



# Holistic Management of Cerebral Palsy through Ayurveda

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## ABSTRACT

Cerebral palsy is a group of non-progressive, noncontagious, neuromuscular disorders that results from damage to the growing brain during prenatal, perinatal or postnatal period. CP is the leading cause of childhood disability affecting muscles movement and coordination, cognitive functions and development in child. Approximately 1- 2 per 1000 live births is a reasonable estimate of the incidence. Ayurveda is a holistic system of medicine, which aims to preserve health and wellness by maintain the balance between body, spirit and mind of a person and prevent the occurrence of diseases. In Ayurveda, as per disease classification and their respective clinical features, cerebral palsy is *Vata Vyadhi* or *Vatavikara*, particularly affecting *Shiromarma* or *Shiromarma Abhighata* which may manifest as *Pangu* (diplegia), *Pakshaghata* (hemiplegia), *Ekangaroga* (monoplegia) etc. This article explores the new horizons in management of cerebral palsy through Ayurveda as it offers various *Panchkarma* procedures like *Udwartana*, *Swedana*, *Shashtishali pinda sweda*, *Nasya*, *Vasti* etc. and various *Medhya* (nootropic) drugs. Ayurveda drugs and therapies not only benefit in the clinical complaints of child, but also provides nourishment, improves over all general condition and quality of life of child affected with cerebral palsy. Thus Ayurveda offers a holistic care for cerebral palsy and needs to be widely used in management of the disease

**Key Words** *Ayurveda*, Cerebral Palsy, Holistic medicine, *Panchkarma*, *Vatavyadhi*, *Nasya*, *Shiromarma Abhighata*, *Vasti*

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## INTRODUCTION

Childhood period is the foundation of future of nation. But in case of special children having sort of disability and while disability is discussed, about quarter of childhood problems are of neurologic origin and amongst them cerebral palsy is the most common cause of childhood disability. Approximately, 2- 2.5 cases per 1000 live births is the worldwide incidence of CP<sup>1</sup>. While in India, the incidence rate of CP is estimated at around 3

cases per 1000 live births and as per last statistical information there are about 25 lakh CP children in India<sup>2</sup>.

CP is an umbrella term encompassing a group of non-progressive, non-contagious condition that causes motor impairment syndrome characterized by abnormalities in movement, posture and tone<sup>3</sup>. Causative factors of CP may be pre natal, perinatal or post natal and the pathology is any type of injury to the developing brain. 6% to 8% incidence



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of CP is due to perinatal asphyxia, while prenatal causes are responsible for approximately 75% of total cases of CP, although it is impossible to determine the exact timing and nature of damage and postnatal causes acquires incidence of 10% to 18% of CP<sup>4</sup>. CP is considered as static encephalopathy as the lesion is non-progressive in nature and excludes all progressive neurological disorders<sup>5</sup>.

As there is no condition defined in *Ayurvedic* classics which can be correlated with cerebral palsy. But after considering the etiology and clinical features, dominance of *Vata* is obvious. So we put this condition in *Vata* dominant diseases i.e. *Vata Vyadhi*. In *Ayurveda* some conditions are explained which show some similarities with cerebral palsy like *Phakka*, *Pangulya*, *Jadatva*, *Mukatwa*, *Ekanga roga*, *Sarvangroga*, *Pakshaghat*, *Pakshvadha*, *Vatvyadhi* etc<sup>6</sup>. Some authors considered the cerebral palsy as a '*Shiro-Marmabhighathaja Bala Vata Vyadhi*'<sup>7</sup>.

In *Ayurveda*, *Panchakarma* procedures along with appropriate oral medications can provide improvement in quality of life of patient with CP<sup>5</sup>. *Panchakarma* procedures like *Udwartana* (medicated powdered massage), *Naadi Sweda* and *Baaspa Sweda* (steam bath), *Sarvaanga Abhyanaga* (full body massage with medicated oil) and *Vasti* (medicated oil or decoction enema) are found to be beneficial in management of cerebral palsy<sup>8</sup>.

### Review Methodology

Electronic database, 'Google scholar' has been searched for relevant studies and review

publications from 2008- 2019. The key words used for search are '*Shashtishali Pinda Sweda* in cerebral palsy', '*Udwartana* in cerebral palsy', '*Sarvanga Abhyanga* in cerebral palsy children', '*Vasti* in cerebral palsy children, *Nasya* in cerebral palsy children', '*Naadi Sweda* and *Baaspa Sweda* in cerebral palsy children', '*Shirodhara* in cerebral palsy children'. Abstracts and full texts of open access in English language were only considered.

### Panchakarma

*Panchakarma* is a term derived from two words i.e. '*Pancha*' means 'five' and '*Karma*' means 'procedure or action'. The term *Panchakarma* indicates the five major therapeutic procedures of detoxification to cleanse the body channels or it can be called as *Shodhana Chikitsa*. The five major procedures including in *Panchakarma* are: *Vamana* (emesis), *Virechana* (purgation), *Vasti* (herbal enema) and *Raktamokshana* (bloodletting). *Panchakarma* procedures primarily aimed at elimination of *Ama* and vitiated *Doshas* from the body to cleanse the channels. Every procedure is performed in three phases i.e. *Poorva Karma*, *Pradhana Karma* and *Paschata Karma*<sup>9</sup>. In *Ayurveda* *Shodhana Chikitsa* is considered superior to *Shamana Chikitsa* because the condition treated with *Shodhana* therapy will never reoccur, whereas condition treated by *Shamana* therapy may reoccur in due course of time<sup>10</sup>.

### Effective Panchakarma Procedures in CP

*Panchakarma* procedures commonly used and found effective in management of cerebral palsy are *Udwartana*, *Sarvaanga Abhayanga*,



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*Shahstishali Pinda Sweda, Naadi Sweda, Baasp Sweda, Nasya and Vasti.*

### **Udwartana**

*Udwartana* is a *Rookshana* procedure seems to be beneficial in reducing spasticity in patient with CP and it is also suitable in *Amavastha* or *Kapha Aadhikya Avastha*<sup>8</sup>. In this procedure, massage of body is done with powders of medicines and it brings the *Rookshna* at the level of superficial *Dhatus* i.e. *Twaka, Rakta, Mamsa, Meda*<sup>11</sup>. It opens the channels and improves blood circulation and lymphatic circulation. *Udwartana* relieve pain, improves appetite and bring lightness in body. It helps in reduction of vitiated *Kapha Dosha* by inducing dryness and remove blockage. Once blockage or *Aavarana* is removed, vitiated *Vata* can be pacified by further treatment<sup>6</sup>.

### **Sarvaanga Abhyanga**

*Sarvaanga Abhayanga* is whole body massage. *Abhyanga* provide nourishment to the body as oil has *Mrudu, Snigdha* and *Picchila* qualities. As *Vayu* resides in *Sparshanendriya* and *Abhyanga* is considered as one of the prime procedure for mitigating *Vata* as it involves cutaneous manipulations.

*Abhyanga* acts by two mechanisms i.e., local and central. Locally it dilates the arterioles and achieves more circulation and also assists venous and lymphatic drainage. This hyper circulation state enhances the trans- dermal drug absorption and assimilation and improves blood supply to the muscles, reduce stiffness and relieve muscular fatigue. Massage stimulates CNS by stimulating sensory nerve endings in skin and gives abundant

sensory inputs to the cortical and other centers in central nervous system<sup>12</sup>.

*Abhyanga* is *Kaphavatahara, Pushtikaraka* and *Ayurvedhaka*. It nourishes the superficial and deep muscles and gives strength to the muscles and provides stability to the joints. Thus *Abhyanga* helps in reduction of spasticity, facilitates movements of joints, and prevents deformities and contractures in patient with CP<sup>13</sup>.

### **Swedana**

*Swedanam* is sweating or sudation or diaphoresis, it provides temporary and lasting relief in many ailments. Many types of *Sweda* are explained in *Ayurvedic* classics, amongst them *Baaspa Sweda* (steam bath) and *Naadi Sweda* (tube sweating) are commonly used in management of CP. In *Baaspa Sweda* patient's whole body is exposed to steam coming from fluid (fluid may contains herbs or liquid like *Dhanyamla* or milk). In *Naadi Sweda* patient is exposed to steam coming out of the spout or a tube which is fitted to a narrow mouthed vessel over the required body part<sup>14</sup>.

*Swedana* has properties like *Stambhagana, Sandhichestakar, Shrotosiddhikara* and *Kapha-Vata Nirodhkara*, thus the action of '*Swedana* is *Shroto Sangha Vighatana*' and gives relieve in joint stiffness<sup>15</sup>. Thus *Swedana* procedures like *Naadi Sweda* and *Baaspa Sweda* has important role in management of CP.

### **Shahstika Shali Pinda Sweda**

In *Shashtika Shali Pinda Sweda*, heat, pressure and massage simultaneously provided on whole body or specific part of the body, which stimulates the nerve endings and provide nourishment to the



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muscles. In this procedure, *Shahstika Shali* is cooked with cow's milk and *Balmoola Kwath* of various herbs, this cooked rice is kept in piece of cloth and make *Pottali*. After preparation of *Pottalis*, patient is massaged with suitable oil and warm *Pottali* gently applied for half to one our<sup>16</sup>. Heat and pressure provided by *Shashtika Shali Pinda Sweda* dipped in *Balmoola Kwath* with cow's milk increases blood circulation locally, reduces spasticity, increases tendon extensibility, provide relief to the pain and also nourishes the muscular tissues thereby preventing the atrophy and detrimental changes<sup>17</sup>. Thus *Shashtika Shali Pinda Sweda* is the most preferred method of sudation in patient of CP where weakness and muscle wasting is present.

### **Nasya**

In this procedure, the medicines are administered through nostrils. Common medicines used in *Nasya* are *Pachendriyavardhan Tailam*, *Shadbindu Tailam*, *Anu Tailam*, *Dhanvantran Tailam* and *Shunthi Churna* for *Pradhamana Nasya*. *Maharishi Kashyapa* has mentioned *Brimhana Nasya* and *Karshana/Shodhana Nasya*. During this procedure, patient should be sitting or lying down in comfortable posture, apply gentle massage over face, head followed by *Swedana*, prescribed dose of medicine should be instilled in each nostril. After instillation of medicine apply gentle massage on shoulder and back and advice patient for warm water gargles<sup>16</sup>. It cleanses the channels by removing the aggravated *Kapha* which blocks upper respiratory tract with the help of nasal instillation of herbal juice, oil and

powders. According to *Acharya Charaka*, *Nasya* is beneficial in various *Shiro Roga's*. *Pratimarsha Nasya* have beneficial effect in patient with CP as it provide strength to *Shira* (head) and *Shirogata Indriyas* (sense organ in head)<sup>18</sup>.

### **Vasti**

*Vasti* is a procedure in which medicines in the form of suspension are administered through rectum or genitourinary tract with the help of *Vasti Yantra*. In this procedure, administered medicines reaches up to umbilicus, hips, waists, small intestine and loins, churns the accumulated materials like *Purisha* and *Doshas*, spread the unctuousness all over the body and easily comes out along with *Purisha* and *Doshas*<sup>19</sup>. *Vasti* promotes *Bala*, *Varna*, *Harsha*, *Mardavatva* and *Snehana* to the body<sup>7</sup>.

*Matravasti* is the sub type of *Anuvasana Vasti* in which small quantity of oil or ghee is given by rectal route. It is *Balya*, *Brimhana*, *Vatarogahara*. It acts on *Moola* sthana (*Pakwashya*) and get control on *Vata* all over the body. As rectum has rich blood supply and lymph supply, the can cross the rectal mucosa and enters general circulation and act on whole body. It may block neuromuscular transmission by binding the receptor sites on motor or sympathetic nerve terminals, entering the nerve terminals and may inhibit release of acetylcholine<sup>20</sup>. *Matravasti* nourishes the deeper *Dhathus*<sup>15</sup>. It improves fine motor functions as well as general motor functions like sitting, standing, crawling, walking and clasping of hand in patient with CP.



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*Sneha Vasti* nourishes the overall body and expel out the doshas. It acts by facilitation of excretion of morbid substance which is responsible for disease process into the colon. In *Pakwashya*, *Vasti Dravya* acts on whole body in the same way that of sun, though in the sky but evaporates the water from earth. When *Vasti Dravya* administered into the rectum it may stimulate the sensory nervous system and as total nervous system is interrelated so it has positive effect on central nervous system also<sup>12</sup>. As compared to *Niruh Vasti*, *Anuvasana Vasti* and *Matra Vasti* is commonly used in children in the management of various neurological conditions.

### Oral medicines

**Samwardhana ghrīt:** Acharya Kashyapa has mentioned samwardhana ghrīt for rapid growth of healthy child and in treatment of *Pangu* (Lame), *Muka* (Dumb), *Ashruti* (Deaf) and *Jada* (Mentally deficient / Imbecile) child<sup>21</sup>.

**Ingredients:** *Khadira* (*Acacia catechu*), *Prishniparni* (*Uraria picta*), *Syandana* (*Ougenia dalbergiodes*), *Bala* (*Sida cordifolia*), *Atibala* (*Abutilon indicum*), *Kebuka* (*Costus speciosus*), *Saindhav* (*Sodium Chloride*), *Kshira* (Milk), *Ghrita* (*Ghee*).

This *Ghrita* helps the child to grow rapidly, crawls and walk early, free from diseases and children with *Pangu*, *Muka*, *Ashruti*, and *Jada* start developing respective functional activity at the earliest<sup>21</sup>.

**Ashwagandha Ghrita:** *Ashwagandha Ghrita* is a formulation specifically indicated for nourishment and increasing vitality in children<sup>22</sup>. It is *Vata Pitta*

*Shamaka* and *Agni Deepaka* and helps in *Srotoshodhana*<sup>23</sup>.

**Swarnaprashana:** Traditionally practiced across India as a formula for growing child to improve growth and development as well as to promote longer and healthy life<sup>24</sup>. The oral administration of *Swarna* along with herbs, *Ghee* and honey in liquid or semisolid form by neonates and children is referred as *Swarnaprashana*<sup>25</sup>.

According to *Acharya Sushruta*, *Swarnaprashana* helps in escalating *Buddhi* (memory) and *Bala* (strength) and thereby aiding in proper development of a child<sup>26</sup>.

**Kumarabharana Rasa**<sup>27</sup>: formulation of herbs and minerals.

**Ingredient:** *Yastimadhu* (*Glycyrrhiza glabra*), *Amalaki* (*Embllica officinalis*), *Ashwagandha* (*Withania somnifera*), *Shunthi* (*Zingiber officinale*), *Pippali* (*Piper longum*), *Haritaki* (*Terminalia chebula*), *Vacha* (*Acorus calamus*) *Kumarabharana Rasa* have effects like immunomodulatory, antibacterial, antipyretic, nourishing and rejuvenate properties and aids in escalated growth and development in children.

### Clinical Evidences

1. A study was conducted on 8 patients of cerebral palsy. *Udwartana* (*Yava* and *Kullataha Churna*), *Abhyanaga* (*Bala Taila*) followed by *Sarwanga Nadi Sweda* for 5 days. *Yoga Basti* for 8 days *Ashtanga Ghrita* was administered orally for 58 days. It shows significant results ( $p < 0.05$ ) on developmental milestone, anthropometrical measurements, and on motor system components. No adverse effects have been noticed<sup>28</sup>.



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2. A study was conducted in which 2 groups were made, group A was administered with *Samvardhana Ghrit* orally along with *Abhyanga (Bala Tail)* and SSPS for 14 days and repeated after 7 days. Group B was administered only *Samvardhana Ghrit* orally. Group A showed highly significant results ( $P < 0.001$ ) in fine motor skills, standing, head-holding, language function, and personal and social activities, whereas significant results ( $P < 0.05$ ) were achieved in the sitting parameter. Group B showed highly significant results ( $P < 0.001$ ) in sitting, fine motor, head-holding, language and personal and social activities. No adverse effect has been noticed<sup>10</sup>.

3. An open labeled randomized, controlled clinical trial was conducted in which treated group were administered with *abhyanga (tila taila)*, SSPS and *Mustadi Rajayapana Basti with oral baladi yoga* while control group were given *abhyanga (bala taila)*, SSPS and placebo tablets of *godhuma churna*. The effect of therapy on the ability to understand was 13.43% in treated group and 1% in control group ( $P < 0.001$ ), treated group provide significance of  $P < 0.001$  on gross motor with improvement of 26.7%, while control group shows improvement of 5%<sup>7</sup>.

4. A study was conducted in which group A was administered with *Ashtang Ghrita*, *Abhyanga (Prasarini Taila)*, SSPS, *Matra Basti (Devdarubaladi Taila)* while group B were only on physiotherapy for 3 months. Improvement was statistically very significant ( $p < 0.01$ ) with 23.49% change in spasticity. While in group B, decrease

of 21.86% spasticity which was statistically very significant ( $p < 0.01$ )<sup>29</sup>.

### Areas for future studies

Ayurveda is a traditional Indian medicinal system with a holistic approach to health and personalized medicine. Researches should be done with large sample size and multicentric approach for more accurate statistical data. Studies with Randomized clinical control trial and black box study design can be done with various *medhya* (nootropic) and *rasayan* (rejuvenating) drugs like *saraswat ghrit*, *samvardhana ghrit*, *panchgavya ghrit*, *krishana chaturmukha rasa*, *medhya rasayan* mentioned by Acharya Charaka and with various *panchkarma* procedures. Prevention of cerebral palsy can also be done by following specific regimens described in Ayurveda called *garbhini paricharya* for pregnant women.

## DISCUSSION

CP is the leading cause of childhood disability. As per Ayurvedic classics there is no condition defined which can be exactly correlate with CP. Though it is not curable, but Ayurveda show a better direction to improve the quality of life with better life expectancy of children with CP. After analyzing the mode of action of various *Panchakarma* procedures it has been clear that *Panchakarma* along with internal medications has great role in management of CP. As *Udwartana* reduces bring lightness in body whereas procedures like *Sarvaanga Abhyanga*, *Naadi* and *Baaspa Sweda*, *Shashtika Shali Pinda Sweda* and



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*Matra Vasti* are nourishes the body and also beneficial in reducing spasticity like scissoring phenomenon, improve flexibility of joints and make joints more stable, improves gross and fine motor functions. Thus overall effect of *Panchakarma* is towards the improving the quality of life with better life expectancy in children with CP.

treatment in management of CP. It provide nourishment to the body, improve gross as well as fine motor functions, improves overall general conditions and quality of life.

## CONCLUSION

The main aim of CP management is to facilitate typical motor development and function and to prevent development of secondary impairments due to muscular contracture, joints and limb deformities and promotes independence of child both functionally and psychologically and increase the quality of life of both child as well their family.

After considering the etiology and clinical features of CP, it indicates that this condition is almost nearer to the *Vata Vyadhi*. *Panchakarma* procedure like *Udwartana*, *Swedana*, *Snehana*, *Vasti* etc. are said to be beneficial for treating *Vata Dosha*. *Udwartana* has *Kapha- Vata* properties and remove *Aavarana* and *Shrotorodha*. It cleanses the minute channels and improves the blood circulation and provide platform for further procedures like *Abhyanga*, *Swedana*, *Vasti*. *Sarvaanga Abhyanga* and *Swedana (Baaspa and Naadi Sweda)* reduce spasticity, improve circulations, improve flexibility of joints and reduce pain. As *Vasti* is said to be '*Ardha Chikitsa*' for *Vata Vyadhi* so it is the major



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