength and deep tendon reflexes also indicates a positive outcome of the management. Although cerebral palsy is incurable, but *Ayurveda* can give a better quality of life with children having cerebral palsy. No adverse reaction observed during this treatment schedule of *Ayurvedic* management of spastic cerebral palsy. Hence, it is concluded that *Ayurvedic* management is effective and safe in spastic cerebral palsy.

## REFERENCES

1. Cerebral palsy: Hope Through Research. National institute of neurological stroke. July. Archived from the original on, 2013; 21.

2. Cerebral palsy, spastic Quadriplegic 1; CPSQ1” online Mendelian inheritance in Man. 28 June 2016. Retrieved, 26 Jan 2018.
3. Oskoui Moutinho Dykeman J, Jette N, pringsheim T “An update on the prevalence of cerebral palsy: a systematic review and meta-analysis, june 2013.
4. Prof. K.R. Sri kantha Murthy. Vagbhata’s Ashtanga Hridaya. 10<sup>th</sup> edition. Varanasi. Chowkhamba Krishnadas Academy. Nidanasthana, chapter 15, sloka, 2014; 15.
5. Prof. K.R. Sri kantha Murthy. Vagbhata’s Ashtanga Hridaya. 10<sup>th</sup> edition. Varanasi. Chowkhamba Krishnadas Academy. Sutrasthana, 2014; 13(1).
6. Meseguer-Henarejos AB, Sánchez-Meca J, López-Pina JA, Carles-Hernández R. Inter- and intra-rater Reliability of the Modified Ashworth Scale: A Systematic review and meta-analysis. *Eur J Phys Rehabil Med.* 2018 Aug; 54(4): 576-590. Doi: 10.23736/S1973-9087.17.04796-7. Pub 2017 Sep 13. PMID: 28901119.
7. Harb A, Kirshner S. Modified Ashworth Scale. [Updated 2022 May 8]. In: Stat Pearls [Internet]. Treasure Island (FL): Stat Pearls Publishing; 2022 Jan-. Available from <https://www.ncbi.nlm.nih.gov/books/NBK554572/>.
8. Naqvi U, Sherman Al. Muscle Strength Grading. [Updated 2022 Aug 29]. In: Stat Pearls [Internet]. Treasure Island (FL): Stat Pearls Publishing; 2022 Jan. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK436008/>.
9. A Santhosh Kumar. Paediatric Clinical Examination. 5th edition. New Delhi. Paras Medical Publisher, 2019; 212.
10. Arthur C. Guyton, John Hall. Textbook of Medical Physiology 11th edition. Philadelphia, Pennsylvania. Elsevier Saunders, 2006; 678.
11. Walker HK. Deep Tendon Reflexes. In: Walker HK, Hall WD, Hurst JW, editors. Clinical Methods: The History, Physical, and Laboratory Examinations. 3rd edition. Boston: Butterworths, 1990; 72. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK396>.
12. Choudhary KR, Kumar A A clinical study to evaluate role of ayurvedic management for improving activities of daily living in cerebral palsy affected children .int j Ayur pharma research, 2014; 2(4): 68-82.
13. A conceptual study on shirodhara procedure, international journal ayurveda pharm, 2019; 10(3).
14. Nelson. Textbook of Paediatrics. Richard E Behsnanh, Robert M Klieg man, Hal B Jenson, Editors. 19<sup>th</sup> ed. Philadelphia, PA: Elsevier Publication. Psychological treatment in Children, 2011; 108.
15. Atlas Of Paediatric Physical Diagnosis Seventh Edition Vol-1, By Basil J. Zitelli Sara C. McIntire Andrew J. Nowalk.