

**“CEREBRAL PALSY IN ADULTS- A CASE STUDY TO EVALUATE THE
EFFECTIVENESS OF AYURVEDIC THERAPY”****Dr. Shriyankita Vaman Patwardhan* and Dr. Abhijeet Shirkande**¹PG Scholar 2nd Year and ²Department Dravyaguna Vigyan
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ABSTRACT

Cerebral palsy (CP) is the group of disorders of nervous system causing impairment in muscle coordination and movements. This disease is usually diagnosed in childhood and can persist in adulthood or till the death of an individual. The incidence of cerebral palsy in India is about 3 cases per 1000 children. Cerebral palsy in adults affects mainly muscular coordination and movements of body resulting in either partial or impairment or disability. In this report, a female patient of age 30 years (diagnosed with cerebral palsy at the age of 14 months), mainly presenting deformities, spasticity in muscles and pain in lower extremities, taking conventional therapy continuously since last 25 years, was provided with ayurvedic medicinal therapy. The symptoms mentioned above can be categorized under '*Mansamedogat vata*' in Ayurveda. Treatment protocol included internal medicines, *Abhyanga* (massage), *Swedana* in the form of *Annalepa*. The symptoms like pain and stiffness in muscles were brought in control with this treatment. Also, this treatment was found to be safe and no specific side effects were observed.

KEYWORDS: Cerebral palsy, adults, Ayurveda, case report.**INTRODUCTION**

Cerebral Palsy is (CP) is a group of disorders of neuromuscular system causing impairment in muscle coordination and movements. This disease is usually diagnosed in childhood and can persist in adulthood or till death of an individual. This disease manifests with the delay in motor growth milestones like neck holding, sitting, standing, walking along with this, vision and speech are also seen to be hampered. This results in poor muscular coordination in adulthood, causing muscular spasticity, impairment or loss of movements, myalgia etc.^{[2],[3]} The incidence of cerebral palsy in India is about 3 patients per 1000 children^[1], which is rare. Although it is the severe disorder which can cause disability in one's life. The differential diagnosis of cerebral palsy includes metabolic and genetic disorders. The treatment of cerebral palsy aims to improve functionality and capabilities towards independence. Complications of cerebral palsy include wide range of symptoms from simply systematic dysfunction to major motor neuromuscular impairment.

1. Patient Information

A 30 years old female patient, medium statured, approached to ayurvedic clinic on 27 December 2020. Patient was known case of cerebral palsy, since, 14

months of her age, and on the date suffered from muscular spasm, myalgia, generalized weakness and impairment and visual disability in the movements of lower limbs. Patient was fully bed ridden, impaired physical mobility along with impaired bowel control and urinary incontinence. Systemic examination was carried out to assess her condition. Amongst *dashavidha parikshana* told in Ayurveda, *Nadi*, *Jivha*, was inconvenient to examine considering patient's orientation and condition. *Nadi* was not palpable due to hyperactivity and involuntary movements of patient. *Mala* elimination was alternate day, with slimy consistency. *Mutra* showed incontinence, but no major complaints with consistency and smell. *Jivha* could not be observed due to patient's disorientation. *Shabda* was *aspashta* (patient was unable to speak, only humming could be heard, patient was responsive to external voice.). *Sparsha* was warm. Patient seems to see normally (*Druk*). *Akri* was medium. *Agni* was *manda* but *Kshudha* was normally realized. *Trushna* was normal. *Koshtha* was found to be irritated (*krura*). Patient experienced sleeplessness (*Anidra*). Patient has low *bala* and *madhyam satwa*.

Table 1: Shows specific examination related to the disease. Here, the mental state of patient, social skills, dependability, the disability and deformities are observed, also neuromuscular coordination is checked.^[6]

1. Mental State (retardation)				
Normal	Mild	Moderate	<u>Severe</u>	
2. Education status				
<u>Illiterate</u>	literate	primary	secondary	high school
University graduate				
3. Accommodation Status				
Alone	<u>With family</u>	With spouse	Caregiver	
4. Gross Motor Function Classification System (GMFCS)				
Grade I	Grade II	Grade III	Grade IV	<u>Grade V</u>
5. Deformities				
None	Mild	Severe	<u>Severe Multiple</u>	
6. Cerebral palsy type				
Spastic diplegia				
7. Mobility				
Unaided Aided Aided due to balance problems				
Previously ambulant but stopped walking	Mobile with wheelchair			
<u>Never walked</u>				
8. Other Locomotor system examinations				
Gait- not applicable (patient cannot walk)				
Posture- poor, kyphoscoliosis, inverted foot deformity				
Balance- no balance.				
Bowel control-impaired				
Bladder control- impaired				
Communication- no communication.				

Table 2: Examination specific to cerebral palsy^[6]

- History of past illness-
Patient had convulsions in neonatal age, required neonatal intensive care, oxygen injections and anticonvulsant therapy. She had history of delayed milestones. Lower Respiratory Tract Infection in past life resulted in Right lung (Upper Lobe) collapse consolidation.
- Birth History of Patient-
Patient was born at gestational age of 32 weeks and weight of baby at birth was 1400 grams. Mother delivered child through pre term normal delivery.

Mother was admitted in the hospital 2 to 3 times throughout gestation, for a complaint of per vaginal bleeding starting from 6 weeks of gestational period.
- Family history-
No significant family history was found.
- Follow up and Outcomes
After proper case study and diagnosis, medicine and other regimen was advised. Regular follow ups were noted at every 15 days to 1 month. Regular follow ups benefited patient's parents to observe the outcomes. Patient responded to therapy well. Any severe adverse events were not seen during this treatment. Table 3 elaborates the timeline of the treatment.

Table 3: Timeline of the follow ups of patient.

DATE	SYMPTOMS	MEDICINE FORMULAE (ELABORATED IN TABLE 4.)	UPAKRAMA (REGIMEN)
27.2.2020	Whole body ache, heaviness in body, Myalgia, Muscular spasm	Formula A Formula B Trayodashang guggul 250 mg with warm water twice a day after meals.	1.Nasya with anu tail 2 drops each into both nostrils. 2.Abhyanga with Mahamash tail ^[16] 3.Annalepa with Shali-shashti and Kolakulathadi Yoga. ^[10]
27.01.2021	Sleep disturbances, Body ache relieved by 5%	Jatamamsi churna (<i>Nordostachys jatamamsi</i>) 60 mg at night Formula A Formula B	Continued as above.
21.02.2021	Body ache relieved. Constipation, Runny nose, Vomiting	Continued as above	1. Continued as above. 2. Milk with Shatavari (<i>Asparagus racemosus</i>), Pippali (<i>piper longum</i>), Ashwagandha (<i>Withania somnifera</i>) started.
20.03.2021	Sleeping normally, Kaphanishtivan (drooling)	Formula C Formula B Yogaraj guggul 250 mg with warm water twice a day after meals.	Continued as above
19.04.2021	Complaints relieved	Continued as above	Continued as above
2.06.2021	Lower abdomen ache during periods, sleep disturbances prior to periods, otherwise sleeping normally	Continued as above Musta (<i>Cyperus rotundus</i>) 125mg + Nagkesar (<i>Mesua ferrea</i>) 125mg before meals with warm water.	Continued as above
IN THE MONTH OF JULY 2021 PATIENT DIAGNOSED WITH COVID 19, THUS THE MEDICINE WAS REPLACED BY ALTERNATIVE MEDICINE OF COVID 19 FOR 3 MONTHS.			
5.10.2021 POST COVID 19 FOLLOW UP	Sleep disturbances	Formula D Formula B Panchatikta ghrita guggul 250 mg with warm water twice a day after meals.	Continued as above
27.11.2021	No major complaints	Continued as above Chandraprabha vati 125 mg + Rajapratrani vati 125 mg before meals with warm water.	Continued as above
11.12.2021	No major Complaints	Formula D Formula B Sinhanad guggul 250 mg with warm water twice a day after meals	Continued as above
7.02.2022	No major complaints	Formula D Formula E Yograj guggul 250mg with warm water twice a day after meals	Continued as above
17.02.2022	Pain elevated (Annalepa was discontinued since 15 days) Constipation	Continued as above Avipattikar churna vati 500mg with warm water at night.	1.Continued as above. 2.Annalepa was advised to continue.
3.03.2022	Anorexia, Lower abdomen ache during periods	Hingwashtak churna 500 mg with warm water before meals. Castrolex capsule 1 with warm water at night Kanchanar guggul 250mg + Yogaraj guggul 250 mg with warm water after meals. Formula E	1.Continued as above 2.Hingu (<i>Ferula foetida</i>) + Eranda (<i>Ricinus communis</i>) tail – Samvahan (massage) over <i>nabhi</i> .
15.03.2022	Constipation	Continued as above Yograj guggul 250 mg with warm water twice a day after meals.	Continued as above
27.03.2022	No major complaints	Continued as above	Continued as above

4.04.2022	No major Complaints	Continued as above Bhaskarlavana Churna 500 mg with warm water before meals Ashwagandha (Withania somnifera) Churna 500 mg with milk after meals	Continued as above
11.05.2022	No major complaints	Formula F Bhaskarlavana churna 500mg + Chandraprabha vati 125mg+ Shankha vati 125 mg with warm water before meals. Formula E	Continued as above
11.06.2022	Vomiting, anorexia	Formula G Formula H Kanchanar guggul 250 mg with warm water twice a day after meals Laghusutshekhar vati 125 mg 3 times a day. Tribhuvaba kirti vati 60 mg with warm water after meals twice a day. Avipattikar churna vati 1 gm with warm water at night.	Continued as above

DISCUSSION

In Ayurvedic texts different types of *Vatavyadhi* are explained. It is said that, in *Vatavyadhi*, not only *tridosha* in body are affected, but the prognosis of *Vatavyadhi* also affects the *Chetana Dhatu* i.e., *Prana* is also affected. Thus, *Vatavyadhi* are difficult to treat. *Vatavyadhi*s of two types viz., *Dhatukshayajanya* and *Avarodhajanya*, that means either they are caused by malnourishment of body constituents, underdevelopment of body constituents or deposition of toxic material such as *Aama* in body. In most of the cases of cerebral palsy, brain is either abnormally developed or mental retardation starts in their intra uterine life itself.^[4] Cerebral Palsy is not a progressive disease, but the symptoms might worsen in later life. Therefore, Cerebral Palsy can be sorted into *Dhatukshayajanya Vatavyadhi* category. Symptoms can be classified into concept of *Dhatugata Vata* or *Avruta Vata*. *Cheshta nash* or *Cheshta vikruti* i.e., loss of movements or difficulty or abnormality in movements is a manifestation of *Vata dosha* in body and all the *panchaprana* (*Prana*, *Vyana*, *Udana*, *Samana*, *Apana*) are seen to be affected in this disease. Symptoms like myalgia, muscular spasm and disability in movements of lower extremities and general weakness were in correlation with *Mamsa-Medogat Vata* which can also be correlated with *Asthi-majjagat Vata*, *Siragat Vata*, *Snayugat Vata*, *Kaphavruta apana*, *Pittavruta Vyana* and *Kaphavruta Vyana*.^[14] Patient also has additional symptoms like *Anidra* (Sleep disturbances), *Mamsabalakshaya* (muscular hypertonicity resulting into weakness of muscles) to above. Symptoms reflect *mamsavaha srotodushti*, along with severe *dushti of Rakta*, *Mamsa*, *Asthi* and *Majja dhatu* as *dushya* and *tridosha* as *dosha*.

General treatment of *Vatavyadhi* follows *Vata dosh Upakram* i.e., *Snehana*, *Swedana*, *Mridu Samshodhana*, *Basti*, *Abhyanga*, etc. along with *Vatashamak Aushadha*.^[15] Table 4. Shows the description of all the

formulations given to the patient in consecutive follow ups.

Mahamasha tail (Niramisha) was used for *Abhyanga* as a part of external *snehana*, which is effective in list of *vatavyadhi* including *pakshaghat*, *khanja*, *pangulya* and *kalayakhanja* which are closely associated with neuromuscular pathology. Mahamasha tail promotes normal movements of muscles as well as improvement in muscle tone. It is also said to be effective against spasticity in paediatric cerebral palsy patients. As a part of internal *snehana*, *samvardhan ghrita* was given as *anupana* with medicine. *Samvardhan ghrita* gives benefits of *rasayana* as well as has *medhya* properties, i.e., it stimulates brain cells. By having *Madhura - kashaya rasa* ingredients along with *ghrita* as a medium, it also eliminates *vata dosha*. Mahakalyanak Ghrita was also used as *anupana*. Mahakalyanak ghrita also has *rasayana* and *medhya* properties. *Swedana* was given with *annalepa*, shali shashtik rice cooked with the paste of kolakulathadi lepa was used for annalepa. Kolakulathadi lepa is a mixture of various vata-shamana medicines, and is primarily used for *udvartan* (dry powder massage) in different painful and inflammatory conditions. It acts as a good pain reliever. The mixture of Rice and Kolakulathadi lepa; when applied hot around the joints and calf muscles, provide warmth and eliminate the pain as well as rigidity and produce antispasmodic action. *Nasya* provides nourishment to *Shira*, i.e., to the organs in the head. *Nasya* stimulates brain and thus is also one important treatment of cerebral palsy. For internal medicinal treatment different combination of herbal powders and *guggulu Kalpana* was used. Rasna-dashamooladi yoga powder contains certain herbs like dashamool, rasna, erandmool, shunthi (Refer table 4 for details); which is excellent source of *vatashaman* and pain reliver herbs, along with *Saraswata churna* as a source of *medhya* effect for strengthening the neuromuscular coordination was given. Other simple herbal drugs such as *Guduchi* (*Tinospora cordifolia*),

Ashwagandha (*Withania somnifera*), Sariva (*Hemidesmus indicus*), Manjishtha (*Rubia cordifolia*) and jatamansi (*Nordostachys jatamansi*) were also given to obtain expected effects. Various guggulu Kalpana used in ayurvedic texts are also said to be excellent pain relivers. Different guggul formulations like Trayodashang guggulu, Yograj guggulu, Simhanad guggulu, Kaishor guggulu, Kanchanar guggulu were added to formulations time to time focusing the pathology at multiple levels. Other general medicines such as Chandraprabha vati, Avipattikara churna vati, Rajapravartini vati etc. were also given according to other symptoms like menstrual disturbances or constipation.

General Regimen for *Vatavyadhi* was advised the patient, *Snigdha-Ushna Bhojan*, *Madhur-Amla Rasa-Sevan* were advised. Vegetable soups, *Peya* and *Godugdha* was advised.

The aim of this treatment was to mainly focused at elimination of symptoms like myalgia, muscular spasm and general weakness, and subsiding the side effects of ongoing Conventional therapy. With the start of ayurvedic therapy, current dose of spinobak (baclofenac) tablet which was 10 mg, 2 tablets twice a day was altered with lower dose of spinobak (baclofenac) 10 mg, 1 tablet as per requirement. After a month of the treatment, patient was able to bear the symptoms without administration of spinobak (baclofenac) tablet; with the help of ayurvedic therapy. In cold seasons or windy atmosphere, patient experienced elevation in the symptoms. At that time, Spinobak(baclofenac) 10 mg, 1 tablet as per requirement was advised to continue. It was observed that lower dose of spinobak (baclofenac) only once a day was sufficient to subside the symptoms in cold seasons along with ayurvedic therapy. Thus, therapy was effective against both the purposes of treatment.

Table 4: Treatment protocol and description of medicines.

FORMULAE	CONENTS AND QUANTITY	ANUPANA	KAAL	CONTENTS OF COMBINATION (YOGA)
FORMULA A	Brahmi (bacopa moneri) churna 60mg + Saraswat churna 250mg	Mahakalyanak ghrita	In morning empty stomach (rasayan kaal)	*Saraswatachurnam , Ref:- Yogaratanakaram 1. Kushtha (<i>Saussurea lappa</i>) 2.Ashwagandha (<i>Withania somnifera</i>) 3.Saindhava (Rock Salt) 4.Ajamoda (<i>Trachyspermum ammi</i>) 5.Cumin seed (<i>Cuminum cyminum</i>) 6.Krishnajiraka (<i>Nigella sativa</i>) 7.Dry ginger (<i>Zingiber officinalis</i>) 8.Black pepper (<i>Piper nigrum</i>) 9.Pippali (<i>Piper longum</i>) 10.Patha (<i>Cyclea peltata</i>) 11.Vacha (<i>Acorus calamus</i>) 12.Shankhapushpi (<i>Convolvulus pluricaulis</i>) 13.Juice extract of Brahmi (<i>Bacopa monnieri</i>) whole plant
FORMULA B	Rasna dashamool kwath churna 250 mg ^[5]	Samvardhan Ghrita	After meals (vyanodan kaal)	*Rasna-dashamool kwath churna- Ref: Sahasrayogam. 1. Rasna (<i>Alphenia calcarata</i>) 2.Shunthi (<i>Zingiber officinale</i>) Eradamul (<i>Ricinus communis</i>) 4. Deodaru (<i>Cedrus deodara</i>) 5. Bilva (<i>Aegle marmelos</i>) 6.Agnimantha (<i>Premna mucronate</i>) 7. Shyonak (<i>Oroxylum indicum</i>) 8. Patala (<i>Stereospermum suaveolens</i>)

				9.Gambhari (<i>Gmelina arborea</i>) 10.Bruhati (<i>Solanum indicum</i>) 11. Kantakari (<i>Solanum xanthocarpum</i>) 12.Shalaparni (<i>Desmodium gagicum</i>) 13.Prishniparni (<i>Uraria picta</i>) 14. Gokshura (<i>Tribulus terrestris</i>) 15. Guduchi (<i>Tinospora cordifolia</i>)
FORMULA C	Brahmi (Bacopa moneri) 60mg+ Jatamamsi (Nordostachys jatamansi) 60 mg + yashti (<i>Glycyrrhiza glabra</i>)120mg + guduchi (<i>Tinospora cordifolia</i>) 120mg + kaishor guggul.	Mahakalyanak ghrita	In morning empty stomach (rasayan kaal)	
FORMULA D	Jatamamsi (Nordostachys jatamansi) 60mg+ Dhamasa (<i>Fragaria cretica</i>) 60mg+ Sariva (<i>Hemidesmus indicus</i>) 120mg+ Manjishtha (<i>Rubia cordifolia</i>) 120mg + guduchi (<i>Tinospora cordifolia</i>) 120 mg + vacha (<i>Acorus calamus</i>) 60mg+ madhumalini vasant 60 mg	Mahakalyanak ghrita	In morning empty stomach (rasayan kaal)	
FORMULA E	Asthimajjapachak 125 mg + Raktapachak 125mg + Navayas lauha 60mg	madhu	After meals (vyanodan kaal)	*Asthimajjapachak- 1.Amalaki (<i>Embllica officinalis</i>) 2.Musta (<i>Cyperus rotandus</i>) 3.Guduchi (<i>Tinospora cordifolia</i>) *Raktapachak- 1. Patol (<i>Trichosanthes dioica</i>) 2.Sariva (<i>Hemidesmus indicus</i>) 3.Musta (<i>Cyperus rotandus</i>) 4. Patha (<i>Cyclea peltata</i>) 5.Kutaki (<i>Pichrorrhiza kurroa</i>)
FORMULA F	Sariva (<i>Hemidesmus indicus</i>) 120mg+ manjishtha (<i>Rubia cordifolia</i>) 120 mg+ Brahmi (<i>Bacopa moneri</i>) 60mg + Vacha (<i>Acorus calamus</i>) 60 mg+ Jatamamsi (Nordostachys jatamansi) 60 mg	Madhu, ghrita	In morning empty stomach (rasayan kaal)	-
FORMULA G	Yashti (<i>Glycyrrhiza glabra</i>)120 mg+ Sariva (<i>Hemidesmus indicus</i>) 120mg + Manjishtha (<i>Rubia cordifolia</i>) 120 mg+ Vacha (<i>Acorus calamus</i>) 120 mg	Madhu, ghrita	In morning empty stomach (rasayan kaal)	-
FORMULA H	Guduchi (<i>Tinospora cordifolia</i>)120 mg+ musta (<i>Cyperus rotandus</i>)120 mg+ gokshur (<i>Trilobus terrestris</i>)120 mg + ashwagandha (<i>Withania somnifera</i>) 120 mg+ manjishtha	Warm water	After meals (vyanodan kaal)	-

	(Rubia cordifolia) 120 mg			
KOLA-KULATTHADI YOGA (YOGARATNAKARA)	-	With Shali shastik for Annalepa	Once a day- preferably in evening	1.Badara (<i>Ziziphus jujuba</i>) 2. Kulattha (<i>Dolichos biflorus</i>) 3. Deodar (<i>Cedrus deodara</i>) 4.Rasna (<i>Alphenia calcarata</i>) 5. Mash (<i>Vigna mungo</i>) 6.Atasi (<i>Linum usitatissimum</i>) 7.Amalaki (<i>Embllica officinalis</i>) 8.Haritaki (<i>Terminalia chebula</i>) 9.Bibhitaki (<i>Terminalia bellirica</i>) 10.Kushtha (<i>Saussurea lappa</i>) 11. Vacha (<i>Acorus calamus</i>) 12. Shatavha (<i>Anethum sowa</i>) 13.Yava (<i>Hordeum vulgare</i>)

CONCLUSION

Ayurvedic therapy provides a wide range of treatment methodologies in the chronic disorders. In the disease like cerebral palsy which causes major personal and social disabilities to the patients, ayurvedic therapy is proved to be effective. It helps in improvement of functionality of patient towards independence in children with cerebral palsy. Scope of this study is to expand our clinical knowledge to various unknown diseases, examination criteria and suggestive treatment protocols.

This is single case study done in an adult patient with diagnosed cerebral palsy. There is a need of further study of such serious and life limiting conditions.

1. Patient Perspective

As the patient is unable to communicate, the data was collected from her parents. Parents provided the elaborated details about patient's condition time to time. Patient suffers from severe body ache and muscular spasm especially in lower limbs since past 10 years. She was started with conventional therapy with spinobak (baclofenac) 10 mg, 2 tablets twice a day; 10 years ago. Due to which, she faced general side effects such as constipation, nausea, anorexia, sleep disturbances, etc.

Patient responded to therapy well. She followed the diet, regimen and medicine properly. Positive outcomes of a therapy were observed within a month of start of the treatment. Symptoms like body ache, muscular spasm were partly relieved. Patient was able to tolerate pain and spasm with ongoing ayurvedic therapy only. Side effects like nausea, sleep disturbances were subsided.

Patient was advised to conduct MRI scan, but due to inconvenience patient's parents were not able to conduct this examination.

In cold seasons, with the changes in temperature, pain and spasm was seen to elevate again. But lower dose of spinobak (baclofenac) 10 mg, 1 tablet as per requirement was sufficient to subside the symptoms along with ayurvedic therapy. Side effects of conventional therapy were not observed this time.

Thus, the ayurvedic therapy benefited patient in the improvement of health condition.

2. Informed consent

Written consent was obtained from parents of patient before starting the treatment, considering patient's mental state and educational status.

3. Additional Observations

Patient's response at the time of examination was positive, she was not hesitant to examination except for pulse and tongue examination. Examinations like pulse, blood pressure were inconvenient to carry out thus were omitted. Patient occasionally suffers through vitamin deficiencies thus vitamin supplements are given time to time. Patient was diagnosed with Covid 19 in the period of July 2021 for which she received first line modern medicinal treatment along with ayurvedic medicine. She came out through covid 19 condition normally, there was no significant effect of disease over her otherwise health condition and there were no major complications as such. After 3 months of covid 19 management protocol, regular therapeutic regimen for myalgia and muscular spasm was restarted.

Declaration of Competing author: None to the date.

AUTHOR'S CONTRIBUTION

Guidance behind the manuscript writing was provided by Dr. Abhijeet Shirkande, guide. Writing of manuscript, processing of data, collection of data was done by author

Dr. Shriyankita Patwardhan. Examination and treatment were carried out at Arogyasudha Ayurved Clinic at Shirgaon, Pune.

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