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Contribution of Ayurveda in Augmenting Motor Function in a Child with Cerebral Palsy-A Case Report

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ABSTRACT

Cerebral Palsy is non-progressive, non-contagious, neuro-motor deficit of cerebral origin due to antenatal, peri-natal or early postnatal insult to the developing brain, also known as Little's disease. It can be allied with Vyadhijanya Phakka in Ayurveda. It has no permanent efficacy. Here, an effort was made to treat a toddler with spastic type of CP by multiple modalities of Ayurveda treatment.

Objectives: This case study was aimed to evaluate the efficacy of Ayurveda management in CP along with Vasatherapy (Physio-ball exercise) and Panchkarma procedures.

Materials and Methods: A female child of two years was brought by the parents with the complaints of not using any extremity, unable to hold the neck, sit and crawl, stand without support, improper posture of left feet, drooling of saliva and recurrent respiratory infections since age of 6 months. She had squint in both eyes and speech delay in the last one year. According to NICU history and clinical examination, she was diagnosed as a case of CP-spastic quadriplegia. The child was treated with the Ayurveda treatment principles for a period of 2 months in two sittings.

Results: At the end of 2 months, there was significant reduction in the clinical features as per the GMFCS-gross motor function classification system and parents have satisfied by the improvement in the activities of daily living of the child post treatment in a very short duration.

Conclusion: This case study establishes the role of Ayurveda treatment management of CP.

Key words: Cerebral Palsy, Ayurveda, GMFCS, *Panchkarma*, *Vasatherapy*, *Vyadhijanya phakka*

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INTRODUCTION

Cerebral Palsy (CP) is a predominant manifestation which continues to be one of the common but challenging physical disabilities in children. It is named as 'Balsanvardhanvikruti' as there is a delayed growth and development. It can be also termed as 'Mastishkaghat or Shiroabhighat janya vatavyadhi' as CP is a product of brain damage hence categorized under hypoxic ischemic encephalopathy-HIE. If considered as Vatavyadhi as primary one, can be corelated with Vyadhijanya Phakka. It accounts for nearly 15% of the child population (1 in 6). The global prevalence and prevalence in India both are estimated to around 3 per 1000 live births. Nearly 4 % of total population in India, 15-20% of the total physically handicapped children suffers from CP, however actual figure is much higher as in last statistical survey, it was mentioned that there are more than 25 lakh children of CP in India. According to the United Cerebral palsy Association, 5lakh children have CP in USA. According to World Health Organization (WHO) estimation, 10% of the global population has some form of disability due to different causes.

In view of growing prevalence of CP and its disabling nature in spite of development of science, there is an urgent need to create awareness among the society about the consequences of CP to prevent it as no definite management is still available. CP has association of multiple problems at a time including malnutrition, behavioural problems, low IQ and sensory-motor poor functioning Although many new avenues have been developed in modern sciences till today, CP is still under non-compliance of proper treatment outcome. In Ayurveda, on the basis of some scattered references,

disease shows its existence but lack of detailed literature, conversion of disease into physical and mental disability, with no availability of much effective answer for the problem in any pathy (course of medicine) up till now, indicates the necessity of time to see what Ayurveda can do in this regard as compared to present multi-modal therapy used as standard management in general in allopath.

The study mainly aimed to improve child's capabilities, motor skills, communication and behaviour. In CP, mainly Vata dominance is found in etiology, clinical features and disease presentation; it is similar and close to Vatavyadhi, Basti, Pindaswed, are the best available Balya, Brihan (anabolic) and Vatahar with ksheerbala tail. As CP is a product of hypoxic encephalopathy, multiple interventions are necessary hence Shirodhara and Nasya with Bramhi tail have good synergetic effect. Therefore, the combination of internal and external medication is the unique modality had been employed in this study with Physiotherapy including all symptomatic treatment. Patient's parents had given the consent for the treatment as well as publication of this case report [1-10].

CASE HISTORY

A two and half years old female child, approached our hospital for the treatment of cerebral palsy, came to our care along with her mother, with the complaints of not able to crawl, unable to sit, stand without support, improper posture of left feet, sleep disturbances, drooling of saliva since age of 6 months, delayed developmental mile stones and weakness of lower half of the body along with wasting and squint in both eyes. Along with the associated complaints of recurrent cough-cold, lack of appetite since age of 7-8 months (on-off) and irregular bowel movements. Child was full term baby born with a birth weight of 2.5 kg and born by Lower Segment Caesarean Section (LSCS); Cried soon after birth, and had given NICU Stay after 12hrs of the delivery due to complaints of seizures, for 4 days. There was no deafness; also, no seizure was noticed after episodes at birth. No significant previous treatment history. Parameters assessed during general examination are as depicted in Table 2. Parameters assessed during systemic examination are as depicted in Table 3. Parameters assessed during Developmental history are as depicted in Table 4. Major cause of Spastic CP was demyelinating disease of Central Nervous System (CNS), sequel of postnatal hypoxia. Diagnosis was confirmed by modern pediatrician "Severe diplegic spastic CP" (Table 5).

Table 1: Parameters of personal history.

Sr.no	Parameters assessed	Observation
1	Appetite	Poor
2	Diet	Mixed
3	Bowel movements	Once-twice/alternate day (Irregular)
4	Urine	Normal
5	Sleep	Disturbed
6	Habits	H/o Teeth grinding

Table 2: Parameters assessed in general examination.

Sr.no	Parameters assessed	Findings
1	Built	Lean
2	Pulse	110/min
3	Blood pressure	90/50mmHg
4	Respiratory rate	22-24/min
5	Height	72cm
6	Weight	7kg
7	Head Circumference	44cm
8	Mid Arm Circumference	14 cm
9	Chest Circumference	49 cm
10	BMI	13.5
11	Tongue	Pale, coated
12	Eye	Moderate pallor

Table 3: Parameters assessed in systemic examination.

Sr.no.	Parameters assessed	Findings
1.	CNS	Poor understanding and orientation
a.	Reflexes	
	Planter	Extensor
	Knee jerk	Sluggish
	Ankle jerk	Clonus
	Biceps & Triceps	Brisk
b.	Muscle power	Grade - 3/5 all extremities
c.	Muscle tone	Hypertonic
2	CVS	No murmur or any problem detected
3	Respiratory System	No adventitious sound
4	Abdomen	No organomegaly, soft

Table 4: Parameters assessed in Developmental history.

Sr.No	Parameters	Milestones	Attained age		Normal limit
			1st sitting	2nd sitting	
1	Gross Motor	Neck holding Crawl	18 months		3 months
			Not achieved	Not achieved	---
		Sitting with support Sitting without support Stand without support	24 months	---	5 months
			---	25months	9 months
			Not achieved	Not achieved	12 months
		Walk without support	Not achieved	Not achieved	13 months
2	Fine motor	Pincer grasp	Not achieved	Not achieved	9 months
3	Language	Cooing Monosyllabus (ma,ba)	18 months	---	3 months
			18 months	More unclear words	6 months
4	Personal-social	Eye contact Recognised mother Social smile & Recognizing relatives Waves bye bye	Achieved timely	---	---
			6 months	---	3 months
			---	Delayed (Achieved)	---
			22 months	---	9 months

Table 5: Probable pathophysiology and its management.

Roga Prakriti	Samprapti Ghataka	Samprapti Vighātana
Dosha	Vatadhiktridosha	Basti
Dushya	Rakta, mamsa, asthi, sandhi, snayu, kandara	Abhyanga, Swedana
Srotas	Rasa-Rakta and majjavaha	Medhya drugs
Agni	Mandya	Dipanpachan drugs
Srotodusti	Sanga(obstruction)	Srotoshodhan by basti
Udhabhavstan	pakwashaya(being a Vatavyadhi)	Basti
Vyaktasthana	sarvang(adhoang)	Sarvang Snehan and sewdan
Roga	Spastic cerebral palsy	Vatvyadhi Chikitsa(Snehan, Swedan, Basti, Snehapan)
Sadhya/asadhyata	Kruchhasadhya	Long term treatment protocol

Treatment protocol used in this case

- Deepan-Pachana.
- Abhyantar snehapana fortified with medhya dravyas.
- Sarvang Abhyang, shirodhara, & Swedana.or SSPS-Pindsweda.
- Matrabasti.
- Passive Physiotherapy, Vasatherapy and Yoga as per need (Tables 6-9).

Table 6: Drugs administered in the 1ndsitting for 10 days.

Sr. No	Formulation	Dose	Anupana (after drink)	Probable action
1	Triphala churna + Trikatu + Vacha + Yashtimadhu + Sitopaladi churna	1 pinch each, BD	Honey	To stimulate appetite, digestion, speech control, saliva dribbling and respiratory function.
2	Kumarkalyan rasa-KKR + Sankha vati + Saptamrit loha + Ashwagandha + churna + Guduchi satva	60mg BD (after food) 125 mg BD (after food) 125 mg BD (after food) ¼ tsf BD (after food) 60 mg BD (after food)	Saraswatarishta with gold 1 tsf BD (After food) + Honey	Supplement of deficient minerals-iron, calcium, to boost sensory-motor and cognitive function as Suvarnbhasma in KKR is capable to do all with immunomodulation.
3	Kalynakaghrita	5ml BD (before food)	Luke warm water	Nootropic/Medhya effect to boost higher function of brain
4	Krimikuthar rasa	60 mg BD for 3 days	Water	Krumihar/Anthelminthic

Table 7: Drugs administered in the 2nd sitting for 10 days.

Sl. No	Formulation	Dose	Anupana and karma (Adjuvant with main medication)
1	Shankha vati + Saptamrut loha + Bramhi vati + Kumarkalyan rasa	125 mg BD (after food) 125 mg BD (after food) 125 mg BD (after food) 60 mg BD (after food)	Honey, post meal to augment strength of muscles as well as sensory-motor function
2	Bramhi ghrit	10 ml once a day in the morning	Milk early in the morning-Medhya
3	Triphala churna + Trikatu churna+ Guduchi satva +Vacha Yashtimadhu	1 pinch each 4 times in a day	Application on tongue with honey, before meal for speech stimulation and to stop dribbling

Table 8: Procedures done in 1st and 2nd sitting 10 days course.

Sr.no	Procedures	Medicine used-
1	Shirodhara	Bramhi tail-10 days
2	Pratimarsha Nasya	One drop of Bramhi tail in each nostril-10 days
3	Utsadan	Triphala churna + Dashmool tail For 3 days for strotoshodhan, to remove Kleda, ama
4	Nadisweda	Dhashmool kwath for 3 days for Strotovishodhan
5	Saravangabhyanga	Dashmool tail for 7 days-pre-procedure of pindasweda
6	Sashtishalipindasweda	Bala, Ashwagandha, Dashmool, rice, milk-7 days
7	Matrabasti	Ksheer Bala Tail in increasing order from 10 ml to 30 ml to increase retention for 7 days

Table 9: On discharge medicine after both sittings for 20 days .

Sl. No	Formulation	Dose	Anupana	Probable action
1	Kalyanakaghrita	5ml BD (before food)	Luke warm water	Medhya
2	Trikatu + Vacha + Yashtimadhu	1 each pinch BD (after food)	Honey	Speech stimulation
3	Shishubharan rasa Sankhavati Ashwagandha churna Bramhivati Saptamrit lauh	60 mg BD (after food) 125mg BD (after food) 500mg BD (after food) 125mg BD (after food) 60 mg BD (after food)	Saraswatarishta with gold 1 tsf BD + Honey (After food)	Boost growth-development
4	Balchaturbhadra churna SOS if respiratory or GIT problems arises	¼ tsf BD	Honey	To stimulate teething, control respiratory and GIT problem advised to give if required

Improvement

After the first course of treatment, the appetite and bowel habit of child got improved, also cough cold reduced and saliva dribbling reduced. After the second course of treatment child was able to sit without support, able to speak bisyllabus words, able to stand with support, saliva dribbling stopped totally, started crawling but fully not achieved and improvement in milestones such as personal, social and cognitive arise owing to collaborative action of medicines, pre and main procedures of Panchakarma and physiotherapy.

Follow up and outcomes

Follow up was done after every 1 month where clinical outcome of the therapy was assessed along with any adverse drug reactions. Thereafter Suvarnaprashan, Bramhi ghrit was given along with physiotherapy for further treatment to augment the cognitive as well as motor function. During the course of treatment, no any adverse drug reaction was reported to the child.

Observations and results

The Observations based on clinical picture was noted before and after the course of treatment is as given in Table 10.

Table 10: Observations before and after complete course of treatment.

Sr.no	Symptoms	On admission	On discharge
1	Lack of appetite	+++	Good appetite
2	Sleep disturbances	+++	Absent
3	Cough and cold	++	Reduced
4	Saliva dribbling	+++	Stopped
5	Sit without support	Absent	Present
6	Crawling	Absent	Present
7	Able to stand with support	Absent	Present
8	Able to speak bisyllabus words	Absent	Present

DISCUSSION

Cerebral Palsy (CP) is the foremost cause of developmental delay distressing cognitive as well as abnormality in all higher function and growth. CP is defined as a non-progressive neuro-developmental disability. The main pathology is related with Diffuse cortical & scattered focal atrophy, cystic softening of the brain, hypoplasia of midbrain or cerebellum, periventricular leukomalacia and normal gross appearance with loss of cortical neuronal cells on microscopy. The diagnosis is mainly based on thorough history, clinical examination, reflexes, tone, power of muscles. CT, MRI helps in knowing the exact pathology with area of lesion involved. Management is directed at alleviating symptoms that are caused by damage to the brain and helping the child achieve maximum potential in growth and development. Cerebral palsy is not an acute disorder which can be completely cured but it is rather a chronic problem which can be adequately managed. In management of CP, the multi approach is needed as Physiotherapy, Occupational Therapy, CAM-Complimentary Alternative medicine, pre and main panchkarma procedures etc. as per need. Here, malnutrition also occurs due to dominant Vata requires Vatashaman by Deepan-pachan, proper nutrition and panchkarma procedure. Ayurveda herbs have good efficacy to reduce constipation and regularize bowel function.

The Medhya Churna might have worked on CNS by its nootropic and Medhya effect, lowering the irritability, enhancing sleep and understanding by means of improvement in personal-social, language and cognitive milestones. Medicated Ghrit formulations fortified with Medhya Dravyas play a pivotal role in stimulating the higher mental functions (Dhee, Dhruti and Smruti). Medicines having Suvarna bhasma/gold (KKR & Shishubharan rasa, Saraswatarishta Gold) might have shown action on brain to provide good results in terms of development in a small duration. Shashtika Shali has the properties as unctuous, light but nutritious-Brihana like karma, So SSPS nourishes the applied part and it is firming fomentation which can be very useful in condition like malnutrition, spasticity. Pindasweda and Physiotherapy decrease spasticity, augment the range of motion of the joints and to avoid contractures development. It also offers nourishment to muscular tissue thereby prevent wasting and contractures. Pindasweda or Navarakkizhi and Upanah are the most important swedan method used in Pakshaghat and other chronic Vata diseases where spasticity is situated.

The action of Shirodhara may regulate the secretions of various neurotransmitters and hormones, thus reduces seizures, cognitive impairment and behavioural problems like nervousness and hyperactivity associated with CP. Nasya karma is mainly proposed to clean the channels in the upper neck and throat region. The vitiated Kapha, which usually obstructs the upper part of the body, is eradicated time to time by Pratimarsha nasya with Medhya medicine is very helpful in augmenting cognitive, social and sensory-motor function. After SSPS and bath, warm meal and then matrabasti of KsheerBalatail in increasing doses had been given, deep inside the rectum for better retention and absorption. It is proven by studies that Matrabasti maintains the normal physiological function of vata by reaching into systemic circulation which in turn stimulates cerebrum. Physiotherapy specially Vasatherapy means exercises on physio-ball has been very beneficial to CP children to stretch, boost strengthening, increasing range of motion by improving motor function of extremities. Utsadana brings rukshan means removing heaviness in the body or limbs and especially useful in flaccidity in CP cases. Whereas procedures like Sarvanga Abhyanga, nadisweda, Pindasweda/SSPS, nasya, shirodhara and matravasti are beneficial in reducing the rigidity, contractures, augment mobility or flexibility of joints, improves all developmental milestones and quality of life in children with CP. Ayurvedic Panchakarma procedures seem to be very beneficial with physiotherapy and Rasayan/ rejuvenation by Suvarnakalpa and medhya dravyas like Suvarnaprashan in children with CP. Cases on cerebral palsy were reported [11-15].

CONCLUSION

CP is a complex physical and mental disability. However, the Phakkaroga treatment principles should be thought of while managing the cases of CP. Amapachak and Agnivardhak, Kaphahar management is necessary. The opted treatment strategy along with Vata-kaphahar, Rasayan/rejuvenation, Vasatherapy and physiotherapy alongwith panchakarma procedures help to boost motor function as well as mental ability. In the nutshell, it can be concluded that Yuktivyapashray chikitsa can do wonders in upgrading of such children's quality of living

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