

ROLE OF PANCHAKARMA IN THE MANAGEMENT OF CEREBRAL PALSY

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ABSTRACT

Background: Cerebral palsy is the leading cause of childhood disability affecting function and development of children. Cerebral palsy is non progressive irreversible disease of the central nervous system. Motor disorders of Cerebral palsy are accompanied by disturbances of sensation, perception, cognition, communication and behavior. Children with Cerebral palsy affected exhibit impaired muscle coordination, decreased velocity, overactive reflexes, muscles contractures, altered biomechanics, disuse, sensory impairment, hypertonia etc. In *Ayurveda* there is no correlation with any single disease or condition. Cerebral palsy may be correlated with *Janma Bala Pravritta Vyadhi* or *Shiro marmabhighata* and *Vata Vyadhi*,

beside these some symptoms like *pangulya*, *muka*, *minmin* & *gadgad*, *badhirya* *ekangaroga*, *sarvangaroga*, *pakshaghata*, *pakshavadha*, *vepathu*, *mukha vakrata*, *hatekpaksh* etc, are described as main symptoms of *Vata Vyadhi*. Various *PANCHAKARMA PROCEDURES* which are commonly used in *Vata vyadhi* like *Udwartana*, *Sarvaang abhyanga*, *Shashtikshali pinda Sweda*, *Shirodhara*, *Nasya*, *Basti* etc. are found to be beneficial in the management of Cerebral Palsy in Children. *Udwartana* is *kapha*, *vata hara* and removes *srotash awarodha*. *Udwartana* along with *abhyang* also open minute channel and improve blood as well as lymphatic circulation. *Swedana* reduces pain, spasticity, improve range of motion, flexibility of joint along with *Snehana*. *Nasya* is a therapeutic procedure which is used in various systemic diseases mainly for *urdhavjatrugat bhaag*. *Shirodhara* may modulate the secretions of various neurotransmitter at brain cellular level. *Basti* is best treatment to vitiated *Vayu*, it may destroy the seed of all disease, it improve gross as well as fine motor functions provide

nourishment, improve overall general condition. It is major general treatment for Cerebral palsy affected children.

KEYWORDS: Cerebral palsy, *Panchakarma*, *Udwartana*, *Snehana*, *Swedana*, *Shirodhara*, *Nasya*, *Basti*.

INTRODUCTION

Cerebral palsy comprises a group of movement and posture disorders resulting from non progressive, permanent damage to the immature brain.^[1] Motor impairment is the main manifestation of Cerebral palsy, with consequent effects on the biomechanics of the body.^[2] Children with Cerebral palsy exhibit impaired muscle coordination, difficulties in the organization of sensory information and functional limitation. Approximately all children with Cerebral palsy have upper and lower neuronal dysfunction, which includes weakness, associated mirror movements, decreased velocity, over active reflexes, muscles contractures, altered biomechanics, disuse, sensory impairment, and hypertonia.^[3] Upper limbs impairments lead to difficulties in reaching, grasping, and manipulating objects. Deficiencies in one or more of these basic functions hinder the performance of activities of daily living and therefore exert a negative impact on independence and quality of life.⁴ In *Ayurveda* there is no correlation with any single disease or condition. Cerebral palsy may be stated as *Janma Bala Pravritta Vyadhi* (Congenital disorder) or *Shiro marmabhighata* (disease caused due to the injury of head or vital organ) *Vata Vyadhi* (Neurological disease). Beside these some symptoms of *Vata vyadhi* like *pangulya* (Locomotor disorder), *muka*, *minmin* & *gadgad* (Dumbness) *badhirya* (Deafness), *ekangaroga* (Monoplegia), *sarvangaroga* (Quadriplegia), *pakshaghata* (Hemiparesis), *pakshavadha* (Hemiplegia), *choreoathetoid* (Vepathu) and some symptoms of *graha* e.g *skanda* and *skandaapasmaar graha* etc, overlap with the symptoms of Cerebral palsy. 'CHAL' is the main *Guna* of the *VATA* and Cerebral palsy is mainly related with *Vata Vyadhi*. Which show mainly, locomotory dysfunction along with other motor disability.

AIM

There is no cure for Cerebral palsy, but various forms of therapies can help a child with disorder to function and live more effectively. The goals of management should be to prevent secondary impairments and to increase the child's developmental capabilities. In *Ayurvedic* literature detailed description of management of *Vata Vyadhi* has been described, which could be beneficial for the treatment of Cerebral palsy. These include *Sanshaman chikitsa*

with oral medication like *medhya* drugs, *rasayanas*, *bringhan dravya* etc, and *Sodhana chikitsa*, which include *poorva karma* (*snehana*, *swedana*, *deepan*, *pachan*), *Pradhan karma* (*vaman*, *virechana*, *basti*, *nasya*, *raktamochana*) *Paschat karma*, (*samsarjana karma*). In the present study *Abhyanga*, *Swedana* and *Udwartana* works through cutaneous tissue. It is considered as one of the prime procedures for shaman of *Vata*. *Basti* is possessed with multi dimensional action and the most appropriate procedure for *Vata-Vyadhi*. *Shirodhara* and *Nasya* also use to calm the nervous system. Overall goal of treatment is to help the child to reach his or her greatest potential physically, mentally, and socially.

Review methodology

Panchakarma is a collective term which indicate five major therapeutic procedures of detoxification of body, along with many other supportive procedures. Literally, *Panchakarma* is made up of '*Pancha*' means 'five' and '*karma*' means procedure of purification. Ayurveda treat disease with two method *Samana* (Pacifactory) subside of symptom without elimination of morbid *doshas*, and other is *Sodhana* (Purifactory) means cleansing or detoxification of the body by expelling the morbid *doshas*. Typically all treatment protocol begins with *sodhana*, followed by shaman for better outcomes. It is necessary to eliminate *ama* (Accumulated toxins in the channels) and to re-establish the homeostasis. Each procedure perform in three ways *Purva karma* (Preparatory method), *Pradhan kama* (Main procedure) and *Paschat karma* (Dietary and behavioral regimen) Primarily these practices are aimed at eliminating *ama*(Toxins) from the body and cleanses the channels .In Ayurveda *sodhana chikitsa* is better than *samana chikitsa* because the disease treated with *sodhana* never recur whereas the disease treated with *samana* may recur again in due course of time. According to *Acharya Kashyap* during the process of disease, there is *dosha sanchaya*, occur even in the body of *shishu*.

So unless and until accumulated *doshas* in *Ashayas* are removed, complete recovery from disease is impossible. Which further destroy the child future. So *shodhan* should be given to the kids also in the mild form.

Effective *panchakarma* procedure in cerebral palsy

Various *panchakarma* procedures are found to be beneficial effect in the management of Cerebral palsy. Present study is focused on *panchakarma* procedures like *udwartana* (medicated powder massage), *sarvaang abhyang* (full body massage with medicated oil), *shashtikshali pinda sweda* (Sudation with a bolus prepared by boiled rice), *nasya*(Oil drip in

each nostrils) *shirodhara* (Oil drip over forehead) and *Basti* (Oil and decoction enemas) because Cerebral palsy is *shiromarma-abhighata vataj vyadhi* and all these therapy are commonly used and found effective in the vitiation of vata dosha and *urdhavjatrugat roga*.

Udwartana^[5]

Udwartana is external procedure. In present study it is mainly used for *rookshana* of body with powders of medicines. *Udwartana* differ from *abhyanga* in its direction of application and pressure during the procedure with no harmful effects. It seems to be beneficial in reducing the spasticity in Cerebral palsy patients and it is suitable in *soshana* of 'Amavastha' (accumulation of waste material inside the body) or *Kapha aadhikya* (predominance of *kapha dosha*).

Types of *udwartana*

According to *Acharya Charak*; Depending upon the variation in the therapeutic effect, it is two type

- (A) *Snigdha Udwartana* in the context of treatment of *Krishha* (lean and thin) persons, in which oil is used in the procedure.
- (B) Indication for *Ruksha Udwartana*;

<i>Kulattha Churna</i> (powder)	To reduce accumulated subcutaneous fat, decrease excessive sweating
<i>Kolkutthadi Churna</i>	Reduce excess fat in obese patient
<i>Mritika, Brick powder</i>	For <i>udgharshana</i> , reduce oiliness of skin, reduce accumulated subcutaneous fat.

Churna like *Kulatta churna*, *Triphala churna*, *Ashwagandha churna*, *Chandan*, *Musta churna*, *Brick powder*, *Mitrika churna*, etc. are used for *rooksha udwartana*.

Udwartana can be used independently or along with *snehana* and *swedana* or other interventions to treat Cerebral palsy patient. *Udwartana* alleviate *Kapha dosha*, reduces excess body fat, increase stability of body, improves skin color and has positive effects on psycho- physical parameter including Cerebral palsy. *Udwartana* opens the minute channels and improves blood as well as lymphatic circulation.

Abhyanga (Snehana)^[6]

Abhyanga (Bhaya snehana) is considered as part of an important rejuvenation therapy of Ayurveda. *Twaka* is adhistan for vata and *bhrajaka pitta*.

The procedure which causes unctuousness, fluidity, softness and mitigation in the body is snehana therapy.

Snehanamsnehavishyandmaardvamkledakarkam. Ch.Su 22/10

Before *Panchakarma* procedure first of all *Snehana* and then *Swedana* karma should be applied after these procedure *Samshodhana* karma should be done.

Abhyanga as a purva karma; *Abhyanga* acts by means of *srotomukh vishodhanam*, *abhisyandanam* of *doshas* and reduces aggravated *vata*, thus moving the aggravated *dosha* from *shakha* to *koshtha* after which the *doshas* can be easily removed through *sodhana* karma. The term *Abhyang* is used as a synonym of oil bath. This is advised to be practiced daily. *Sneha* applied on head called *Shiroabhyang* and when apply on foot called as *padabhyanga*.

Specific oil should be selected according to the type of the disease

<i>Vataj</i> temperament medicated oil	<i>Ksheerabala taila, Balaguduchyadi taila, Mahamashyadi taila</i> etc.
<i>Pittaj</i> temperament	<i>Bhringamalakadi, Manjisthadi taila</i> etc
<i>Kaphaj</i> temperament	<i>Eladi, Asanavilwadi, Marichyadi taila</i>

Abhyanga (*Snehana*) provide nourishment due to its *snigdha, guru, shita, mridu, picchila, sara, manda, sukshma guna*.

Mode of action

Abhyanga involves cutaneous manipulation and it is considered as one of the prime procedures for mitigation *Vata*. Primarily it acts by two mechanisms i.e., local and central. The local mechanisms include cutaneous stimulation causing the arterioles to dilate and thereby achieving more circulation. It also assists venous and lymphatic drains. This state of hyper circulation also enhances the trans- dermal drug absorption and assimilation. *Abhyanga* improves blood supply to muscles, reduces stiffness, stimulates sensory nerve endings of the skin and gives abundant sensory inputs to the cortical and other centers in central nervous system. *Abhyanga* procedure is the mechanical stimulation more precisely the pressure application during massage, pressure application in proper direction may help in reduction of motor neuron hyper-excitability by reducing the alpha motor neuron activity. A study reports in hemiparesis the H- reflex was depressed during both continuous and intermittent pressure was found more effective. *Abhyanga* normalize superficial and deep muscles both and make

the muscles strong and joint stable. It have pleasant and calming effect. The strokes used in *Abhyanga* like kneading, friction etc improves local circulation.

Abhyanga is *kaphavatahara*, *pustivardhak*, *ayuvardhak*. *Snehana* and *Swedana* both simultaneously have properties of reduction in spasticity, stiffness, pain and improve range of motion of joint in Cerebral Palsy affected child.

Swedana

The *swedana* karma is a part of purva karma of *panchakarma*.^[7]

Swedana is the therapy which make the body to perspire.^[8]

Acharya Kashyap mentioned eight type of swedana

Hasta sweda, *Pradeha sweda*, *Nadi sweda*, *Prastarsweda*, *Sankarsweda*, *Upnahasweda*, *Avagahasweda*, *Parisheksweda*

Acharya Kashyap indicated *avasthika sweda* in children i.e. *sweda* in children should be done according to roga and rogi's bala and special attention should be given to *sheeta*, *vyadhi* and *sharirk bala*.

Person with different doshas temperament of *sweda* are used-

Vataj vyadhi - *Snigdha sweda*

Kaphaj vyadhi – *Ruksh sweda*

Vataj and Kaphaj vyadhi-both should be employed.

Pinda sweda

It is the type of fomentation by means of *pinda*, containing drugs with or without being wrapped with a cloth. It is the type of *Sankara sweda*.

Shashtikashali pinda sweda is the common method of *swedana* used in children in which specific part or whole body made to perspire by the application of *shashtika shali* in the forms of *pottali*'s (boluses tied in cotton cloth). *Shashtika Shali* is cooked with milk and decoction of herbs, cooked rice is to be kept in pieces of cloth to make *pottalis*. Remaining *Kwatha* and milk should be mixed and heated in low temperature to dip the *pottalis* of boluses. After creating *pottalis*, patient is massaged with suitable warm *pottalis* gently applied. The procedure takes about half to one hour.

Mode of action^[9]

Shashtikashali is *snigdha*, *sthira*, *balavardhaka* and *dehadardhyakrita*. *Bala*, *godugdha* and *dashmoola* that are used to cook the rice and heat the bolus are *snigdha*, *rasayana*, *balya*, and *Vatahara*. The heat provided by the bolus of *shashtikashali* dipped in *balamula kwath* with *godugdha* increases the blood flow locally and *bala* absorbed locally provide nourishment to muscular tissue and prevent from emaciation, Consequently, application of therapeutic heat causes vasodilatation which improves blood circulation and removal of waste products. Due to improvement in blood circulation, anabolism increases and tissue receives maximum oxygen and get nutrition properly. Heating can also result in decreasing stiffness and increasing tissue extensibility which improve joint movement and range motion. Further the *shrotas* cleans up and open the channel which facilitate the more nourishment and free movement of *Vata Dosha*. This result in the relief of spasticity and enhance more nourishment and free movement of joints and prevent from deformities and contractures. So that the *Shashtikashali pinda sweda* is one of the *swedana* which have beneficial effect on cerebral Palsy affected children.

Nasya

Nasya is a therapeutic procedure which is used in various systemic diseases mainly for *urdhavjatrugat roga*. *Nasya* is the process of administration of medicines through nostrils. Commonly used medicines for *nasya* are *panchendriyavardham*, *anu tail*, *shadbindu tail*, etc. Age limit of *Nasya* is 7 to 80 year of age.

In Ayurveda, *nasa* is considered as way of *shira*, which is *uttamanga* and seat of *prana*.

During *nasya* the patient should sit or lie down in comfortable posture, then applied gentle massage over the head, forehead and face followed by mild *swedana*. Lukewarm oil should be instilled in prescribed dose in each nostrils. After procedure gentle massage given to palmer and planter, shoulder and back region, oil on face should be wiped off and advice for gargling with lukewarm water.

Type of nasya

According to *kashyap*- *Bringham* - *Vataj roga*

Karshana - *Kaphaj roga*

According to *charak*- *Navan*, *Avapeedan*, *Dhmapan*, *Dupan*, *Pratimarsh*

According to *susruta*- *Nasya*, *Shirovirechan*

According to vagbhata – In child at the place of *Marsh*, *Pratimarsh Nasya* is used.

Mode of action

The Nasya karma is mainly intended to cleanse the channels in the head and neck region. The aggravated kapha dosha, which usually blocks the upper respiratory tract, is eliminated with the help of nasal instillation of herbal drugs. The channel carrying senses in human body are directly connected to shira (head) just like the sun rays are connected to the sun. The medicine which put into the nostril moves up to the sringataka marma and spreads to the interior of the head and the junctions where all the channels related to eye, ear, and nose situated together. The olfactory nerves of the nose are connected with the higher centers of brain i.e. limbic system which include amygdaloidal complex, hypothalamus and basal ganglia etc. Thus drugs administered to nostrils directly goes to higher centers the brain and affects nervous system and endocrine system by controlling doshas. 10Nasya not only work as a shirovirechana i.e. shodhan and shaman but also play a vital role in nourishing for the panchgyanendriya adhisthan situated in shira. PRATIMARSH NASYA is given to each nostrils, it is Ubhayaarthkrit without any demerit, it may use for day or night any time and it is Satmya from birth to death. It have beneficial effects in patient of Cerebral palsy as it provides strength to shira (head) and indriyas (sense organ).

Shirodhara

Shirodhara is a form of Ayurveda therapy that involves gently pouring of liquid over the forehead from a specific height and for a specific period of time continuously and rhythmically allowing the oil to run through the scalp and into hairs. The name comes from the Sanskrit word ‘shiro’ and ‘dhara’. The liquid use are- medicated taila (*Bala*, *Mahamash*, *Narayana taila* etc), Melt Ghee (*Brahmi*, *Astamangala ghrita* etc), Kwatha (*Medhya* drug, *dashmoola*, *balamoola*, *Ashwagandha* etc.), even lukewarm water etc. *Shirodhara* has been used to treat various disease like- neurological disorder, insomnia, memory loss, stress, anxiety, hearing impairment, sinusitis, vertigo, eye disease etc.

Mode of action

The chemical constituent of *Shirodhara* may modulate the secretions of various neurotransmitter and hormones at brain cellular level. *Shirodhara* is a purifying and rejuvenating *panchakarma* procedure that eliminate toxins and mental exhaustion as well as relieve stress and any ill effect of central nervous system.^[11] The calming effect produced by *Shirodhara* is similar to that obtained with meditation. Thereby controlling seizures cognitive

impairment and behavioral problems like anxiety, attention – deficit hyperactivity disorder etc. so it have beneficial effect in Cerebral palsy affected children.

Basti

Basti is the procedure where the medicines is in suspension form and the most appropriate procedure for vitiation of *Vata*

In children administration of drug is introduced through rectum.^[12]

Among all therapeutic procedures, *basti* is considered as superior because it is like amrita for child patient. Knowledge of administration of *basti* in children is very important.^[13] *Basti* is very difficult to understand and practice in pediatrics. *Basti* give complete nourishment to the body. Initially it does cleansing of *shrotus* followed by anabolic function. *Basti* is prepared by using various medicated oil, *kwatha* and *kalka*, *madhu* and *saindhav*. The patient is advised to lie down left lateral position. Before administration of *basti*, small amount of oil is applied on patient anus and also on *basti netra*, then *basti netra* insert in rectum carefully.

According to Vaagbhatta basti praman insert in anus with age

Age	<i>Basti pramana to insert in angul praman</i> (1 angul= 16mm to 21mm)
1yr	5 Angul
1-6yr	6 Angul
7yr	7Angul
12yr	8Angul
16yr	9 Angul

According to Kashyap amount of Anuvasana basti, sneha introduced are

<i>Uttam</i>	2 pala (96gm), in pksheera ½ pala(24 gm)
<i>Madhyam</i>	1.5 pala (72 gm)
<i>Heena</i>	1 pala(48gm)

The *basti netra* is gently inserted into the anal canal up to a specific range and *basti putak* containing mixture is pressed with uniform pressure. The pressure is continued till only small quantity of fluid remains in the bag to avoid air insertion. Then the nosal is remove gently and the patient is allowed to lie down in supine position till he feels urge to excrete. After evacuation of bowel, the patient may take mild hot water bath. *Matra basti* is a type of sneha *basti* in which medicated oil is given in small dose and it can be also given daily with no risk. *Matra basti* can be used irrespective of age and not much precautionary measures.^[14] *Matra Basti* is said to have *bringhana* effect. It have capability to eliminate all disease from the

children body. It is found that *basti* improves the flexibility of joint in cases of Cerebral palsy by *Vatasaman*.^[15] *Basti* is half treatment of *vataj vyadhi* and more important *Panchakarma* procedure in Cerebral palsy. There are many type of *Basti* like *Niruha*, *Anuvasana*, *Uttara Basti*. No other treatment has capacity to pacify and regulate the *Vata*.

Mode of action

Basti is the procedure in which the administered medicines through anal canal reaches upto umbilicus, hips, waist, loins, small intestine the toxic material, which spread all over the body easily comes out along with excretory material. *Basti* karma instantaneously promotes *bala*, *varna*, *harsh*, *mridutwa* and *snehana* of the body. *Basti* is being most widely used and highly effective treatment modality for treating neurological disorder. *Matra basti* is said to be *balya*, *bringhana* and *vata roghara*. *Pakwashya* is the *mool sthan* of *Vata-dosha*. *Basti* by its action on the *moolsthan* gets control on *Vata* all over the body. When medicated oil reaches rectum and colon, presence of short chain fatty acid in oil allows direct diffusion of drugs from epithelial cells into capillary blood villi showing its generalized effect. Rectum has a rich blood and lymph supply and drug can cross the rectal mucosa like other lipid membrane and by entering general circulation, *basti* acts on whole body. *Basti* may block neuromuscular transmission by binding through receptor site on motor or sympathetic nerve terminal, entering the nerve terminal, and may inhibit the release of acetylcholine. *Matra basti* provides more nourishment to deeper *dhatu*s.^[16] *Basti* improve fine motor functions, general motor functions in Cerebral palsy patients. *Basti* has improved fine and gross motor function in Cerebral palsy cases. *Basti* is found beneficial in spastic diplegia. *Matra basti* improves all over nutrition. *Basti* is having two actions, expelling the *dosha* and nourishing the body as it is indicated in chronic neurological disorder. Action of *Basti* is related with the facilitation of excretion of morbid substances, responsible for disease process in to the colon, from where they are evacuated. *Basti* dravya when administered into rectum may stimulate the sensory system due to its chemical composition and pressure effects over the bowel. As the total nervous system is inter-related, the regular stimulation on enteric nervous system has positive effect over central nervous system also. When *basti* dravyas are pass through gastrointestinal tract, it probably stimulate the cells (Enterochromaffin cells or enteroendocrine cells) that help to compensate neurological deficit and improve its function.

Shodhana karma perform mainly by *Niruha* and *Asthapana basti*. The protocol is determined according to disease and patients condition. According to *Kashyap*, *Basti* is given after the

age of v/kLruks·UuHkksDrk (Crawling age). But *Anuvashana basti* is promoted from early infancy itself. As far as possible *shodhana* therapy should be avoided in children or should be used in mild form. In children as compared to *Niruha basti*, *Anuvasana* and *Matra basti* should be used more pre – dominantly in the management of various neurological conditions. By considering all these facts *Basti* has beneficial effect in Cerebral palsy child.

CONCLUSION

The selected Ayurvedic treatment modality is effective in relieving the signs and symptoms and thus reducing the disability in children with Cerebral palsy affected child. Panchakarma is well known broad subject, having preventive, curative as well as rejuvenative effect in Cerebral palsy affected child. Udwartana brings lightness in the body and provides flaccidity in Cerebral palsy cases. It is Kapha, Vata hara and removes Shrotorodha. Udwartana, Abhyanga and Swedana also opens the minute channels and improves blood as well as lymphatic circulation which provides platform for further panchakarma procedures. Abhyanga and SSPS improves flexibility of joints which enhance range of motion, reduce pain and spasticity. Nasya and Shirodhara provides strength to shira (head) and shirogata indriyas (sense organ). Matra Basti provides more nourishment to tissues, improves fine motor functions as well as gross motor function in Cerebral palsy cases. Basti is like amrita for child patient and the most appropriate procedure for Vata-Vyadhi. So it is major treatment for Cerebral palsy affected Children. There is no cure for Cerebral Palsy, but various forms of therapies can help a person with disorder to function and live more effectively. The goals of management should be to prevent secondary impairments and to increase the child's developmental capabilities. Panchakarma is one of the major mode of treatment which helps in improving the range of motion, reducing the spasticity and strengthening the muscles and by these therapy we can improve child capability and quality of life.

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