



An Ayurvedic Approach And Management Protocol To Cerebral Palsy In Children: A Review Article

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Abstract: Cerebral Palsy refers to a collection of lasting neurological conditions that mainly influence movement, coordination of muscles and posture due to atypical brain development or injury occurring before, during or shortly after birth. The intensity and manifestations of CP can vary greatly among individuals, with some experiencing mild motor challenges while others face significant physical disabilities. Although contemporary medicine emphasizes symptom management through physiotherapy, medications and surgical procedures, alternative methods like *Ayurveda* provide a comprehensive approach to treatment and care. Combining *Ayurveda* with contemporary rehabilitation methods can lead to a more thorough and patient-focused strategy for managing cerebral palsy. Although *Ayurveda* may not provide a conclusive cure for CP, its holistic approaches are designed to enhance the patient's quality of life, alleviate symptoms and improve overall. It mainly focuses on managing *Vata Dosha*. Additional clinical research and evidence-based investigations are required to confirm the effectiveness of *Ayurveda* treatment for CP and to develop standardized treatment guidelines.

Keywords- Cerebral palsy, *Ayurveda*, *Vata*, Brain, *Dosha*.

INTRODUCTION

Cerebral palsy encompasses a group of disorders that stem from abnormal brain development or injury to the growing brain, usually occurring before, during or shortly after birth. This condition affects motor capabilities, coordination and posture and is often linked to additional complications like muscle tightness, cognitive impairments and difficulties with speech. As one of the leading causes of physical disability in children, CP demands comprehensive management approaches to tackle the various challenges.

Ayurveda, an ancient medicinal practice from India, suggests that health stems from a harmonious balance among the body's three main *Dosha's Vata, Pitta* and *Kapha*. Each *Dosha* plays a crucial role in specific physiological processes and an imbalance among these forces can lead to illness. Regarding cerebral palsy, *Ayurveda* provides perspectives on the underlying causes of the condition, which are perceived as disturbances in the flow of *Vata Dosha*, the force that regulates movement, communication and neurological activities within the body.

CAUSES OF CEREBRAL PALSY¹

PRENATAL	PERINATAL	POSTNATAL
Infections (Rubella, Cytomegalovirus)	Birth asphyxia	Neonatal Infections (Like Meningitis)
Maternal Malnutrition	Premature Delivery	Traumatic Brain Injury
Toxins	Low Birth Weight	Severe Neonatal Jaundice
Placental Insufficiency	Hypoxic-Ischemic Encephalopathy	
Genetic Mutations		

In *Ayurveda* different *Acharya* described about causes of cerebral palsy as follows-

1. Inappropriate *Ritu*, *Kshetra*, *Ambu*, *Bija* ²:

The terms *Ritu*, *Kshetra*, *Ambu*, *Bija* can be compared to ovulation cycle, uterus, amniotic fluid and gametes respectively. Any type of problem in the above-mentioned factors can lead to conditions like cerebral palsy. Problems in *Bija* can be compared to genetic mutations. Problems in *Ambu* can be compared to placental insufficiency.

2. *Dauhrivadamaana* ³:

Dauhrida in simple terms can be defined as desires. According to *Ayurveda*, the foetus expresses his desires through his mother. If such desires are not met then it is called *Dauhrivadamaana*. This can lead to abnormalities in the growing foetus which can further give rise to conditions like cerebral palsy. The above-mentioned point can be compared to maternal malnutrition which in turn can lead to low birth weight, premature delivery.

3. *Garbhaupaghatkar Bhaava* ⁴:

Pregnant women should avoid foods that are too hot and pungent. Avoid doing activities which are beyond her capacity. She should avoid intoxicating substances during her pregnancy. All these come under the context of *Garbhaupaghatkar Bhaava*. If such instructions are not followed, it may give rise to conditions like cerebral palsy. Toxins, infections can be included in the above point.

4. Incompatible *Garbhavriddhikara Bhaava* ⁵:

Garbha is made up of 6 basic elements which are *Matruja*, *Pitruja*, *Satvaaja*, *Aatmaja*, *Satmyaja*, *Raasaja*. If any one or more of the following factors are incompatible, it may affect the foetus and cause disabilities like cerebral palsy.

PATHOPHYSIOLOGY

Cerebral palsy is defined by persistent neurological challenges that impact movement and muscle tone. The damage in the brain's motor areas can cause different levels of spasticity, dyskinesia, ataxia or mixed motor issues. Current medical perspectives propose that CP may be caused from various factors such as perinatal hypoxia, infections during pregnancy, brain injuries or genetic factors. When the brain experiences a significant lack of oxygen and blood flow it triggers a chain reaction that leads to mitochondrial failure. In response to reduced blood supply the body redirects circulation to critical organs like the brain, heart and adrenal glands. However, when blood flow is restored damaged ion channels allow an overwhelming influx of calcium ions and free radicals into affected areas worsening cellular damage. This disruption leads to an excessive buildup of glutamate in the synapses due to transporter failure in supportive glial cells. The excess glutamate overstimulates NMDA receptors further increasing oxidative stress and generating more free radicals. As a result, enzymes that mediate cell damage are activated and mitochondrial dysfunction leads to the release of pro-apoptotic factors like cytochrome C triggering programmed cell death (apoptosis). Additionally, the accumulation of lactic acid interferes with the mitochondrial respiratory chain further impairing energy production. Ultimately these processes cause widespread cell death with glial cells being even more vulnerable than neurons. However, according to *Ayurveda* principles, cerebral palsy can be seen as a disruption in *Vata Dosha* especially in the subtypes of *Vata* that govern neurological functions. There is no perfect co- relation for cerebral palsy in *Ayurveda*. But can be compared to *Vatvyadhi*. *Vata* is regarded as the most essential *Dosha* since it oversees the functions of all bodily systems including the nervous system, musculoskeletal system and cognitive functions. When *Vata* is in equilibrium, the body operates smoothly,

but an imbalance can result in issues with motor skills, coordination and cognitive abilities which are all associated with cerebral palsy.

Samprapti Ghataka

Dosha- Vata Pradhana Tridosha

Dushya- Asthi, Sandhi, Snayu, Kandara

Srotasa- Majjavaha

Srotodusti – Sanga

Agni- Manda

Rogamarga – Madhyama

Vyaktisthana- Sarvanga Sharira

Sadhyasadhyata- Yapy

CLASSIFICATION OF CEREBRAL PALSY. ⁶

CP is categorized based on movement disorders and the affected body parts:

1. Spastic CP (Most Common, 70-80%) – Stiff, tight muscles due to increased muscle tone.
Hemiplegic CP: One side of the body is affected.
Diplegic CP: Lower limbs are more affected than upper limbs.
Quadriplegic CP: All four limbs and the trunk are severely impacted.
2. Dyskinetic CP (10-15%) – Involuntary movements due to basal ganglia damage.
3. Ataxic CP (5-10%) – Poor balance and coordination.
4. Mixed CP – A combination of spastic, dyskinetic or ataxic features.

SIGNS AND SYMPTOMS

Movement and coordination issues are the major symptoms of cerebral palsy. Associated symptoms include:

AYURVEDA	MODERN SCIENCE
<i>Vata Imbalance</i>	Stiffness
<i>Deha Bala Kshaya</i>	Weakness in muscles
<i>Dhatukshaya</i>	Poor nourishment of muscles
<i>Vak Vikriti</i>	Difficulty in speaking
<i>Anga Graha</i>	Spasticity and stiffness
<i>Indriya Vikara</i>	Vision, hearing abnormalities
<i>Jadatva</i>	Delayed mental growth

DIAGNOSIS AND ASSESSMENT

MODERN APPROACH

Developmental screening for early signs of motor delay.
MRI/CT scans to detect brain abnormalities.
EEG for seizure activity.
Gait analysis and genetic testing for better prognosis.

AYURVEDA DIAGNOSIS

Nadi Pariksha (pulse diagnosis) to assess *Dosha imbalance*.
Prakriti analysis (body constitution) to personalize treatment.
Examination of *Dhatus* (tissues) to evaluate muscle and nerve degeneration.

TREATMENT

Ayurveda Management For Cerebral Palsy

It involves treatment methods to improve the child's motor function to get better quality of life. To achieve harmony in individuals with CP, *Ayurveda* approaches concentrate on:

Calming Vata Dosha: As *Vata* regulates movement and neurological activities, treatments are tailored to alleviate the hyperactive *Vata*, lessen spasticity and enhance coordination.

Revitalizing Prana: *Prana*, the essential life force, is deemed vital for both mental and physical well-being. Therapies aim to facilitate the circulation of *Prana* throughout the body and mind.

Boosting Sattva: *Sattva*, representing mental clarity, plays a crucial role in cognitive abilities. *Ayurveda* methods seek to restore mental equilibrium, diminish anxiety and enhance focus and clarity.

1. Herbal Remedies.⁷

Ayurveda herbal preparations are frequently utilized to enhance the nervous system, alleviate muscle stiffness and boost overall vitality. The herbs listed below are typically recommended for those with CP:

Ashwagandha (*Withania somnifera*): This adaptogenic plant is famous for its capacity to fortify the nervous system, enhance coordination and diminish anxiety. It is commonly employed to tackle the weakness and fatigue linked to CP especially in those with low muscle tone and energy levels.

Brahmi (*Bacopa monnieri*): Renowned for its cognitive-boosting effects, Brahmi works on brain function, memory and focus. It is particularly beneficial in enhancing cognitive abilities in individuals with CP, notably when developmental delays or learning disabilities are present.

Shatavari (*Asparagus racemosus*): This herb is commonly utilized to balance the *Vata* and *Pitta Dosha*. It is thought to nourish and revitalize the body, improve strength and assist in tissue regeneration.

Guduchi (*Tinospora cordifolia*): As a strong immunomodulator, *Guduchi* is employed to cleanse the body and eliminate *Ama* from the system. Its anti-inflammatory effects can aid in alleviating spasticity and muscle discomfort in people with cerebral palsy.

Shankhpushpi (*Convolvulus pluricaulis*): A renowned brain tonic in *Ayurveda*, plays a crucial role in managing Cerebral Palsy (CP) by supporting cognitive function, calming *Vata Dosha* and enhancing neural development. Known for its neuro-protective, anxiolytic and memory boosting properties, it helps improve speech, coordination and learning ability in children with CP. By balancing *Vata*-related neurological imbalances, *Shankhpushpi* aids in reducing spasticity, hyperactivity and emotional instability.

Mandukaparni (*Centella asiatica*): Highly valued in *Ayurveda* for its intellect-enhancing properties making it beneficial in managing cerebral palsy. As a potent brain tonic, it helps improve cognitive functions, memory and mental clarity while supporting nerve regeneration and reducing inflammation. Its anxiolytic effects aid in calming hyperactivity and muscle spasticity common in cerebral palsy.

Jatamansi (*Nardostachys jatamansi*): A revered herb in *Ayurveda* known for its neuro-protective and *Medhya* properties making it beneficial in managing cerebral palsy. It helps in calming the nervous system, reducing hyperactivity and improving cognitive functions, memory and concentration.

Oral formulations: Oral formulations like *Samvardhan Ghrita*⁸, *Saraswataristha*⁹, *Kumarkalyanrasa*¹⁰, *Ashwagandha Ghrita*¹¹, *Medhya Rasayan*¹², *Panchgavya Ghrita*¹³, *Mahapanchgavya Ghrita*¹⁴, *Brahmi Ghrita*¹⁵, *Suvarnaprashan*¹⁶, *Kumarbharan Rasa*¹⁷.

2. Panchkarma

Panchakarma, an essential aspect of *Ayurveda* treatment, is an extensive detoxification procedure designed to remove toxins (*Ama*) from the body, rebalance the *Doshas* and enhance overall health. The subsequent *Panchakarma* therapies are especially advantageous for those with CP:

A) Sarvanga Abhyanga¹⁸

Abhyanga is a vital treatment for harmonizing *Vata Dosha*. This healing massage using warm herbal oils encourages relaxation, alleviates muscle tightness, enhances blood flow and fortifies the nervous system. It is particularly beneficial for individuals with CP who face muscle spasticity or rigidity.

Oils like *Mahanarayan Tailam*,¹⁹ *Kshirbala Tailam*,²⁰ *Ashwagandhabalalakshadi Tailam*²¹, *Dhanwantar Tailam*²² can be used for *Abhyanga*.

B) Swedana

Swedana, a therapeutic steam treatment, utilizes heat to expand the body's channels, eliminate toxins and ease muscle tension. It is frequently paired with *Abhyanga* to enhance its healing properties. *Swedana* is especially beneficial for individuals with cerebral palsy who experience significant muscle stiffness and inadequate circulation.

Specific type of *Swedana* like *Nadi Sweda*, *Shasthishali Pinda Sweda*, *Patra Pinda Sweda* can be used. In *Shasthishali Pinda Sweda* rice granules are boiled in milk and medicines and *Swedana* is done with help of *Pottali*. In *Patra Pinda Sweda* leaves of *Eranda*, *Nirgundi* or *Arka* can be used.

C) Basti

Basti is a key therapy in *Panchakarma*, especially for imbalances related to *Vata*. This technique includes the use of herbal enemas that assist in stabilizing *Vata*, cleansing the digestive tract and enhancing the proper operation of the digestive system. Consistent *Basti* treatment may alleviate constipation, frequently seen in people with CP and also boost overall physical strength. *Kshirbala tailam*²³, *Prasarni tailam*²⁴ can be used for *Basti* treatment. The oils are generally administered in the form of *Matra Basti* as it can be administered daily without putting a toll on the body.

D) Nasya

Medication is given through nose in the above process. At first patient's shoulder and head are massaged and then medication is injected in each nostril. As it gives power to head it is helpful in managing cerebral palsy. Oils like *Dhanwantar Tailam* or *Churna* like *Sunthi Churna* are generally used for this process.

3) Dietary modifications

In *Ayurveda* nutrition is crucial for maintaining the harmony of the *Doshas* and enhancing health. For those with cerebral palsy, it is important to follow a diet that calms *Vata*. Foods that are warm, moist, grounding and nourishing are suggested to help restore equilibrium and boost overall vitality.

Comforting nourishing meals like soups, stews and porridges are perfect for individuals with cerebral palsy as they are gentle on the digestive system and provide essential nourishment.

Sweet, fatty foods such as ghee (clarified butter) are helpful for balancing *Vata* and enhancing muscle strength.

It is advised to steer clear of dry, cold foods like raw vegetables and large amounts of grains as these can elevate *Vata* and contribute to heightened spasticity and rigidity.

4) Lifestyle modifications

In *Ayurveda*, adjusting one's lifestyle is crucial for handling chronic issues such as cerebral palsy. Establishing a consistent daily schedule getting sufficient rest and minimizing stress are important for harmonizing *Vata* and enhancing overall well-being. Activities like gentle massage, application of oils and creating a peaceful and supportive atmosphere can contribute to better quality of life and alleviate symptoms of CP.

Conventional Treatment Modalities ²⁵

The current standard of care for CP consists of a multi-disciplinary approach.

Physical therapy: Aims to enhance motor skills and strength through targeted exercises and adaptive equipment.

Medications: Comprise anti-spasticity medications such as Baclofen, botulinum toxin injections and anticonvulsants to control seizures.

Surgical interventions: In instances of significant spasticity or skeletal deformities, surgical procedures may be undertaken to alleviate tight muscles or rectify bone abnormalities.

Assistive devices: These can include wheelchairs; orthotic supports or tools for communication. Although these therapies are effective in enhancing quality of life and functional results, they frequently fail to tackle the root neurophysiological imbalances or offer enduring relief. Additionally, the negative side effects of some medications like muscle relaxants as well as the invasive nature of surgical interventions emphasize the necessity for a more integrated and complementary method, such as *Ayurveda*.

Physiotherapy: It involves specific exercises generally performed thrice a day.

DISCUSSION

Although cerebral palsy as a disease does not have direct correlation in *Ayurveda*, based on its clinical manifestations it can be compared to *Vatvyadhi* given in texts of *Ayurveda*. Although cerebral palsy is difficult to cure completely *Ayurveda* therapy can be used along with conventional modalities in order to give a better life to the patient. In case of *Ayurveda* different forms treatment can be used in patients of cerebral palsy. Procedures like *Abhyanga*, *Swedana*, *Basti*, *Nasya* provide fascinating results in a patient suffering from cerebral palsy. The main aim of procedures like *Abhyanga* and *Swedana* is to reduce muscle stiffness and reduce the vitiated. In case of *Abhyanga* different types of oils are used for the above-mentioned purpose. In case of *Swedana* different types like *Shashthishalipinda Sweda*, *Nadi Sweda*, *Patra Pinda Sweda* can be used. *Basti* can be considered as most important treatment when it comes to controlling the elevated *Vata*. Different types of oils used this procedure are beneficial in the treatment. Along with the above-mentioned procedures internal medications given in different *Samhitas* are beneficial in managing cerebral palsy. *Ayurveda* provides not only treatment but dietary modifications as well as lifestyle modifications which help in managing cerebral palsy. Hence in order to give better life as well as to increase the life expectancy of patient with cerebral palsy *Ayurveda* can be seen as a good choice.

CONCLUSION

Cerebral palsy presents ongoing challenges that necessitate thorough and personalized management. While contemporary medicine provides considerable progress in symptom control *Ayurveda* offers a comprehensive framework for tackling the underlying causes of CP especially by harmonizing the *Vata* Dosha. *Ayurveda* methods such as herbal treatments, *Panchakarma* therapies, dietary changes and lifestyle adjustments can work alongside conventional therapies and enhance the quality of life for those affected by CP. By integrating *Ayurveda* principles into the multidisciplinary care of CP, healthcare practitioners can present a more holistic and cohesive approach that improves both the physical and mental health of individuals dealing with this intricate condition. The main goal of cerebral palsy management is to promote the motor development and function, prevent the onset of secondary impairment. *Ayurveda* protocol helps in nourishing the body and enhancing gross and fine motor skills. It also enhances general health and quality of life.

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