

Ayurvedic Management of Cerebral Palsy: A Conceptual Understanding

**Dr Kapil Patil^{1*}, Dr Nilima satish Chaudhari², Prof. Dr. Shambhu Dayal Sharma³,
Dr. Amit Kataria⁴, Dr. Vinod Kumar Swami⁵**

¹*Dr Kapil Patil, Associate professor, department of Kaumarabhritya, RB Ayurvedic Medical college and hospital, Jalesar road, mudi chauraha, Agra, Uttar Pradesh. Mail id – kapscool27@gmail.com

² Assistant professor department of Panchkarma, RB Ayurvedic Medical college and hospital, jalesar road, mudi chauraha, Agra, Uttar Pradesh.

³ HOD & Professor, department of Kaumarabhritya, SKAU, kurukshestra, Haryana.

⁴ Associate Professor, department of Kaumarabhritya, SKAU kurukshestra, Haryana

⁵ Associate Professor, department of Kaumarabhritya, Jayoti Vidyapeeth Womens University, Jaipur

***Corresponding Author:** Dr Kapil Patil, Associate Professor
department of Kaumarabhritya, RB Ayurvedic Medical college and hospital, jalesar road, mudi chauraha, Agra, Uttar Pradesh. Email: kapscool27@gmail.com

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Abstract

Cerebral palsy (CP) is a non-progressive neuromotor disorder resulting from early brain injury, affecting movement, posture, and often cognition, with a global prevalence of 2-3 per 1000 live births. In Ayurveda, CP aligns with Vatavyadhi, involving Vata predominance and Kapha avarana, correlating to conditions like Phakka roga, Pangulya, Ekangaroga, and Sarvagaroga. Etiology spans prenatal (Beeja dushti, Dauhrida apachara), perinatal (birth asphyxia), and postnatal factors (infections, trauma), classified as Sahaja, Garbhaja, or Doshabala.

Pathogenesis features Vata prakopa impacting Shiro-marpa and Asthi-sandhi, leading to spasticity, weakness, and mental impairments. Management emphasizes Dosha balance through Panchakarma, including preparatory Deepana-Pachana and Udwartana; main therapies like Sarvaanga Abhyanga, Swedana (including Shashtika Shali Pinda Swedana), Nasya, and Basti; and supportive oral medications such as Samwardhana Ghrita, Ashwagandha Ghrita, Swarnaprashana, and Medhya Rasayanas. These interventions nourish Dhatus, reduce spasticity, enhance motor skills, and improve quality of life.

This conceptual review, drawn from narrative literature, highlights Ayurveda's holistic, personalized approach, integrating Shodhana and Shamana for better outcomes than oral therapy alone. Integration with modern rehabilitation is advised, with calls for further clinical trials to validate efficacy.

Keywords: Cerebral palsy, non-progressive NMD, Vatavyadhi, Sahaj, Garbhaj, Doshabala vyadhi.

Introduction

Cerebral palsy (CP) is defined as a group of permanent disorders of movement and posture attributed to non-progressive disturbances in the developing fetal or infant brain.(1,5) It manifests as motor impairments, often with associated issues in sensation, cognition, communication, and behavior. Globally, CP affects 2-2.5 children per 1000 live births in developed nations, with higher rates in preterm or low-birth-weight infants.(2,22) In India, prevalence is estimated at 3 per 1000 live births, with spastic quadriplegia being predominant.(3)

From an Ayurvedic standpoint, CP does not correlate directly to a single disease but aligns with Vatavyadhi or Vata vikara, encompassing neurological and motor disorders.(2,7,10,12) Ayurveda emphasizes holistic health, integrating physical, mental, and spiritual well-being.(4,8) The condition is interpreted through Dosha (Vata predominance), Dushya (tissues like Mamsa and Asthi), and Srotas (channels) involvement, with etiological classifications such as Adhyatmika (hereditary), Adhibhautika (external), and Adhidaivika (supernatural).(2,11) This conceptual framework allows for personalized management based on Rogi-Roga Pareeksha (patient-disease examination), including Prakriti (constitution) and Ashtavidha Pareeksha (eightfold examination).

Ayurvedic Perspective on Cerebral Palsy

Etiological Factors (Nidana)

Ayurveda classifies CP etiology into prenatal (Garbhakaleen), perinatal, and postnatal factors, mirroring modern categories.(2,3,14,15,18,19)

- **Prenatal (Garbhakaleen Nidana):** Includes consanguineous marriages (Sa-gotriya), leading to Beeja dushti (genetic defects in sperm/ovum).(2) Maternal misconduct during Dauhrida avastha (pregnancy cravings period), such as Apathya ahara-vihara (inappropriate diet and lifestyle), contributes to Janmabala prakopa.(2,13) These align with modern prenatal risks like infections (TORCH), metabolic disorders, and chromosomal abnormalities.(2,3)
- **Perinatal Factors:** Birth asphyxia, prematurity, and obstetric complications like obstructed labor or cord prolapse are key.(2,3) In Ayurveda, these relate to Rasa krita (nutritional) and Dauhrada apachara (maternal errors), causing Vata aggravation.(2)
- **Postnatal Factors:** Infections (meningitis, encephalitis), trauma, and toxins account for about 10% of cases.(2) Ayurvedically, these are Aagantu (external) causes, vitiating Doshas post-birth.(2)

Overall, CP is seen as Vata predominant, with Kapha involvement in spasticity (Avarana janya vata vyadhi).(3) Classifications include Sahaja (congenital), Garbhaja (intrauterine), and Doshabala (Dosha-induced).(2,16,21)

Pathogenesis (Samprapti)

The Samprapti involves Vata prakopa (aggravation) affecting Shiro-marma (brain as vital organ) and Asthi-sandhi (bones and joints).(2) Kapha avarana (obstruction) leads to stiffness and impaired motor control.(3) Mental aspects (Manasa dosha) contribute to cognitive delays, linking to Jadatva (mental dullness).(2,12)

Types of CP and Ayurvedic correlations:(2)

- Spastic: Ekangavadha (monoplegia), Pakshavadha (hemiplegia), Sarvanga roga (quadriplegia), Pangu (diplegia).
- Dyskinetic/Athetosis: Cheshtavridhi/Chalatva (abnormal movements).
- Ataxic: Cheshtavridhi/Chalatva.

- Hypotonic: Saada (flaccidity).

Associated conditions include Mukatva (speech disorders), Badhirya (hearing impairment), and Anavasthita chittatva (mental instability).(2)

Ayurvedic Management Strategies

Ayurvedic management aims to balance Doshas, strengthen Dhatus, and improve motor functions through Shodhana (purification), Shamana (pacification), and supportive therapies. Panchakarma is central, combined with internal medicines for better outcomes.(3,5,6,9,25,26,27)

Preparatory Procedures (Purvakarma)

- **Deepana and Pachana:** To achieve Niramavastha (toxin-free state) and strengthen Agni (digestion, eg. Warm water boiled with Shunthi (*Zingiber officinale*) or Dhanyaka (*Coriandrum sativum*) is administered.(3)
- **Udwartana (Powder Massage):** Rookshana therapy using medicated powders (e.g., Kolakulathadi churna) to reduce Kapha, alleviate spasticity, improve circulation, and clear Srotas obstructions.(3) It enhances appetite and lightness, preparing for further treatments.

Main Therapies (Pradhana Karma)

- **Sarpaanga Abhyanga (Full-Body Oil Massage):** Using oils like Bala taila or Mahanarayana taila to nourish tissues, reduce Vata, and improve muscle tone.(3) It targets Mrudu and Snigdha guna to counteract stiffness.
- **Swedana (Sudation):** Includes Vaashpa swedana (steam bath) and Naadi swedana (localized steam). These pacify Vata, reduce pain, and enhance flexibility.(3)
- **Basti (Enema):** Key for Vata disorders. Matra basti (small oil enema) or Yoga basti (combination of oil and decoction) using Dashamoola kwatha strengthens muscles and corrects postural abnormalities.(3,11)
- **Nasya (Nasal Administration):** With Anu taila or Ksheerabala taila to nourish the brain (Shiro-marma) and improve sensory functions.(3)
- **Other Procedures:** Shirodhara (oil pouring on forehead) for mental stability; Pichu (oil-soaked cotton on head) for neurological support; Shirobasti (oil retention on head) for Vata pacification.(3)

Post-Therapy and Supportive Measures (Paschatkarma)

- **Internal medicines:** Herbal formulations like Ashwagandha (*Withania somnifera*), Brahmi (*Bacopa monnieri*), and Saraswatarishta for neuroprotection and cognitive enhancement.(3,31,32)
- **Diet and Lifestyle:** Sattvic diet, avoiding Vata-aggravating foods; Yoga and Pranayama for motor coordination.
- **Duration:** Therapies are repeated based on severity, often 14-21 days per cycle, for long-term benefits.(3)

Conceptual understanding emphasizes tailoring treatments to Dosha dominance (e.g., Vata shamana in hypotonic CP) and patient Prakriti, promoting independence and holistic well-being.

Discussion

Ayurveda's strength lies in its multifactorial approach, addressing root causes like Dosha imbalance rather than symptoms alone. Studies indicate Panchakarma reduces spasticity and improves motor skills more effectively than oral medications alone.(3,5,6,9,28) However, integration with modern therapies (physiotherapy, occupational therapy) is recommended for optimal outcomes. Limitations include the need for more randomized controlled trials to validate

efficacy.

Deepana and Pachana (Preparatory Digestive Enhancement): Deepana and Pachana are foundational preparatory procedures in Ayurvedic management of CP, aimed at igniting Agni (digestive fire) and achieving Niramavastha (toxin-free state) before intensive therapies. In CP, where Vata aggravation leads to impaired motor functions and nutritional deficiencies, these steps ensure optimal absorption of subsequent treatments. Deepana stimulates Agni using herbs like Shunthi (*Zingiber officinale*), which has Ushna (hot) and Tikshna (sharp) properties to counteract Kapha-induced sluggishness. Pachana pacifies Ama (undigested toxins) that obstruct Srotas (channels), contributing to spasticity and weakness. For pediatric CP patients, administration involves simple, palatable forms such as warm water boiled with Shunthi or Dhanyaka (*Coriandrum sativum*), given in small doses to avoid overwhelming the delicate Agni. This process aligns with Ayurvedic principles of Rogi Pareeksha, tailoring to the child's Prakriti (constitution) – e.g., more Pachana for Kapha-dominant types. By clearing Ama, it prepares the body for Snehana (oleation) and Swedana (sudation), enhancing tissue permeability and nutrient delivery to affected areas like muscles and nerves. Conceptually, this duo addresses the root of Vatavyadhi by preventing further Dosha imbalance. Literature highlights its role in reducing symptoms like constipation and poor appetite common in CP, fostering better growth and motor milestones. Combined with dietary advice (Pathya Ahara like light, warm foods), it promotes holistic well-being. Clinical observations suggest improved energy levels and reduced spasticity post-preparation, underscoring its preventive and supportive efficacy. In essence, Deepana-Pachana embodies Ayurveda's emphasis on foundational health, paving the way for transformative interventions in CP management.

Udwartana (Powder Massage): Udwartana, a Rookshana (drying) therapy, is particularly beneficial in CP for alleviating Kapha avarana that exacerbates Vata-induced spasticity and stiffness. Using medicated powders like Kolakulathadi Churna, applied in upward strokes, it induces dryness to counter Snigdha (unctuous) qualities of Kapha, clearing Srotorodha (channel obstructions) in superficial Dhatus (Twak, Rakta, Mamsa, Meda). This enhances lymphatic and blood circulation, reducing inflammation and promoting lightness in the body. In CP children, where muscle tone abnormalities hinder movement, Udwartana targets Aamavastha (toxin accumulation), preparing for deeper therapies. The procedure involves gentle massage to avoid discomfort, focusing on limbs and trunk to improve joint mobility and reduce contractures. Ayurvedically, it balances Kapha-Vata, as per Charaka Samhita, by generating heat through friction, which stimulates Agni and alleviates pain.(12) It's especially useful in spastic CP, correlating to Avarana Janya Vatavyadhi, where Kapha blocks Vata flow. Conceptual integration draws from Dosha theory: Kapha's heaviness contributes to Jadatva (dullness) and Pangulya (locomotor issues), while Udwartana's Laghu (light) Guna counters this. Literature notes appetite enhancement and body lightness post-treatment, aiding nutritional uptake crucial for growth-delayed CP patients. Precautions include avoiding in emaciated children or during acute Vata flare-ups, emphasizing personalized Rogi-Roga Pareeksha. Overall, Udwartana exemplifies Ayurveda's holistic approach, not just symptom relief but root correction. By removing obstructions, it facilitates subsequent oleation, leading to better motor coordination and quality of life. Studies indicate reduced spasticity scores, validating its role in comprehensive CP care.(27)

Sarvaanga Abhyanga (Full-Body Oil Massage): Sarvaanga Abhyanga involves therapeutic oil massage across the body, nourishing tissues and pacifying Vata in CP management. Oils like

Bala Taila or Mahanarayana Taila, with Snigdha (unctuous) and Mridu (soft) properties, penetrate Dhatus to strengthen muscles, improve tone, and reduce spasticity. In CP, where Vata derangement affects Shiro-Marma (brain) and motor functions, Abhyanga stimulates sensory inputs via Sparshanendriya (touch), enhancing CNS responses and circulation. The procedure entails warm oil application with rhythmic strokes, tailored to the child's tolerance – lighter for hypotonic types, firmer for spastic. It nourishes Mamsa and Asthi Dhatus, preventing atrophy and deformities like contractures. Conceptually, it embodies Vata Shamaṇa, as oils counteract Ruksha (dry) qualities, promoting Bala (strength) and Pushti (nourishment). Literature correlates it to Vatavyadhi treatments, noting improved venous/lymphatic drainage and transdermal absorption for deeper healing.(26) For CP, it addresses multifaceted issues: physical (reduced stiffness, better joint mobility) and mental (calming Anavasthita Chittatva via parasympathetic stimulation). Integrated with Swedana, it amplifies effects, aligning with Panchakarma's sequential approach. Precautions include avoiding during fever or indigestion, based on Ashtavidha Pareeksha. This therapy highlights Ayurveda's preventive ethos, fostering independence in daily activities. Clinical insights show enhanced motor skills, like sitting or grasping, and overall vitality. By balancing Doshas and enhancing Prana flow, Abhyanga offers sustainable support, improving life quality beyond symptomatic relief.

Swedana (Sudation Therapy): Swedana, or sudation, induces sweating to pacify Vata and clear Srotas in CP therapy. Types like Vaashpa Swedana (full-body steam) and Naadi Swedana (localized tube steam) use herbal decoctions (e.g., Dashamoola) to relieve stiffness and pain. In CP, where Kapha-Vata imbalance causes Sandhi Cheshta Hani (joint immobility), Swedana's Ushna and Drava Gunas liquefy obstructions, enhancing flexibility. Procedure: Post-Abhyanga, steam exposure softens tissues, aiding toxin elimination. For children, mild sessions prevent overheating, focusing on affected limbs. Conceptually, it counters Stambha (rigidity) and Shoola (pain), as per Sushruta, by dilating channels and improving circulation.(11) It's vital in spastic CP, reducing scissoring and promoting gait. Integrated with prior Rookshana, it prepares for Basti, amplifying Vata control. Literature emphasizes its role in Vatavyadhi, noting reduced spasticity and better motor functions. Contraindications: Avoid in Pitta aggravation or dehydration. Swedana embodies holistic detoxification, supporting physical and subtle energy balance for CP rehabilitation.

Shashtika Shali Pinda Swedana (Navara Kizhi or Rice Bolus Sudation): Shashtika Shali Pinda Swedana, a specialized form of Swedana (sudation therapy), is highly recommended in Ayurvedic management of CP for its nourishing and rejuvenating effects on neuromuscular tissues. This procedure involves preparing boluses (pottalis) from Shashtika Shali (a specific variety of red rice) cooked in cow's milk and Balamoola Kwath (decoction of Bala root, *Sida cordifolia*, known for its Vata-balancing properties). The rice is tied in cotton cloth to form boluses, which are then warmed and used for simultaneous heating, compression, and massage over the body or affected areas. In CP, characterized as Vata Vyadhi with Kapha Avarana leading to spasticity and muscle atrophy, this therapy addresses key pathologies. The heat and pressure from the pottalis stimulate nerve endings, enhance local blood circulation, reduce muscle stiffness, and increase tendon extensibility. It nourishes atrophied muscles, preventing further degeneration and deformities like contractures. The Balamoola Kwath's Brimhana (nourishing) qualities, combined with milk's Snigdha (unctuous) nature, counteract Vata's Ruksha (dry) attributes, promoting Dhatu Poshana (tissue nourishment) and Bala (strength). Procedure: After preparatory Abhyanga with suitable oils (e.g., Mahanarayana Taila), warm pottalis are applied

for 20-30 minutes in synchronized movements by therapists. For pediatric CP patients, sessions are gentle, focusing on limbs and trunk to improve motor functions like crawling or standing. It is particularly effective in spastic or hypotonic CP, correlating to Sarvanga Roga or Saada, by alleviating pain and enhancing flexibility. Conceptually, it aligns with Ayurveda's emphasis on Srotoshodhana (channel clearing) and Vata Shamana, as per Charaka Samhita.(12) Literature notes improved circulation, reduced spasticity, and better quality of life, with precautions against use in acute inflammation or Pitta aggravation. Integrated with other Panchakarma, it offers holistic support, fostering independence in daily activities.

Nasya (Nasal Administration Therapy): Nasya, or nasal therapy, is a pivotal Panchakarma procedure in CP management, targeting the Shiro-Marma (head as vital organ) to nourish neurological structures and clear obstructions. In CP, viewed as Shiro-Marmabhigathaja Vata Vyadhi, Nasya eliminates exacerbated Kapha blocking upper channels, improving sensory and cognitive functions impaired by Vata derangement. Types relevant to CP include Brimhana Nasya (nourishing, using oils like Anu Taila or Dhanwantara Taila) for vitality and Shodhana Nasya (cleansing, with powders like Shunthi Churna) for Kapha removal. Pradhamana Nasya, using medicated powders, and Pratimarsha Nasya (daily mild doses) are highlighted by Acharya Kashyapa for pediatric use.(18,30) Procedure: The child receives a gentle head and face massage, followed by mild Swedana. Medication (e.g., Pachendriyavardhan Taila for sensory enhancement, Shadbindu Taila for sinus clearance) is instilled into nostrils (2-8 drops per nostril, age-dependent). Post-administration, shoulders and back are massaged, and warm water gargling is advised to prevent irritation. Mechanistically, Nasya delivers drugs trans-mucosally to the brain via olfactory pathways, strengthening Shira (head) and Indriyas (senses). It pacifies Vata, reduces seizures (Aakshepaka), improves speech (countering Mukatva), and enhances cognition (addressing Jadatva). Charaka Samhita praises it for Shiro Rogas, as it empowers sensory organs and prevents mental dullness.(12,37) In CP, it positively impacts associated issues like hearing impairment (Badhirya) and visual abnormalities. Literature emphasizes its role in Pratimarsha form for safe, long-term use in children, nourishing deeper Dhatus and promoting Prana Vayu flow. Contraindications include acute colds or indigestion; dosage is tailored via Rogi Pareeksha. Combined with oral Medhya drugs, Nasya fosters holistic neurodevelopment, improving quality of life without invasive methods.

Basti (Medicated Enema Therapy): Basti, hailed as the cornerstone of Panchakarma for Vata disorders, is the most crucial therapy in CP management, often termed "Ardha Chikitsa" (half treatment) for its profound Vata control.(11,26) In CP, a Vata-predominant condition with motor impairments, Basti nourishes from Pakwashaya (colon, Vata's root), addressing spasticity, weakness, and deformities. Subtypes include Matra Basti (small oil enema, e.g., Bala Taila) for Balya (strengthening) and Brimhana (nourishing), and Yoga Basti (alternating oil-decoction) for comprehensive Vata Hara. Medications like Dashamoola Kwath churn Purisha (feces) and Doshas, distributing Snehana (oleation) body-wide, expelling toxins. Procedure: Using a Basti Yantra, suspension is administered rectally (or vaginally in females), reaching umbilicus, hips, and intestines. For children, small doses (Matra Basti: 60-120 ml) are given post-Swedana, retained briefly. It acts systemically via rectal absorption into blood/lymph, inhibiting neuromuscular transmission and securing sympathetic receptors. Benefits in CP: Enhances gross/fine motor skills (sitting, walking, grasping), nourishes Dhatus, improves Bala/Varna (vigor/complexion), and prevents contractures. It controls Vata energy, reducing pain and improving posture in conditions like Pangu or Sarvanga Roga. Conceptually, per Sushruta, Basti

tames Vata like no other, promoting Mardavatva (softness) and Harsha (cheerfulness).(11) Literature confirms better overall condition, with Matrabasti aiding daily functions.(9,28) Precautions: Avoid in acute diarrhea; sequence after Udwartana/Swedana. Integrated with Abhyanga, it offers sustainable rehabilitation, enhancing independence and life expectancy in CP children.

Oral Medication (Shamana Aushadhi or Internal Medicines): Oral medications in Ayurvedic CP management complement Panchakarma by providing internal nourishment, Dosha balance, and neuroprotection, focusing on Shamana (pacification) without elimination. In CP, these target Vata-Pitta Shamaka, Medhya (cognitive-enhancing), and Balya properties to address motor delays, mental impairments, and growth issues. Key formulations:

- **Samwardhana Ghrita:** Recommended by Kashyapa for Pangu, Muka, Ashruti, and Jada children. This Ghrita (medicated ghee) accelerates growth, early milestones (crawling, walking), and functional activities, nourishing Dhatus and countering nutritional deficits.(18,30)
- **Ashwagandha Ghrita:** Specifically for vitality in children, it's Vata-Pitta Shamaka, Agni Deepaka (digestion enhancer), and Srotoshodhana (channel cleanser). It strengthens muscles, reduces spasticity, and supports Snehana.(31)
- **Swarnaprashana:** Oral gold with herbs, Ghrita, and Madhu for infants. Sushruta notes it boosts Buddhi (intellect) and Bala, promoting healthy development and immunity against infections contributing to CP sequelae.(33,35)
- **Kumarabharana Rasa:** Immunomodulatory and rejuvenating, with antibacterial/antipyretic effects, fostering growth and preventing disabilities.
- **Medhya Rasayanas:** Charaka's quartet—Yastimadhu, Guduchi, Shankhapuspi, Mandukaparni—averts physical/mental impairments. Kashyapa adds Brahmi, Vacha, Triphala for Lehana (licking mixtures), enhancing cognition and avoiding Jadatva.(12,37,18) Administration: Age-appropriate doses (e.g., Ghrita in milk), repeated cycles based on Prakriti. They nourish deeper tissues, improve Agni, and support milestones. Conceptually, these align with Rasayana for Dhatu Poshana, addressing CP's multifactorial nature. Literature shows better mental/physical growth, reduced seizures, and enhanced quality of life when combined with Panchakarma. Safe for long-term use, they promote holistic well-being without side effects.

Conclusion

Ayurvedic management of CP offers a conceptual framework rooted in Dosha theory, with Panchakarma as a cornerstone for motor and cognitive improvement. By drawing from etiological insights and therapeutic protocols, it provides a supportive, non-invasive path to enhance quality of life. Further research is essential to bridge Ayurvedic concepts with evidence-based practice. (3,5,9)

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