Global Journal of Medicine & Public Health

Ayurvedic (Traditional Indian Medicine) management of Spastic Cerebral Palsy in children: Case report

Mokindan R[1], Arun Raj GR[2], Kavya Mohan[3]*

ABSTRACT

Cerebral palsy is a complex neurological disorder characterised by postural abnormalities and movement dysfunction due to an early insult to the brain, often resulting from infections during pregnancy, birth asphyxia, premature birth, low birth weight, difficult labor, head trauma, severe jaundice, etc. These factors frequently lead to significant developmental delays. This case report focuses on the management of a 6-year-old female child diagnosed with spastic quadriplegic CP, exhibiting delayed milestones, poor coordination, inability to walk independently and speech difficulties. Her caregivers sought Ayurvedic treatment due to her worsening of symptoms and limited progress with allopathic interventions. The assessment revealed global developmental delay and malnourishment, aligning with a diagnosis of CP attributed to hypoxic-ischemic encephalopathy. Ayurveda classifies such conditions under Bala Vata Vyadhi, a childhood disorder marked by increased vata dosha (air-space element). The treatment aimed at pacifying the aggravated vata through panchakarma therapy, internal medication and lifestyle modifications. Key interventions included Deepana-pachana (digestive stimulation), snehana (oleation), swedana (sudation) and vasti (medicated enemas) targeting both physical and neurological well-being. These modalities helped to alleviate the spasticity, enhance mobility and support overall wellbeing. Functional assessments conducted before and after the treatment displayed significant improvements In motor skills, speech development and muscle tone. The Gross Motor Functional Classification System (GMFCS) improved from level 4 to 2, the Gross Motor Function Measure (GMFM) increased from 120 to 185, and the Barthel Index for daily activities rose from 20/100 to 70/100, indicating greater independence. The Modified Ashworth Scale also reflected reduced spasticity, enhancing mobility and overall quality of life. This case highlights the efficacy of Ayurvedic therapies in managing CP, supporting neuroplasticity and functional recovery. Early intervention and a holistic, multifaceted approach can significantly improve independence and well-being in children with CP, offering an alternative or complementary strategy for caregivers seeking effective treatment options.

Keywords: Cerebral Palsy, Quadriplegic Spastic CP, Bala Vata Vyadhi, Detoxification therapy, Rejuvenation therapy

GJMEDPH 2025; Vol. 14, issue 2 | OPEN ACCESS

2*Corresponding author: Professor, Department of Kaumarabhritya, Parul Institute of Ayurved and Research, Parul University, Vadodara, Gujarat, Email: drdrarunraj26@gmail.com; Ph: 9886292826; 3.Associate professor, Department of Kaumarabhritya, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat; [1]Post graduate scholar, Department of Kaumarabhritya, Parul Institute of Ayurved and Research, Parul University, Vadodara, Gujarat.

Conflict of Interest—none | Funding—none

INTRODUCTION

Cerebral palsy is a broad term encompassing a range of non-progressive yet often evolving motor impairment syndromes caused by insult to the brain which can occur during its development before birth, during delivery due to birth injuries or after birth as a result of perinatal complications that impact the developing brain.[1] These factors can lead to lesions or anomalies in the brain during early development.[2] Cerebral palsy stands as the leading cause of childhood disability, profoundly influencing functional development and quality of life.[3] It is a non-progressive neuromotor disorder of cerebral origin and doesn't encompass all progressive or metabolic neurological disorders.[4] Defined as a chronic central nervous system disability, Cerebral palsy is a static encephalopathy that affects posture, reflexes, motor development, coordination and muscle tone in early life. This condition is frequently associated with developmental delays and epilepsy, as well as abnormalities in speech, vision, hearing, and cognitive functions. The motor disorders of cerebral palsy are accompanied by disturbances in sensation, perception, cognition, communication, and behaviour as well as secondary musculoskeletal problems.[5] Numerous prenatal, natal, and postnatal etiologic factors are responsible for cerebral palsy (CP), with preterm birth and hypoxia at the moment of delivery being the main causes.

Cerebral Palsy is the most prevalent motor disability in children with an incidence estimated to be around 2 to 3 out of every 1000 live births globally.[6] Cerebral Palsy impacts 15 – 20 % of all physically disabled children in India where its prevalence is approximately 3 to 4 per 1000 live births.[7]

Cerebral palsy is classified into 5 subtypes: Spastic, ataxic, dyskinetic, hypotonic and mixed.[8] Each subtype shares common traits such as abnormal muscle tone, reflexes and challenges with motor development and coordination. In Addition to joint and bone deformities affected people may also have contractures where muscle and joints become permanently tight. Research stipulates that children with cerebral palsy and their caregivers often experience a reduced Quality of life in terms of health.[9] The severity of the condition tends to correlate with this decline in QOL.

Current medical science cannot completely reverse brain damage or insult that occurs at any stage of development, despite advancements in various treatment options. Treatment primarily aims to increase the child's independence by improving their ability to perform day-to-day activities. A multidisciplinary and multifaceted approach is often necessary for the management of cerebral palsy, integrating several therapies such as physical therapy, speech therapy, and pharmacotherapy. To enhance motor skills and communication, these therapies—which include speech, physical, and occupational therapy—target specific limitations and address core challenges. This enables the child to engage more effectively with the environment. Numerous cutting-edge treatments for cerebral palsy are presently being explored. These include autologous stem cell activation therapies that improve blood flow and nourishing neurons, as well as selective dorsal rhizotomy (SDR), botulinum toxin type A injections, orthotic devices like ankle foot orthoses (AFOs) and intrathecal baclofen.[10] Additionally, hyperbaric oxygen therapy (HBOT) is being investigated.[11] Research into neuroplasticity also holds promise for future approaches to managing CP.[12]

Ayurveda, the ancient Indian system of medicine, promotes health among individuals by signifying the significant connection between body, mind, and spirit. This holistic approach emphasizes both physical health and spiritual well-being. Child healthcare has been explained elaborately in Ayurveda, with a separate branch of clinical specialization being attributed to child healthcare known as Kaumarabhritya. Ayurvedic texts describe a number of diseases and etiological factors that resonate with the aspects of CP, despite the fact that they are not directly equivalent to CP. Several such disorder are available in the texts, these include Vata Vyadhi (disorders connected with Vata dosha) includes some notable conditions such as Phakka (paresis), Pangulya (limb weakness), Mukatva (facial paralysis), Jadatva (stupor), Ekanga Roga (monoplegia), Sarvanga Roga (generalized

ISSN# 2277-9604

paralysis), Pakshaghata (hemiplegia) and Pakshavadha (paralysis). Spastic CP can be categorized as 'Avarana janya Vata Vyadhi' (disorders caused by obstruction of vata dosha) or 'Kaphavrita Vata (Vata obstruction by vitiated kapha),' with some scholars

suggesting it may be referred to as 'Shiro-Marmabhigathaja Bala Vata Vyadhi' (Vata Vyadhi or neurophysiological disorders caused by injury to vital points in head) in Ayurveda.[13-20]

A number of variables can interrupt normal fetal growth and development, potentially leading to CP. These include inappropriate ritu (ovulation cycle), kshetra (uterus), ambu (amniotic fluid), beeja (sperm and ovum), dauhridavamana (neglect of urges during dauhrudastate of a pregnant woman), Presence of garbhopaghatakarabhavas (activities or substances which are not favourable for growth and survival of fetus), incompatible garbhavriddikarabhavas (requisites for growth and development of the fetus) and improper garbhiniparicharya (antenatal regimen) may have unwanted effects on the fetus impeding its normal growth and development subsequently leading to many diseases, deformities and even death.

Ayurvedic Panchakarma (detoxification and rejuvenation) therapy encompasses the ability to substantially enhance the quality of life for individuals with cerebral palsy (CP). It is comprised of five main detoxification procedures along with additional approaches. This holistic approach, which integrates internal medicine with Panchakarma procedures has shown to be more successful than taking oral drugs by themselves. In the treatment of childhood cerebral palsy, methods like Udwartana (massage with herbal powder), Sarvaanga Abhyanga (full-body massage with medicated oils), Bashpa Sweda (steam bath) and Naadi Sweda (tube sweating), Upanaha (poultice) and Basti (oil and decoction enemas) have had favourable outcomes.[13,14,16,19,20] This study emphasizes the efficacy of several Panchakarma procedures in treating and enhancing the quality of life for children with cerebral palsy.

I. Patient Information

Age: 6 years old
Gender: Female child
Religion: Hindu
Informant: Mother
Socio-economic scale: Lower middle class (Kuppuswamy scale)

II. Chief Complaints

Patient attendants complained of delayed milestones, inability to stand or walk without support, inability to bear her body weight on standing with support, poor coordination, improper posture, and tightening of both limbs, more intense in the lower limbs, all of which coexist with the difficulty in speaking in the past 4 years.

III. History of Present illness

The patient was apparently healthy since birth. At around 6 to 7 months, the parents noticed that their child was unable to hold the neck but did not pay much attention to it. By the age of 1 year, the spasticity and involuntary movements became noticeable. By 18 months, they observed delays in sitting with support and in speech development along with delays in other milestones. Despite trying allopathic medications for several years, they saw no significant improvement. Consequently, they sought better management at the outpatient department of Kaumarabhritya, Khemdas Hospital, Ishwarpura, Vadodara.

IV. History of Past Illness

At 1 year of age, the child was hospitalized for a week due to pneumonia and then contracted mumps at 1.5 years, for which the received treatment.

V. Family history

The Child was born out of a non-consanguineous marriage, indicating that the parents share no biological relation or common ancestry. All the family members are reported to be healthy, with no relevant medical history.

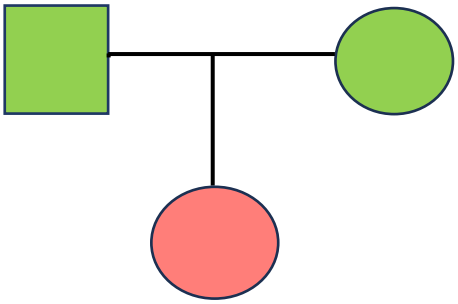

Figure 1: family chart

VI. Antenatal History

At the time of conception, the mother was 26 years old, and the father was 30. During the antenatal period, regular medical checkups were conducted. She consistently took iron, folic acid and calcium supplements throughout the antenatal period. The mother was diagnosed with hypothyroidism in the first trimester and was placed on appropriate medication. There was no history of fever, rashes, vaginal bleeding, or other complications. No additional mental stress was reported during this stage.

VII. Natal History

According to the mother, the patient was born preterm at 8 months via LSCS due to fetal distress, with a low birth weight of 2.1kg. she did not cry immediately, which led to respiratory distress. As a result, she was admitted to the NICU and intubation was performed.

VIII. Postnatal history

The baby had suffered from hypoxic-ischemic encephalopathy grade 3 with early onset of septicemia and neonatal jaundice.

IX. Treatment history

The child received treatment from multiple allopathic hospitals, and the details of interventions are as follows;

- Tablet Baclofen: Prescribed as a muscle relaxant to help alleviate spasticity.
- Botox Injections: Administered to reduce muscle contractures and improve mobility.
- Physiotherapy: Engaged in regular physiotherapy sessions aimed at enhancing motor skills and overall physical function

X. History of Immunization

The patient has been immunized as per schedule till date.

XI. Personal history

The patient was completely dependent on others for food intake and daily activities. She was only able to consume semi-solid foods due to difficulties with coordination during deglutition.

Diet: mixed
Appetite: reduced
Sleep: disturbed
Urine: 7-8 times/day
Bowel: 2 times/day (hard stools)

XII. Developmental History

Developmental milestones are depicted in table 1.

Table 1: showing developmental history

Domains	Milestones	Normal age	Attained age
Gross motor	Neck Holding	3months	8 months
	Rolls over	5months	10 months
	Sitting with mother's support	6months	15 months
	Sitting without support	8months	18 months
	Standing with support	9months	38 months
	Standing without support	12 months	Not attained
	Walking	15 months	Not attained
Fine motor	Bidextrous grasp	4months	6 months

	Unidextros grasp	6months	8 months
	Immature pincer grasp	9months	12 months
	Pincer grasp	12 months	15 months
	Tower of 2-3 blocks	15 months	22 months
Language	Alerts to sounds	1month	2 months
	Coos	3months	5 months
	Laugh loud	4months	6 months
	Monosyllable	6months	8 months
	Bisyllables	9months	12 months
	Speaks two words	12 months	18 months
	Adds two or three words	15 months	Not attained
	Vocabulary of 10 words	18 months	Not attained
Social and adaptive development	Social smile	2months	2 months
	Recognizes mother	3months	3 months
	Stranger anxiety	6months	6 months
	Waves 'Bye-bye'	9months	16 months
	Indicates his wants	12 months	26 months
	Starts imitating mother	15 months	30 months
	Mimics	18 months	Not attained

XIII. General Examinations

General appearance: Fair
Nourishment: acutely malnourished
Pallor: absent
Icterus: absent
Cyanosis: absent
Temperature: afebrile
Pulse: 90/min
Respiration rate: 24/min
Edema: absent
Lymphadenopathy: no lymphadenopathy.
Nail: nail clubbing absent

XIV. Anthropometry

Head circumference – 50 cm
Chest circumference – 56 cm
Mid - arm circumference– 16 cm
Height – 102cm
Weight – 14.87 kg
BMI- 14.3

XV. Astavidha Pariksha (Eight-Fold Examinations)

Naadi (pulse) - Vata
Mootra (micturation) – samanya (Normal)
Mala (defecation) – prakrita (Normal)
Jihwa (tongue)- nirama (not coated)
Shabda (Voice) – prakrita (normal)
Sparsha (touch) – Anushnasheeta (normal)
Drik (vision) – samanya (normal)
Aakriti (body structure) – durbala (weak)

XVI. Dashavidha Pariksha (Ten-Fold Examinations)

Prakirti (constitution) - Vata kapha
Vikriti (pathology) - Vata
Sara (quality of tissue) – avara (reduced)
Samhanana (structural integrity) – Madhyama (Normal)
Pramana (measurement) – Height: 102 cm Weight: 14kg
Satmya (adaptability) - Sarvarasa satmya (acclimated to all taste)
Satva (mental status) – avara (reduced)
Aahara Sakthi (digestive capacity) – avara (reduced)
Vyayama Sakthi (exercise tolerance capacity) – Madhyama (normal)
Vaya (stage of life) – baala (childhood)

XVII. Systemic Examination

Respiratory system

- Inspection: Shape of the chest – B/L Symmetrical
  Chest movements – Symmetrical
- Palpation: Trachea – Centrally placed
  Chest expansion - Symmetrical
- Percussion: B/L Resonant

- Auscultation: NVBS heard

Cardiovascular system

- Inspection: No distended blood vessels, scars or deformities
- Palpation: apex beat felt
- Auscultation: S1 S2 heard no added murmurs

GIT:

- Inspection: No distended blood vessels, scars or deformities
- Palpation: apex beat felt
- Auscultation: S1 S2 heard no added murmurs

Central Nervous System

Higher Mental Functions:

- Consciousness: alert, conscious
- Orientation: Partially oriented
- Intelligence: Impaired
- Memory: not able to assess
- Emotional disturbance: Irritable
- Disturbances of speech: aphasia
- Hallucinations and delusions: absent

Cranial Nerve:

Cranial nerve examination could not be done due to inability to follow the command.

Sensory System:

- Touch: intact
- Pain: intact
- Temperature: intact
- Vibration: intact
- Pressure: intact
- Two point discrimination: intact

Motor System

- Attitude of limbs: the limbs are typically present with flexion and adduction, with increased stiffness in lower limbs than upper limbs, increased muscle tone, and exhibit postural abnormalities and scissoring gait.
- Power:

Table 2: showing muscle power

Right UL	Left UL	Right LL	Left LL
3	3	2	2

- Tone:

Table 3: showing muscle tone

Right UL	Left UL	Right LL	Left LL
Hypertonia	Hypertonia	Hypertonia	Hypertonia

- Muscle bulk:

Table 4: showing muscle bulk

Muscle Bulk (BT)	Rt	Lt
10cm below knee joint	20 cm	20 cm
10cm above knee joint	22 cm	22 cm
10cm below olecranon process	19 cm	19 cm

10cm above olecranon process	22 cm	22 cm

- Nutrition: acutely malnourished
- Coordination: impaired, affection gross motor skills
- Involuntary movements: absent
- Reflexes:

Table 5: showing deep tendon reflexes

Reflex	Rt	Lt
Biceps	+3	+3
Triceps	+3	+3
Brachioradialis	+3	+3
Patella	+4	+4
Ankle	+4	+4

- Clonus: ankle clonus present with a grade of +2
- Plantar reflex – B/L Positive (Babinski sign)
- Cerebellar signs – absent (Kernig's sign, Brudzinski sign)
- Gait: scissoring gait with toe walking.

XVIII. Timeline

Date **Sequential Presentation**

February 11, 2024 A 6-year-old female child attended the OPD with complaints of delayed milestones, inability to stand or walk without support, inability to bear her body weight on standing with support, poor coordination, improper posture, tightening of both limbs, and difficulty in speaking.

February 11, 2024 Patient history indicated an episode of hypoxic-ischemic encephalopathy grade 3 with early onset of septicaemia and neonatal jaundice, leading to global developmental delays across all milestones. MRI done at 2 years of age was suggestive of periventricular leukomalacia changes and was diagnosed with Spastic cerebral palsy.

February 12, 2024 The patient was assessed using the Gross Motor Functional Classification System (GMFCS) scale, the Gross motor function measure scale (GMFM), the Modified Ashworth Scale, Medical Research Council (MRC's) power grade scale and Barthel's scale of daily activities. The patient was given oral medication (table 1), which included Deepana pachana, anulomana and medya drugs.

February 26, 2024 The Patient came for a follow-up, which revealed improved appetite, the child was active and playful.

February 27, 2024 The patient was admitted to the Kaumarabhritya ward for panchakarma procedures (table 2) and underwent all the Panchakarma procedures over a period of 15 days.
March 13, 2024 The patient was discharged and advised to continue the oral medications (table 1). She was instructed to return for a follow-up sitting after 1 month.
April 14, 2024 The patient was again admitted for panchakarma procedures (table 2) and underwent procedures for 15 days.
April 29, 2024 The patient was discharged and advised to continue the oral medications (table 1).

She was instructed to return for a follow-up sitting after 1 month.

May 30, 2024 The patient was again admitted for panchakarma procedures (table 2) and underwent procedures for 15 days.

June 14, 2024 The patient was discharged and advised to continue the oral medications (table 1). She was instructed to return for a follow-up after 1 month for assessment.

July 14, 2024 Functional assessment was done after 90 days using the Gross Motor Functional Classification System (GMFCS) scale, the Gross motor function measure scale (GMFM), the Modified Ashworth Scale, Medical Research Council (MRC's) power grade scale and Barthel's scale of daily activities.

XIX. Investigations

Routine examinations of blood, urine, and renal functions were done and showed values within normal limits.

XX. Special Investigations

An MRI performed at 2 years of age was suggestive of periventricular leukomalacia changes. These findings suggest potential white matter injury, as sequalae of HIE and is often associated with developmental or motor impairments.

XXI. Differential diagnosis

Spastic Cerebral palsy, Demyelinating disease, post-natal hypoxia

XXII. Diagnosis

Clinical symptoms, history, examinations and imaging techniques all suggesting a case of spastic quadriplegic cerebral palsy, GMFCS level 4 with global developmental delay and malnourishment.

XXIII. According to Ayurveda

Given the symptoms, clinical features and Imaging findings, cerebral palsy may result from shiromarmabhighata (brain injury) and can be viewed as a vata dominant condition or bala Vata vyadhi. Therefore, treatment for CP aims to pacify the aggravated vata doshas.

XXIV. Samprapti Ghataka (Pathophysiology)

Table 6: showing samprapti ghataka

Dosha	Vata pradhana Tridosha
Dushya	Rasa, Rakta, Mamsa, Asthi
Upadhatu	Shira, Snayu, Kandara
Srotas	Pranavaha, Rasavaha, Mamsavaha, Asthivaha Majjavaha
Udhbhava Sthana	Mastiksha
Agni	Dhatwagni and Jatharagni
Sroto Dusti Prakara	Vimargamana sanga
Vyakta Sthana	Ardhaanga/ Sarvasharir
Ama	Saama

XXV. Prognosis

Krichra Sadhya (difficult to cure)

XXVI. Therapeutic intervention

During the course of treatment, the patient was advised oral medication, which is described in table 7 and panchakarma procedures in table 8,9,10.

Table 7: showing oral medications

Sl. No	Drug	Dose	Description
1.	Samshamani Vati (tab.)	1 BD (twice daily) before food	Medha (cognitive) agni bala vardhanam, rasayana (digestive stimulant), balya (nourishment).
2.	Syp. Shankapushpi	3ml BD after food	Jeevaniya (revitalizing), Bruhmaiya (noursishing), Rasayana (rejuvenation), buddhi (intellect).
3.	Syp. Mannol	5ml BD after food	Agnimandya (digestive stimulant), balya (nourishment), srotodusthigna (clearing obstruction), kaphavata nirodhaka (allivetaes kapha and vata), pustikara (replenishing), vrshya (aphrodisiac), rasayana (rejuvenation).

Table 8: showing panchakarma procedures of 1st sitting

Sl. No.	1st sitting	Drugs used	Dose	Duration	Description	Observation
1.	Sarvanga abhaynga (full-body massage)	Ksheerabala taila	40 ml	15 days	Dhatu poshaka (nourishing tissues), balya (nourishment), rasayana, shotahara (reduces inflammation), vata shamaka	Slight increase in muscle tone, increased engagement during activities, improvement was noted in her ability to maintain posture
2.	Nadi sweda (tube sweating)	Dashmoola kwatha	300 ml	15 days	Srotoshuddhi, tridhoshagna (alliveates all doshas), balya, vata pitta hara, pachana (digestive).	
3.	Upanaha Sweda (poultice)	Bala churna and Godhuma	Bala churna – 20 gm Godhuma – 30 gm	15 days	Type of niragni sweda (dry sweating) ,balya, mamsa vardhana (increases muscle), Bala churna – rasayana, balya, vata hara, samvardhana, pachana	
4.	Matra basti (therapeutic enema)	Mahanarayan taila	20 ml	15 days	Vata hara, Dhatu poshaka, balya, rasayana, shotahara, vata shamaka	
5.	Shirothalam (application on vertex)	Rasnadi churna and Mahanarayan taila	Rasnadi Churna – 1 gm Taila – 3 ml	15 days	Ushna, vata kapha hara, Vedana shamaka (reduces pain), shirosothaka	

Table 9: showing panchakarma procedures of 2nd sitting

Sr.no	2nd sitting	Drugs used	Dose	Duration	Description	Observation
1	Sarvanga abhaynga	Mahanarayana taila	40 ml	15 days	Dhatu poshaka, balya, rasayana, shotahara, vata shamaka	Enhanced muscle tone, increase muscle power, improvement in vocalization, increased motivation and willingness to attempt standing.
2	Parisheka	Dashmoola kwatha	800 ml	15 days	Srotoshuddhi, tridhoshagna, balya, vata pitta hara, pachana	
3	Upanaha sweda	Bala churna and Godhuma	Bala churna – 20 gm Godhuma – 30 gm	15 days	Type of niragni sweda,balya, mamsa vardhana, Bala churna – rasayana, balya, vata hara, samvardhana, pachana	
4	Yoga basti	Mahanarayan taila, dasamoola Kashaya, madhu, bala churna, satapushpa curna, saindhava lavana.	Niruha vasti: Dasamoola kashaya – 50ml Madhu – 20ml Mahanarayana taila – 20ml Bala churna – 5gm Satapushpa churna – 5 gm Sanidhava – 1 pinch Anuvasana vasti: Maharanayana taila – 40ml	8 days (5 anuvasana vasti, 3 niruha vasti)	Vata hara, Dhatu poshaka, balya, rasayana, shotahara, vata shamaka, adha kaya balya, shodhana, srotoshuddhi, rogopashamana (alleviates disease).	
5	Shirothalam	Rasna churna and Mahanarayan taila	Rasnadi Churna – 1 gm Taila – 3 ml	15 days	Ushna, vata kapha hara, Vedana shamaka, shirosothaka	
6	Pratimarsha Nasya	Anu taila	2 drops on both nostrils	15 days	Smritivardhana, vata shamana, prashamana, dristivardhana, pratirodhaka kshamata	

Table 10: Showing panchakarma procedures of 3 sitting

Sr. No.	3rd sitting	Drugs used	Dose	Duration	Description	Observation
1	Sarvanga abhaynga	Mahanarayana taila	40 ml	15 days	Dhatu poshaka, balya, rasayana, shotahara, vata shamaka	Able to stand without support for longer duration, reduction in spasticity and improvement in muscle power, muscle tone and muscle bulk, able to walk few steps and speak few words and coordination improved.
2	Parisheka	Dashmoola kwatha	800 ml	15 days	Srotoshuddhi, tridhoshagna, balya, vata pitta hara, pachana	
3	Upanaha sweda	Bala churna and Godhuma	Bala churna – 20 gm Godhuma – 30 gm	15 days	Type of niragni sweda,balya, mamsa vardhana, Bala churna – rasayana, balya, vata hara, samvardhana, pachana	
4	Yoga basti	Mahanarayana taila, dasamoola Kashaya, madhu, bala churna, satapushpa curna, saindhava lavana.	Niruha vasti: Dasamoola kashaya – 50ml Madhu – 20ml Mahanarayana taila – 20ml Bala churna – 5gm Satapushpa churna – 5 gm Sanidhava – 1 pinch Anuvasana vasti: Maharanayana taila – 40ml	8 days 5 anuvasana vasti 3 niruha vasti	Vata hara, Dhatu poshaka, balya, rasayana, shotahara, vata shamaka, adha kaya balya, shodhana, srotoshuddhi, rogopashamana	
5	Shirothalam	Rasna churna and Mahanarayan taila	Rasnadi Churna – 1 gm Taila – 3 ml	15 days	Ushna, vata kapha hara, Vedana shamaka, shirosothaka	
6	Pratimarsha Nasya	Anu taila	2 drops	15 days	Smritivardhana, vata shamana, prashamana, dristivardhana, pratirodhaka kshamata	

XXVII. Follow-up and outcome:

A Functional Assessment was conducted both before treatment and after treatment utilizing several scales: the Gross Motor Functional Classification System (GMFCS) scale, the Gross motor function measure scale (GMFM), the Modified Ashworth Scale, Medical Research Council (MRC's) power grade scale and Barthel's scale of daily activities. The results of these assessments are presented in the following tables (11,12,13,14,15)

Table 11: Showing gross motor functional classification system
The Gross Motor Functional Classification System

Before treatment	After treatment
LEVEL IV Walks using a hand-held mobility device (cane, crutches, walker)	Level II Walks in most settings. Mobility choices in various settings are influenced by environmental factors and personal preferences.

Table 12: showing gross motor function measure scale
The Gross Motor Function Measure Scale

Before treatment	After treatment
120 out of 264	185 out of 264

Table 13: showing modified Ashworth scale
The Modified Ashworth Scale

Before treatment	After treatment
Grade 4 – Affected parts are rigid in flexion or extension	Grade 1+: Slight increase in tone, with a catch followed by minimal resistance throughout the remainder (less than half) of the range of motion.

Table 14: showing medical research council power grade scale
The Medical Research Council Power Grade Scale

Muscle		Before treatment	After treatment
Shoulder abductors	Left	3	4
	Right	3	4
Elbow flexors	Left	2	4
	Right	2	4
Wrist extensors	Left	2	4
	Right	2	4
Hip flexors	Left	2	3

ISSN# 2277-9604

Knee extensors	Right	2	3
	Left	1	3
Foot dorsiflexors	Right	1	3
	Left	1	3
	Right	1	3
Total		22/60	42/60

Table 15: showing Barthel's scale of daily activities

Barthel's Scale of Daily Activities

Activity	Before treatment	After treatment
Feeding	0	5
Bathing	0	5
Grooming	0	5
Dressing	0	5
Bowels	5	10
Bladder	5	10
Toilet Use	0	5
Transfers	5	10
Mobility	5	10
Stairs	0	5
Total	20/100	70/100

XXVIII. Result

Significant improvements were observed in this child, particularly in motor milestones, muscle power, limb tone, and speech, progressing from monosyllables to forming a few words. After 140 days of treatment, assessment results on the GMFCS scale improved from a score of 4 to 2 (Table 11). The Gross Motor Function Measure (GMFM) showed enhancement from 120 to 185 (Table 12). A reduction in spasticity was noted, as assessed by the Modified Ashworth Scale (Table 13). Additionally, the MRC power grade assessment demonstrated improved movements, reflected in higher power grades (Table 14). The Barthel scale of daily living activities also showed significant improvement, increasing from a score of 20/100 before treatment to 70/100 after treatment (Table 15).

XXIX. Adverse and unanticipated events

No adverse or unexpected outcomes were recorded in this case while receiving the treatment. A safe and efficient course of therapy was ensured by the fact that all interventions proceeded as planned with the patient responding effectively to the therapies.

XXX. Discussion

Cerebral palsy is primarily characterized by movement and posture dysfunction which arises due to insult to the brain during fetal or early stages of life. Its etiology is often associated with factors such as prematurity and birth asphyxia. It is characterized by signs of upper motor neuron lesions viz. hypertonia, spasticity, exaggerated deep tendon reflexes and extensor plantar response. The studied case was Spastic cerebral palsy secondary to hypoxic-ischemic encephalopathy events. The condition of spastic cerebral palsy involves complex physiological factors that necessitate both external and internal interventions. Analysis reveals involvement of the panchavayus (5 types of vata dosha) – Prana (vitality), udana (ascendence), vyana

(circulation), apana (elimination) and samana (digestion) – as well as the pachaka (digestion), alochaka (vision) and sadhaka (intellect) pitta's, along with shleshaka (lubrication), tarpaka (nourishment) and avalambaka (support) kapha indicating a multifaceted pathogenesis affecting the entire body. The involvement of the Rasa (bodily fluids), Raktha (blood), Mamsa (muscles), Meda (fat), asthi (bone), and Majja (bone marrow) dhatus further underscores the pervasive nature of the disorder.

While direct comparisons to cerebral palsy are limited in Ayurveda classics. However, given its etiology, cerebral palsy may be attributed to shiromarmabhighata (brain injury) and can be classified as Vata dominant condition or vata vyadhi. On the basis of symptoms, it can be related as a disease of increased vata dosha with associated symptoms of kapha kshaya. While modern medicine lacks effective treatments for cerebral palsy, Ayurveda offers a holistic approach aimed at pacifying vitiated doshas. Leading to a treatment protocol aligned with Vatavyadhi treatment principles that began with agni deepana (digestive stimulation) and anulomana (normal movement), followed by snehana (oleation), swedana (sweating), shodana (purification) and brahmana (nourishment) therapies.

XXXI. Effect of intervention

In this case, the patient's agni was compromised making samshamani vati particularly beneficial. Its primary ingredient, Guduchi (Tinospora cordifolia), supports Agni Deepana, enhancing digestive fire and preventing the formation of Aama (undigested food). The presence of Madhura rasa contributes to its nourishing properties benefiting dhatus and also helps to reduce Vata dosha. Additionally, it alleviates Vata and pitta dosha facilitating physical and emotional equilibrium. As a rasayana, it rejuvenates both Sharira (body) and Manas (mind), thus improving overall vitality.[21]

Acharya Charaka, mentioned about four Medhya rasayanas. These are yastimadhu (Glycyrrhiza glabra), guduchi, sankapushpi (Convolvulus pluricaulis) and mandookaparni (Centella asiatica).[22] These rasayanas mentioned might help in avoiding both physical and mental impairments. The sankapushpi syrup, derived from the herb sankapushpi (Convolvulus pluricaulis) offers a range of penitential benefits like Buddhi and sattva enhancement properties making it relevant for addressing the cognitive impairments which occur in cerebral palsy. It improves smriti (memory), Dhi (intellect) and supports overall mansika (mental health) in affected individuals. It also enhances nidra (sleep)and reduces vikara, which promotes general well-being. The syrups' antioxidative, neuroprotective and anti-inflammatory effects may benefit those with neurodevelopmental challenges.

Mannol syrup, an ayurvedic formulation with ashwangandha (Withania somnifera), shatavari (Asparagus racemosus) and other beneficial herbs as ingredients serves in addressing agnimandya (digestive health) and provides rasayana (rejuvenating) benefits.[23] This dual action not only enhances the physical well-being of the individual but also strengthens the immune response. By addressing both agnimandya and rasayana, mannol syrup can be beneficial in the comprehensive treatment plan for cerebral palsy.

The nourishing Ayurvedic practice of whole-body massage is known as sarvanga abhyanga. Abhyanga is performed here with mahanarayana taila, a taila (oil) characterized by beneficial properties like mrudu (soft), snigdha (unctuous), pichhila (viscous) which effectively alleviates the vata imbalances.[24] Through venous and lymphatic drainage, mahanarayana taila which has anti-inflammatory and analgesic properties improves circulation, reduces stiffness and muscle fatigue and facilitates transdermal absorption. Abhyanga also stimulates the central nervous system by exciting the sensory nerve endings. It is defined as Pushtikaraka, kaphavatahara and ayurvardhaka, it stabilizes joints and strengthens muscles, which makes it beneficial for treating cerebral palsy by reducing spasticity, reducing contractures and improving joint mobility.

In the management of cerebral palsy, Swedana is imperative for providing both long-term and short-term relief from stiffness and spasticity-like symptoms. In this case, Nadi sweda (tube-sweating) and parisheka (pouring warm herbal decoction) were done with dasamoola Kashaya for its potent therapeutic properties.[16] Swedana provides shrotorodha vighatana and effectively alleviates vata imbalances by the ushna guna (heatness) to

counteract the stiffness and rigidity caused by sheeta (cold) and ruksha guna (dryness). The ushnatva produced in swedana stimulates hormone release, and enhances oxygen delivery and blood circulation while stimulating sweat production to eliminate waste products. The benefits of swedana procedures also includes, stambhaghna (relief from stiffness), gauravaghna (reduction in heaviness) and improved joint mobility making them useful in managing cerebral palsy.

Vasti (enema) being the ardha chikitsa (best treatment) of vatavyadhi is the most beneficial panchakarma procedure in the management of cerebral palsy since it effectively alleviates the vata dosha and promotes overall well-being.[14] In this case, yoga vasti was done with dasamoola niruha vasti (decoction based therapeutic enema) and maharayana taia anuvasana vasti (oil based therapeutic enema) to promote detoxification and balance the aggravated vata dosha throughout the body. Additionally, matra vasti was also administered in the first setting before proceeding with yoga basti which provides nourishment to deeper tissues and enhances motor functions. This comphrensive approach ensures systemic effects, by utilizing the absorption of short-chain fatty acids through rectal mucosa. Both types of vasti help individuals with cerebral palsy by enhancing fine and gross motor functions like sitting, standing, crawling and walking. Overall, vasti which directly focuses on the enteric nervous system, not only alleviates spasticity but also enhances overall strength and functionality.

Upanaha sweda (poultice), by providing localized warmth and moisture to affected areas plays a significant role in managing cerebral palsy.[20] In this case, upanaha was done with bala churna (powder of Sida cordifolia) and godhuma (wheat) which may enhance circulation and reduce muscle stiffness. Application of upanaha sweda promotes shrotorodha vighatana, facilitates the removal of toxins and alleviates vata imbalances. Bala churna used in upanaha sweda may nourish the deeper tissues, promote joint mobility and enhance motor functions. Upanaha Sweda helps individuals with spasticity achieve better functional outcomes in tasks like sitting, standing, and walking by improving flexibility and softening tight muscles. A comprehensive approach to managing cerebral palsy can be improved by integrating upanaha sweda.

Shirothalam (application of medicinal paste on vertex) helps to manage cerebral palsy by enhancing neurological functions and promoting relaxation. In this case, shirothalam was performed using a combination of rasnadi churna and mahanarayan taila, which supports the nervous system and alleviates cognitive impairments. It alleviates vata imbalances and enhances blood circulation to the brain providing relaxation and mental clarity. By improving coordination, it not only soothes the mind but also improves motor functions.

Pratimarsha nasya (nasal therapy) was done in this case using anu taila to improve neurological function and alleviate symptoms of cerebral palsy.[25] Nasya aids in clearing blocked channels by removing excess kapha, and improves circulation and sensory function. According to Charaka, nasya is beneficial for conditions affecting the shiras (head), it provides nourishment to shiras and its sensory organs, which helps with the management of cerebral palsy in general.

XXXII. Total effect of therapy:

The overall improvement observed was around 10-15%, which substantially enhances the patient's quality of life. Although it was often believed that neurons couldn't fix themselves after being injured, emerging research on neuroplasticity demonstrates that the central nervous system may regenerate and that damaged connections can be replaced by new ones. This development in patients with cerebral palsy is consistent with the fascinating idea of neuroplasticity, which emphasizes the brain's extraordinary capacity for adaptation and recovery.

XXXIII. Conclusion:

In summary, this case study demonstrates how ayurvedic treatment can significantly enhance the quality of life for children with spastic cerebral palsy and their caretakers, especially when combined with *panchakarma* procedures and targeted internal medications. This holistic approach substantially enhanced growth and development milestones while effectively reducing spasticity and improving motor functions. These beneficial outcomes are supported by the idea of neuroplasticity, which emphasizes the central nervous system's capacity

for adaptation and recovery. Moreover, this approach emphasizes the need for early intervention because minor advancements made early in life can have major consequences later on. Overall, the Ayurvedic approach not only addresses the symptoms of cerebral palsy but also promotes greater independence and a better standard of living for affected individuals and their caretakers.

To strengthen these findings, future research should involve larger, more diverse populations and robust study designs like randomized controlled or longitudinal trials. Such studies can help assess variations in treatment effectiveness across cerebral palsy subtypes and age groups, identify the most impactful components of Ayurvedic therapy, and explore the potential of personalized treatment protocols. This would support more evidence-based integration of Ayurveda into comprehensive cerebral palsy care.

XXXIV. Declaration of patient consent

The authors confirm that all necessary patient consent forms have been obtained. In these forms, the patient(s) have provided consent for their images and clinical information to be published in the journal. The patients understand that their names and initials will not be disclosed, and every effort will be made to protect their identity; yet total anonymity cannot be assured.

XXXV. Patient's perspective on the treatment received:

The patient expressed gratitude for the holistic treatment they received and shared their great experience with the Ayurvedic therapies. Significant gains in daily functioning, such as increased mobility and decreased spasticity, were observed. They felt empowered and more involved in their recovery because of the encouraging setting and individualized treatment. Furthermore, they valued the comprehensive care given to mental and physical health, which enhanced their quality of life. Overall, the patient felt optimistic about their progress and valued the collaborative efforts of the healthcare team

REFERENCES

1. Hallman-Cooper JL, Rocha Cabrero F. Cerebral Palsy. [Updated 2024 Feb 24]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK538147/
2. Friedman JM, Peter van Essen, Clara D.M. van Karnebeek. Cerebral palsy and related neuromotor disorders: Overview of genetic and genomic studies. Molecular Genetics and Metabolism. 2022; 137(4):399-419.
3. Bell KL, Boyd RN, Tweedy SM et al. A prospective, longitudinal study of growth, nutrition and sedentary behaviour in young children with cerebral palsy. BMC Public Health. 2010; 10:179.
4. Sadowska M, Sarecka-Hujar B, Kopyta I. Cerebral Palsy: Current Opinions on Definition, Epidemiology, Risk Factors, Classification and Treatment Options. Neuropsychiatr Dis Treat. 2020 Jun 12; 16:1505-1518.
5. Patel DR, Neelakantan M, Pandher K, Merrick J. Cerebral palsy in children: a clinical overview. Transl Pediatr. 2020 Feb; 9(Suppl 1):S125-S135.
6. McIntyre S, Goldsmith S, Webb A, Ehlinger V, Hollung SJ, McConnell K, Arnaud C, Smithers-Sheedy H, Oskoui M, Khandaker G, Himmelmann K; Global CP Prevalence Group*. Global prevalence of cerebral palsy: A systematic analysis. Dev Med Child Neurol. 2022 Dec; 64(12):1494-1506.
7. Ramanandi, VH, Shukla YU. Socio-demographic and clinical profile of pediatric patients with cerebral palsy in Gujarat, India. Bull Fac Phys Ther. 2022; 27:19.
8. Mahesh K, Mayank D. Which is the Most Common Physiologic Type of Cerebral Palsy?. Neurology India. 2022 May-Jun; 70(3):1048-1051.
9. Alhumaidi KA, Alshwameen MO, Alsayed MS, Alqoaer DK, Albalawi RS, Alanzi SM, Alharthe AF, Abdulaziz Subayyil Alanazi H. Quality of Life of Primary Caregivers of Children With Cerebral Palsy From a Family Perspective. Cureus. 2023 Nov 25; 15(11):e49378.
10. Cox CS Jr, Juranek J, Kosmach S, Pedroza C, Thakur N, Dempsey A, Rennie K, Scott MC, Jackson M, Kumar A, Aertker B, Caplan H, Triolo F, Savitz SI. Autologous cellular therapy for cerebral palsy: a randomized, crossover trial. Brain Commun. 2022 May 20; 4(3):fcac131.
11. Laureau J, Pons C, Letellier G, Gross R. Hyperbaric oxygen in children with cerebral palsy: A systematic review of effectiveness and safety. PLoS One. 2022 Oct 14; 17(10):e0276126.
12. Paul S, Nahar A, Bhagawati M, Kunwar AJ. A Review on Recent Advances of Cerebral Palsy. Oxid Med Cell Longev. 2022 Jul 30;2022:2622310.
13. Shailaja U, Rao Prasanna N, Arun Raj GR. Clinical study on the efficacy of Samvardhana Ghrita orally and by Matrabasti in motor disabilities of Cerebral Palsy in children. Int. J. Res. Ayurveda Pharm. 2013; 4(3):373-377.
14. Shailaja U, Rao PN, Girish KJ, Arun Raj GR. Clinical study on the efficacy of Rajayapana Basti and Baladi Yoga in motor disabilities of cerebral palsy in children. Ayu 2014; 35:294-9.
15. Arun Raj GR, Deepthi Viswaroopan, Shailaja U, Ravi Kumar KM, Muralidhar P Pujar. A review on cerebral palsy in children: Bridging Ayurvedic concepts with scientific approaches in medicine. Int. J. Res. Ayurveda Pharm. 2017; 8(1):26-27.
16. Arun Raj GR, Shailaja U, Prasanna N Rao, Muralidhar P Pujar, Srilakshmi, Kavya Mohan. Effectiveness of Ayurveda treatment modalities in the management of spasticity in children with Cerebral Palsy at a tertiary care teaching hospital of Southern India. Int. J. Res. Ayurveda Pharm. 2018; 9(2):96-100.
17. Srilakshmi, Shailaja U, Raj GRA. Standardization of Salavana upanaha churna: a herbal compound drug used for upanaha in spastic cerebral palsy. Int J Pharm Sci & Res 2018; 9(10): 4338-42.
18. Srilakshmi, Shailaja U, Raj GRA. Standardization of Dashamoola kwatha choorna: a herbal compound drug used for parisheka in spastic cerebral palsy. Int J Pharm Sci & Res 20189(11): 4937-40.
19. Uppinakuduru S, Raj GA, Rao PN, Jyothsna M, Mallannavar V, Subrahmanya NK, et al. Effect of Ayurveda treatment modalities in motor disabilities of children with cerebral palsy: A pilot clinical study. J Indian Sys Medicine 2021; 9:97-103.
20. Arun Raj GR, Shailaja Uppinakuduru, Prasanna Narasimha Rao. Comparative clinical study to assess the effectiveness of Salavana Upanaha Sweda with and without Parisheka on spasticity in children with Cerebral Palsy. Annals of Ayurvedic Medicine 2022 Jan-Mar; 11(1):22-37.
21. Thakar A, Panara K, Shah H, Kalsariya B, Ruparel S, Jain N, Bhatt P, Jani D, Dodia R, Patel F, Salve R, Chaudhari S, Raghavani H, Vyas J, Goyal M, Bhinde S. *Guduchi Ghanavati* (Ayurveda medication) improves the perceived immunity in individuals at risk of SARS-CoV-2: A Multicentred, controlled, before-and-after study. Eur J Integr Med. 2022 Aug; 53:102131.
22. Bajrang Ramawat, Varsha Jangid, Kashinath Samagandi, Review article on the role of Medhya Rasayana : Enhancing the Intellectual Power. J Ayu Int Med Sci. 2022; 7(5):69-74.
23. Singh N, Bhalla M, de Jager P, Gilca M. An overview on ashwagandha: a Rasayana (rejuvenator) of Ayurveda. Afr J Tradit Complement Altern Med. 2011; 8(5 Suppl):208-13.
24. Shruti et al. Role of Ayurveda in the management of myasthenia gravis: A Case Study. Int. J. Res. Ayurveda Pharm. 2022; 13(5):47-52.
25. Kailash Kumar, Dinesh Kumar Rai, Prem Prakash Vyas. Ayurvedic management of cerebral palsy: review of literature. Int J Health Sci Res. 2023; 13(10):62- 68.