

Ayurvedic Management of Cerebral Palsy: Review of Literature

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ABSTRACT

The term "brain paralysis" refers to cerebral palsy. It is a disability that impairs movement and posture. The general term "cerebral palsy," sometimes known as "CP," refers to a loss or impairment of motor function brought on by brain injury. The brain injury or aberrant brain growth that takes place before, during, or right after a child's birth results in brain damage. Body movement, muscular control, coordination, tone, reflex, posture, and balance are all impacted by cerebral palsy. Only a portion of the brain is hurt, primarily the areas that regulate movement. Once injured, brain tissue does not regenerate or worsen. However, depending on how a doctor treats the child and how much brain damage there is, the motions, body positions, and associated issues may get better or worse. A brain injury that results in a permanent, non-progressive, and occasionally growing disturbance of tone, movement, or posture is known as cerebral palsy. With 2-3 newborns per 1000 live births affected, it is the most widespread chronic motor impairment in children.

William John Little was the first to characterise it, stating that "cerebral palsy is a disease of motor control caused to a static lesion of the developing brain."

Keywords: Panchakarma, Ayurveda, Cerebral Palsy, Basti, Swedan, Nasya

INTRODUCTION

The terms "cerebral palsy" and "movement or postural palsy" relate to brain disorders. A range of persistent diseases that have an impact on muscle coordination and bodily motions collectively go by the name of cerebral palsy. It is brought on by harm to one or more particular brain regions that regulate muscle tone and motor function. The ensuing deficits typically manifest during prenatal development or early childhood. It can also happen just before, during, or right after birth. Some cerebral palsy patients may not be able to walk, talk, eat, or play in the same ways as most other kids. Cerebral paralysis is defined as a chronic CNS disability, including stance and tone, occurring early in life and not as a

result of a dynamic neurological condition linked to visual, hearing, dental or behavioral issues, with or without seizures. The most typical motor disability in children is cerebral paralysis. Cerebral paralysis occurs 7.5 per 1000 live births on average, 2.1 per 1000 live births in singletons, and 80 per 1000 in babies weighing less than 1500 grams. In India, 3.8% of the population is affected by a few frames of incapacity, which affects 10% of the global population for various reasons. Brain paralysis affects between 15–20% of all physically disabled children. In India, the frequency is estimated to be 3/1000 live births. Spastic quadriplegia comprised 61% of the cases in a study of 1000 cases with cerebral palsy, followed by diplegia in 22%.¹ The increased

survival of extremely premature newborns weighing less than 1000 grams, who develop CP at a rate of 15 per 100, has led to a slight increase in the prevalence of CP. Preterm birth, having twins, contracting certain illnesses like toxoplasmosis or rubella while pregnant, being exposed to methylmercury while pregnant, a difficult delivery, and head damage during the first few years of life are other risk factors. It is acknowledged that acquired hereditary causes account for nearly 2% of cases.

There is not a single sickness or condition in Ayurveda that exactly resembles CP. *Phakka* (a type of nutritional ailment), *pangulya* (locomotor disorders), *mukatva* (dumbness), *jadatva* (mental disorders), *ekangaroga* (monoplegia), *sarvangaroga* (quadriplegia), *pakshaghata* (hemiparesis), and *pakshavadha* (hemiplegia), among others, are some conditions addressed in Ayurveda that (neurological disorders). It is possible to classify spastic CP as "*Avarana janya vata vyadhi*" or "*Kaphavrita Vata*."² The condition that closely resembles CP is vata vyadhi. Some writers claim that CP might be referred to as "*Shiro-Marmabhigathaja Bala Vata Vyadhi*" in Ayurveda. Patients with CP can significantly improve their quality of life by undergoing ayurvedic *Panchakarma* therapy, which combines the five main ayurvedic procedures and several associated procedures intended to cleanse the body. Combining internal medicine with *Panchakarma* treatments is believed to be more successful than solely oral medicine. *Panchakarma* treatments such as *Udwartana* (medicinal powder massage), *Sarvaanga Abhyanga* (full body massage with medicated oil), *Vaashpa Swedan* & *Naadi Swedan* (steam bath), and *Basti* (oil and decoction enemas), among others, are shown to be helpful in the management of CP in children. The current study focuses on different *panchakarma* techniques that are widely practiced and proven to be

successful in the treatment of childhood cerebral palsy.

Classification

The topographic classification of cerebral palsy includes quadriplegia, hemiplegia, monoplegia, and diplegia; monoplegia and triplegia are exceedingly uncommon. The impacted regions substantially overlap. Diplegia, which accounts for 30%–40% of cases, hemiplegia, 20%–30%, and quadriplegia, 10%–15%, are the most prevalent forms in most research.

The various mobility limitations caused by cerebral palsy are broken down into six major classes. According to the type of Neuromuscular impairment, CP can be divided into

I. Spastic:

- Diplegia
- Monoplegia
- Hemiplegia
- Quadriplegia

II. Choreoathetoid

III. Ataxic

IV. Dyskinetic

V. Hypotonic

VI. Mixed

Causes of Cerebral Palsy

Genetics and pregnancy-related issues are thought to be the primary causes of cerebral palsy. Cerebral palsy can be brought on by a number of conditions during pregnancy, such as infections, problems with the mother's health, an event that interferes with the fetus's normal brain development, and complications during labour and delivery. Cerebral palsy is more likely to develop in women who experience complications following childbirth, particularly premature newborns weighing less than 1,500 grams. Cerebral palsy can also result from accidents, bacterial meningitis, starvation, or poisoning that causes brain damage.

Classification of cerebral palsy and major causes³

Motor syndrome (approx.% of CP)	Neuropathology	Major causes
Spastic diplegia (35%)	Periventricular leukomalacia, Periventricular cysts or scars in white matter, enlargement of ventricles, squared-off posterior ventricles	Ischemia, Infection, Prematurity, Endocrine/metabolic (e.g. thyroid)
Spastic quadriplegia (20%)	Periventricular leukomalacia, Multicystic encephalomalacia, Cortical malformations	Ischemia, Infection, Endocrine/metabolic, genetic/developmental
Hemiplegia (25%)	Stroke: in utero or neonatal, Focal infarct or cortical, subcortical damage, Cortical malformations	Thrombophilic disorders, infection, Genetic/developmental, Periventricular hemorrhagic infarction
Emapyramidal (athetoid, dyskinetic) (15%)	Asphyxia: symmetric scars in the putamen and thalamus Kernicterus: scars in globus pallidus, hippocampus Mitochondrial: scarring of globus pallidus, caudate, putamen, brainstem No lesions: dopa-responsive dystonia	Asphyxia, Kernicterus, Mitochondrial, Genetic/metabolic

Symptoms of Cerebral Palsy

Movement and coordination issues are the major symptoms of cerebral palsy affecting one or both sides of the body. Associated symptoms include:

- Muscle stiffness and rigidity
- Lack of muscle coordination and involuntary movements
- Delays in motor skills like sitting up or crawling
- Difficulty in walking
- Problems with sucking and swallowing
- Delays in speech development
- Difficulty with precise motions, such as picking up a crayon or spoon
- Difficulty with vision and hearing
- Mental health conditions
- Urinary incontinence

Ayurveda Management for Cerebral Palsy

Ayurvedic management involves treatment methods to improve the child's motor functions to get better quality of life. The overall purpose of the treatment process is to maximize the child's independence and assist him or her realize their full physical, mental, and social potential. Ayurvedic treatments include *Udwartana*, *Sarvaanga Abhayanga*, *Sweden*, *Nasyam*, *Pichu*, *Shirodhara* or *Basti*, herbal decoctions, and a unique *Panchakarma* therapy programme.⁴ The length of therapy depends on how severe the problem is, and it must be repeated in order to be highly beneficial and provide long-term support for the affected child. Schedule a meeting right away to

learn more about the available treatments for cerebral palsy.

Deepana and Pachana: Before starting the primary *Panchakarma* treatment, getting the *Niramavastha* of the *doshas* and strengthening *Agni* is advised. Giving paediatric patients water that has been boiled with *Shunthi* (dry ginger) or *Dhanyak* (dry coriander) is possible. It is initially administered warmly and in modest amounts.

Udwartana:

The *Rookshana* treatment known as *Udwartana* is also appropriate for *Amavastha* or *Kapha Aadhikya Avastha* and appears to be helpful in lowering spasticity in CP patients. This process involves massaging the body with medication powders to raise the *Rookshna* to the level of superficial *Dhatus* i.e. *Twaka*, *Rakta*, *Mamsa*, and *Meda*.⁵

The lymphatic and blood circulation is enhanced by opening the channels. *Udwartana* alleviates discomfort, boosts the appetite, and makes the body feel lighter. It reduces vitiated *Kapha Dosha* by causing dryness and clearing obstructions. After clearing the obstruction or *Aavarana*, more therapy can eliminate the vitiated *Vata*.

Sarvaanga Abhyang

Sarvaanga Whole-body massage is known as *Abhyang*. *Abhyang* nourishes the body since oil possesses *Mrudu*, *Snigdha*, and *Picchila* characteristics. As *Vayu* is located in *Sparshanendriy*, *Abhyang* is regarded as one of the most effective methods for

reducing *Vata* because it involves cutaneous manipulations. *Abhyang* functions through both local and central mechanisms. Locally, it helps venous and lymphatic drainage and dilates the arterioles to increase circulation. The improved blood flow to the muscles, decreased stiffness, and relief from muscular exhaustion are all benefits of this hyper circulation state, which also promotes trans-dermal drug absorption and assimilation. Massage activates the central nervous system (CNS) by stimulating sensory nerve endings in the skin and provides a wealth of sensory inputs to the cortex and other centres.⁶ *Abhyang* is composed of *Pushtikaraka*, *Kaphavatahara*, and *Ayurvedhaka*. It feeds the superficial and deep muscles, gives them strength, and stabilizes the joints. *Abhyang* thereby assists CP patients in reducing spasticity, facilitating joint movement, and preventing deformities and contractual.⁷

Swedan

Swedan, also known as sedation or diaphoresis, offers short-term and long-term relief for various illnesses. The *Ayurvedic* texts describe many different types of *Swedan*, including *Vaaspa Swedan* (steam baths) and *Naadi Swedan* (tube sweating), which are frequently employed in the therapy of CP. The entire body of the patient at *Vaaspa Swedan* is exposed to steam from fluid (the fluid may contain herbs or liquid like *Dhanyamla* or milk). In *Naadi Swedan*, the patient is exposed to steam from a spout or a tube that is attached to a vessel with a small mouth over the desired body portion. *Swedana* acts as *Shroto Sangha Vighatana* and relieves joint stiffness since it possesses qualities like *Stambhagana*, *Sandhichestakar*, *Shrotosiddhikara*, and *Kapha-Vata Nirodhkara*.⁸ As a result, *Swedan* practices such as *Naadi Swedan* and *Vaaspa Swedan* are crucial to the management of CP.

Shashtika Shali Pinda Swedan

In *Shashtika Shali Pinda Swedan*, the entire body or a specific area of the body is heated,

compressed, and massaged at the same time to stimulate the nerve endings and nourish the muscles. *Shashtika Shali* is prepared by cooking it with cow's milk and *Balamoola Kwath* made from a variety of herbs, then storing it in a piece of fabric to create *Pottal*.⁹ After preparing the *pottalis*, the patient is massaged with the appropriate oil before receiving the warm *pottalis* for 20 to 30 minutes.

Shashtika Shali Pinda Swedan's heat and pressure, combined with the *Balamoola Kwath's* cow's milk, increase local blood circulation, decrease spasticity, increase tendon extensibility, relieve pain, and nourish the muscles, preventing atrophy and other negative changes. Because of this, *Shashtika Shali Pinda Swedan* is the most popular way of suction in CP patients who have paralysis and muscular atrophy.

Nasyam

The medication is given through the nose during this process.¹⁰ *Pachendriyavardhan Tailam*, *Shadbindu Tailam*, *Anu Tailam*, *Dhanvantran Tailam* and *Shunthi Churna* are typical *Nasya* medications used for *Pradhamana Nasya*. *Karshana/Shodhana Nasya* and *Brimhana Nasya* have both been referenced by *Maharishi Kashyapa*. The patient should be in a comfortable position while receiving a mild massage over their face and head, followed by *Swedan*, and the required dosage of medication should be injected into each nostril. After administering the medication, gently massage the patient's shoulders and back and advise them to gargle with warm water.¹¹

Using nasal instillation of herbal juice, oil, and powders clears the channels by eliminating the exacerbated *Kapha* that obstructs the upper respiratory system. *Nasya* is advantageous in many *Shiro Rogas*, claims *Acharya Charaka*. As it gives power to the *Shira* (head) and *Shirogata Indriyas* (the sensory organ in the head), *Pratimarsha Nasya* positively affects CP patients.¹²

Basti¹³

The most crucial *Panchkarma* procedure for treating CP is *Basti*. Apart from *Basti*, no other medical procedure has the power to control and tame the *Vata's* energy. The *Basti Yantra* is used to administer medications in the form of suspension through the rectum or genitourinary tract. In this procedure, medications are delivered up to the umbilicus, hips, waists, small intestine, and loins, churning the collected *Purisha* and *Dosha* materials, distributing the unctuousness throughout the body, and then readily coming out together with *Purisha* and *Doshas*.¹⁴ *Basti* promotes the body's *Bala*, *Varna*, *Harsha*, *Mardavatva*, and *Snehana*.¹⁵ *Basti Chikitsa* is the prime treatment modality of Ayurveda. It is also considered *Ardha Chikitsa* (half treatment). *Matrabasti* is the sub-type of *Anuvasana Basti* in which a small quantity of oil or ghee is given by rectal route. It is *Balya*, *Brimhana*, *Vatarogahara*. It controls *Vata* throughout the body by acting on *Moola sthana* (*Pakwashya*). Because the rectum has a healthy supply of blood and lymph, it may pass through the rectal mucosa, enter the bloodstream, and exert its effects throughout the entire body. Securing the receptor sites on the motor or sympathetic nerve terminals, penetrating the nerve terminals, and perhaps inhibiting acetylcholine release, may prevent neuromuscular transmission.¹⁶ The deeper *Dhatus* are nourished by *Matrabasti*. It helps patients with cerebral palsy with their fine motor skills as well as their general motor skills, such as sitting, standing, crawling, walking, and hand clapping.

Oral medicines

Samwardhana Ghrit: *Samwardhana Ghrit* has been recommended by *Acharya Kashyapa* for healthy children to grow quickly as well as for the treatment of children who are *Pangu* (lame), *Muka* (dumb), *Ashruti* (deaf), and *Jada* (mentally impaired or imbecile).¹⁷ This *Ghrit* helps with quick growth, early crawling and walking health, and the earliest onset of

functional activity in those with *Pangu*, *Muka*, *Ashruti*, and *Jada*.

Ashwagandha Ghrit: *Ashwagandha Ghrit* is a formulation specifically indicated for nourishment and increasing vitality in children.¹⁸

It is *Vata Pitta Shamaka* and *Agni Deepaka* and helps in *Srotoshodhana*.¹⁹

Swarnaprashana: A method of child-rearing that has been used for a long time in India to foster healthy ageing and better growth and development.²⁰

Swarnaprashana is the name for the oral administration of *Swarna*, in liquid or semisolid form, to infants and young children together with *herbs*, *Ghrit*, and *Madhu*.²¹

According to *Acharya Sushruta*, *Swarnaprashana* helps to improve *Buddhi* (memory) and *Bala* (strength), which encourages a child's healthy development.²²

Kumarabharana Rasa:²³

Immunomodulatory, antibacterial, antipyretic, nourishing, and rejuvenating effects promote children's growth and development.

Use of Medhya Rasayanas: *Acharya Charaka* described the following four *Medhya Rasayanas*.²⁴ These are *Yastimadhu*, *Guduchi*, *Shankhapuspi*, and *Mandookaparni*. These *Rasayana* medicines might help in avoiding both physical and mental impairments.

In *lehanaadhyaya*, *Acharya Kashyapa* discussed *Swarna Prasana* and various *medhya* medication delivery methods, as well as the advantages of doing so.²⁵ *Kashyapa* mentions *Mandukaparni*, *Brahmi*, *Vacha*, *Triphala*, *Chitraka*, *Trivrit*, *Danti*, and *Nagbala* among the *Medhya* medicines. *Lehana* of *Medhya Ghritas*, including *Kalyana Ghrit*, *Brahmi Ghrit*, *Panchagavya Ghrit*, and *Samvardhana Ghrit*, were recommended to enhance good mental and physical growth, avoiding and boosting typical developmental activities.

DISCUSSION

There is not any specific reference available in *Ayurvedic* writings regarding cerebral palsy. However, considering the Ayurvedic disease classification and their sign and symptoms, Cerebral palsy can be compared with *Vatavyadhi* or *Vatavikar* diseases of the nervous system which specifically afflict the *Shiro-Marma* which may be noticeable in various clinical forms such as *Pakshaghat*, *Ekangaroga*, *Pangu*, *Sarvangroga*, *Aakshepka* etc. However, it is not curable, but with Ayurvedic therapy, there is a general improvement in the quality of life with higher life expectancy.

Various *Panchakarma* procedures have proved their efficacy in the management of CP. *Udwartana* opens the minute channels and improves blood as well as lymphatic circulation. *Udwartana* is *Kapha*, *Vatahara* and removes *Aavarana* or *Srotorodha*. It provides a platform for further procedures like *Abhyanga*, *Swedana* and *Basti*. *Sarvanga Abhyang*, *Vaashpa* & *Naadi Swedan* reduce spasticity (especially the scissoring phenomenon), improve flexibility of joints, improve circulation and reduce pain. *Basti* is the major treatment for CP and it improves gross as well as fine motor functions, provides nourishment, and improves the overall general condition and quality of life in children with CP. Further studies on large samples with accurate methodology are required to substantiate these claims. Cerebral palsy is the primary cause of childhood disability. As per the *Ayurvedic* classics, there is no condition identified that may directly correlate with CP. Though it is not curable, Ayurveda provides a better way to enhance the quality of life with a greater life expectancy of children with CP. After evaluating the mode of action of several *Panchakarma* treatments it has been established that *Panchakarma* together with internal drugs plays an important significance in the therapy of CP.

CONCLUSION

The main goal of CP management is to promote typical motor development and function, prevent the onset of secondary impairments caused by muscular contracture, joint, and limb deformities, and promote functional and psychological independence of the child while also improving the quality of life for both the child and their family.

The aetiology and clinical characteristics of CP suggest that it is virtually more similar to the *Vata Vyadhi*. It is believed that *panchakarma* treatments such as *Udwartana*, *Swedana*, *Snehana*, and *Basti* are helpful for curing *Vata Dosha*. Remove *Aavarana* and *Shrotorodha* using *Udwartana's Kapha-Vata* qualities. It promotes blood circulation, cleans the tiny channels, and creates a foundation for later treatments like *Abhyang*, *Swedan*, and *Basti*. Reduced spasticity, increased circulation, increased joint flexibility, and decreased discomfort are all benefits of *Sarvaanga Abhyang* and *Swedan* (*Vaaspa* and *Naadi Swedan*). As *Basti* is considered "*Ardha Chikitsa*" for *Vata Vyadhi*, it is the main management strategy for CP. In addition to nourishing the body and enhancing gross and fine motor skills, it also enhances general health and quality of life.

Declaration by Authors

Conflict of Interest: The authors declare no conflict of interest.

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