



## Case Study

### PANCHKARMA MANAGEMENT OF SPASTIC DIPLEGIC CEREBRAL PALSY IN CHILDREN: A SINGLE CASE STUDY

Aanchal Meena<sup>1\*</sup>, Mahesh Kumar Sharma<sup>2</sup>, Gyan Prakash Sharma<sup>3</sup>, Preeti Swami<sup>3</sup>

<sup>1</sup>P.G. Scholar, <sup>2</sup>Associate Professor & HOD, <sup>3</sup>Assistant Professor, PG Department of Panchakarma, Dr. S.R. Rajasthan Ayurveda University, Jodhpur, Rajasthan, India.

#### ABSTRACT

Cerebral Palsy is a neurological disorder that affects a child's movement, motor skill and muscle tone. The present case is of a patient having Spastic diplegic Cerebral Palsy which was successfully managed with *Panchakarma* treatment. A four year old boy complaint of global developmental delay with predominantly gross developmental delay, can't feed himself, unable to sit without support, does not roll over, has age appropriate non-verbal communication was treated with *Panchakarma* procedures. The Ayurvedic diagnosis of the case was *Shiro-Marmabhighatajysankochajanyavatavyadhi*. We have formulated an *Panchakarma* therapy protocol to improve the condition of spastic diplegic CP patients. Result was observed in the form of GMFCS Level and significant changes in investigations.

**KEYWORDS:** Cerebral palsy, *Panchakarma*, *Vatavyadhi*.

#### INTRODUCTION

Cerebral palsy (CP) is a common cause of childhood disability. It is defined as "a group of non progressive but often changing motor impairment syndromes secondary to lesions or anomalies of brain arising in early stages of its development". It is a static encephalopathy.<sup>[1]</sup> The prevalence of CP varies from 1.5 to 2.5 per 1000 live births. Spastic cerebral palsy is the most common form and accounts for 70 to 75 percent of cases.<sup>[2]</sup> In Spastic diplegic cerebral palsy the lower limbs are more severely affected with extension and adduction posturing, brisk tendon jerks and tendency to contractures, whereas upper torso growths normally. It is characteristically seen in preterm babies with (Periventricular leukomalacia).<sup>[3]</sup> According to Ayurveda Contributory factors like inappropriate *Ritu* (ovulation cycle), *Ksetra* (uterus), *Bija* (sperm and ovum) *Ambu*<sup>[4]</sup> (amniotic fluid and foetal nutrition), presence of *Garbhopaghatakarbhava*<sup>[5]</sup> (substances which can cause defects or death of fetus), incompatible *Garbhavridhikarabhava*<sup>[6]</sup> (normal requisite for growth and development of fetus) and improper *Garbhiniparicharya*<sup>[7]</sup> (antenatal regimen) may have undesirable effects on fetus hampering its normal growth and development consequently leading to many disease, deformities and even death. Spastic CP can be considered as '*Shiro-Marmabhighatajysankocha*'. *Vatavyadhi* is the most similar condition to CP. According to some authors, Spastic diplegic CP in Ayurveda can be

considered as '*Sankuchitpadagatpakchaaghatm*'<sup>[8]</sup>. We have formulated a *Panchakarma* therapy protocol to improve the condition of CP patients.

#### Patient information

A four year old boy with complaint of global developmental delay with predominantly gross developmental delay, sits supported, can't feed himself, does not roll over, difficulty on head and neck holding, has age appropriate non-verbal communication visited in O.P.D. of Department of Panchakarma, Rajasthan Ayurved University, Jodhpur. He had history of perinatal asphyxia with HIE (hypoxic ischemic encephalopathy), had seizures on first day of life. Chest and vital sign were normal. The height of patient was 100.2 centimeters (cm) and the weight of patient was 14.5 kilograms (kg). His appetite was normal. Patient had normal micturation. The patient had undergone for consultations in All India Institute of Medical Sciences (AIIMS), jodhpur 16 month before, where he was diagnosed as a case of spastic diplegic cerebral palsy and oral medications, intensive physiotherapy, occupational, speech and language therapy <sup>[9]</sup> was recommended. He was first alive issue to consanguineous healthy parents.

#### Clinical findings

Patient had *Vata-kaphaprakriti* with *Avarasara* (lowermost purest body tissue), *Avarasamhanana* (lowermost body constitution),

*Avarasatmya* (lowermost homologation), *Avarasatva* (lowermost mental strength), *Madhyamvyayamshakti* (middlemost capability to carry on physical activities), *Madhyamaharshakti* and *Jaranshakti* (middlemost good intake and digestive power). The patient demonstrated Scissor gait. On neurologic examination he was alert, interactive, tracks, fixes and follows well, smile on social contact. On cranial nerve examination pupil were bilaterally 5mm with brisk DLR. On motor examination had spasticity of all 4 extremities (LE> UE), DTR were 2+ in both biceps, triceps, knee, and 3-4 beats clonus in both ankle with bilaterally extensors planters. CT brain performed on 10/4/2017 reported as showing periventricular leukomalacia. MRI brain performed on 10/4/2017 reported as showing finding with consistent periventricular leukomalacia.

### Diagnostic focus and assessment

The patient was a known case of spastic diplegic cerebral palsy. It was confirmed by MRI scan of brain that shows infarct gliotic area in bilateral lenticular nuclei, thalami and perirolandic region-likely sequelae to hypoxic ischemic event. CT Brain was showing periventricular leukomalacia. History of perinatal asphyxia with HIE, had seizure on first day of life and had spasticity of all 4 extremities (LE> UE), DTR were 2+ in both biceps, triceps, knee, and 3-4 beats clonus in both ankle with bilaterally extensors planters. On motor examination in the case were suggestive of spastic diplegic cerebral palsy. *Shiro - Marmabhighatajsankocha* was considered as Ayurvedic diagnosis which is included in *Vatavyadhi Pangu* (diplegia), *Vakasanga* (speech disorder), contracture (*Sankocha*), *Khanjata* (gait abnormality), *Aakshepaka*<sup>[10]</sup> (muscle spasm) are the symptoms of *Shiro-Marmabhighatajvata*. Metabolic disease (Mitochondrial pathology), Syndrome with vascular defect (Moya Moya disease), Neural tube defect, Muscular dystrophy were the differential diagnosis<sup>[11]</sup> for the case.

### Therapeutic intervention

#### Year intervention

1. 29/1/2015 Patient was admitted in Umaid hospital and diagnosed as having perinatal asphyxia with HIE, had seizures on first day of life, treated with IV fluid, antibiotics, oxygenation, PHB, oxygenation for around 2days, discharged on 7<sup>th</sup> day of life.
2. 20/4/2017 Patient was consulted in AIIMS Jodhpur. Diagnosis of spastic diplegic cerebral palsy was confirmed in AIIMS Jodhpur. Patient was advised to go for MRI brain and CT brain.
3. 26/9/2018 Patient visited OPD of RAU hospital for above mention problems and was advised for administration of *Panchakarma* procedures.

4. 26/9/2018 to 2/10/2018 *Patra pindapotali swedana* was done with *Balataila* for 8days along with *Matra Basti* with *Mahanarayantaila* dose of 10ml for 8days. Selected Ayurvedic oral drugs – *Ashwagandha churna* 1gm, *Kukkutandatvak Bhasma* 125mg and *Smriti sagarras* 125mg twice a day were also prescribed along with these *Panchakarma* procedures.
5. 3/10/2018 to 10/10/2018 *Shirobasti* was done with *Mahanarayantaila* for 8days along with *Matra Basti* for 8 days. *Vachachurna* 1gm, *Kumar Kalyanras* 20mg and *Brahmi vatiswarnyukta* 20mg twice a day were also prescribed along with these *Panchakarma* procedures.
6. 11/10/2018 to 18/10/2018 *Shashtikashalipinda swedana* was done with *Shashtikashali* rice, milk, *Bala moola+ Dash moola* decoction for 8days along with *Matra Basti* for 8days.
7. 1/11/2018 to 8/11/2018 *Shashtikashali panda swedana* was done for 8days. There was clinical improvement in patient condition after one month of therapy.
8. 9/11/2018 to 24/11/2018 *Shirobasti* was done for 16days along with *Pratimarshanasya* with *Jyotishmati taila* for 16 days.
9. 1/12/2018 to 8/12/2018 *Patrapindapotali swedana* was done for 8days along with *Pratimarshanasya* for 8 days.
10. 9/12/2018 SGOT, SGPT, Serum creatinine, Ammonia (plasma) Blood urea, S. lactic acid, Thyroid profile (T3+T4+TSH), CBC were investigated. These were within limit. Advice X-ray chest vertebral column.
11. 17/12/2018 to 24/12/2018 *Shashtikashali panda swedana* was done for 8days along with *Pratimarshanasya* for 8 days.

### Follow up and outcomes

Patient condition was assessed on different intervals on parameters like – child global health and GMFCS level. Good relief in head holding and improvement quality of life was noted in the patient. Gross motor function classification system<sup>[12]</sup> – Expanded and Revised (GMFCS – E & R) before 2<sup>nd</sup> birthday Level V-physical impairment limit voluntary control of movement. He was unable to maintain antigravity head and trunk postures in prone and sitting. He requires adult assistance to roll. Between 2<sup>nd</sup> and 4<sup>th</sup> birthday GMFCS Level IV – He floor sit when placed, but are unable to maintain alignment and balance without use of their hand for support. He frequently require adaptive equipment for sitting and standing. Self-mobility for short distances (within a room) is achieved through rolling, creeping on stomach, or crawling on hands and knees without reciprocal leg movement. After *Panchakarma* therapy

GMFCS Level III – He maintain floor sitting by “W sitting ” (sitting between flexed and internally rotated hips and knees) and some time he require adult assistance to sitting. He creeps on stomach and crawls on hands and knees (often without reciprocal leg movements) as their primary methods of self-mobility. He pulled to stand on a stable surface and cruise short distances. He walked short distance indoors using a hand - held mobility device (walker) and adult assistance for steering and turning. There was increase of 2.5cm in height and 2.7kg in weight of the patient during the course of treatment. He did not suffer from any concurrent diseases during the course of period.

## DISCUSSION

CP is lesions or anomalies of brain arising in early stages of its development with global developmental delay with predominantly gross motor developmental delay. Several oral drugs are in use cure these symptoms as these drugs are convenient and conventional. Hence, treatment based on Ayurvedic principles may be suitable for the disease. Similar condition are mentioned in description of *Vatavyadhi* disease. The line of management of *Vatavyadhi* was adopted to treat this case. *Chikitsa* of *Vatavyadhi* is broadly based on ‘*Snehana*’ therapy, include *Swedana*, *Nasya*, *Basti* opposite to properties of ‘*Vata*’. It is indicated in ‘*Kevalvata*’ and ‘*Nirupastambha*’ *Vatavyadhi*.<sup>[13]</sup> *Shastikashalipinda swedana* was adopted for the case as it is a type of *Abhyanga* and *Mriduswedana* and is suitable for children.<sup>[14]</sup> It imparts nourishments to the tissues and thus alleviates the *Vataja* disorder. It enhance physical consistency, strengthens the nervous system. *Avarana* and *Srotorodh* removed by *Patrapindapotali swedana* with *Balataila*. *Balataila* property have *Balya*, *Rasayana*, *Snigdha* and used in *Vatavikar*.<sup>[15]</sup> *Abhyanga* and *Swedana* caused *Doshagati* from *Sankha* to *Koshtha*, which helped in removing vitiated *Dosha* through *Basti*. Finally, *Basti* helped to accomplish the effect of *Shodhana*. *Shastika shalipindasweda* causes excretion of waste metabolites through diaphoresis. *Matrabasti* and *Shastika shalipindasweda* is said to have *Brimhghana* effect. *Matrabasti* with *Mahanarayantaila* was administered. *Mahanarayantaila* is effective in *Vataja* disorder.<sup>[16]</sup> Reduced spasticity of lower limb and spasm due to action of *Shastikashali pindasweda*, *Patrapindapotaliswedana*, *Matrabasti*. *Shirovasti* is mainly indicated for the disease of head due to provocation of *Vata*. It is prescribed in *Shirogatavata* disease.<sup>[17]</sup> Neck holding and head control, appropriate communication<sup>[18]</sup> improvement due to action of *Shirovasti* with *Mahanarayantaila*. Nose is

the entrance of the head so *Pratimarshanasya* (nasal drug application) directly effects on brain. It helps to remove vitiated *Vatadosha* from head.<sup>[19]</sup> Improvement spoken a few word with meaning, due to action of *Pratimarshanasya* with *Jyotishmatitaila*. *Jyotishmatitaila* is used due to it breaks the *Avarana* of *Kapha* and stimulates the intellect, sharpens the memory by increasing the grasping capacity and nourishes the *Medha*.<sup>[20]</sup> Thus by the combined effect of total therapeutic measures, *Avarana* was removed, *Mastulunga Mjja* got nourishment, *Vata* came to normalcy, and hence the proper development of milestones were achieved. Improvement in appropriate communication, speaking few words with meaning due to action of *Smriti sagarras* as brain rejuvenator, enhance learning skills.<sup>[21]</sup> *Kumar kalyanras* effective in emaciation, brain tonic.<sup>[22]</sup> Lower limb muscle mass increase, whole body weight increase due to *Kukkutandatvak Bhasma*.<sup>[23]</sup> After the completion of 3 months treatment, patient was found 20-30% relief. *Panchakarma* is effective improving growth (height, weight) and development (sitting without support, standing without support, roll over, has good head control and neck holding), reducing lower limb spasticity and spasm in patients. Treatment of this kind of condition is important and in that, if we are able to make small improvements in an earlier age, then it will reflect major as a major benefit in later stage in the form of developing skills. Previously, it was believed that neurons don’t repair or rejuvenate after any injury, but the new concept of Neuroplasticity says that CNS have the ability to repair their neurons by axonal sprouting to take over the function of damaged neurons. This improvement in patients also support the concept of Neuroplasticity. So, we can conclude improvement in quality of life by Ayurvedic Panchakarma therapy along with appropriate internal medication.

## Patient consent

Written permission for publication of this case study had been obtained from the patient’s parents.

## Patient’s perspective

Parents of the patient were satisfied with the provided treatment.

## CONCLUSION

The case report demonstrates clinical improvement spastic diplegic cerebral palsy with Panchakarma and Ayurvedic medicinal interventions.

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**\*Address for correspondence**

**Dr Aanchal Meena**

P.G. Scholar,

PG Department of Panchakarma,

Dr. S.R. Rajasthan Ayurveda

University Jodhpur, Rajasthan, India.

Email:

[meena\\_aanchal@rediffmail.com](mailto:meena_aanchal@rediffmail.com)

Phone: 09783593465

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