

Early Hypotonia as a Presentation of Evolving Spastic Palsy - A case report

Dr.Meera S Panicker*¹, Dr.Arathi G², Dr.Divya T N³, Dr.Linet Rose⁴, Dr.Chanda Prajapati⁵

¹* Assistant professor, Department of Kaumarabhritya ,BVDU, College of Ayurveda, Pune

² Assistant professor, Department of Kaumarabhrithya, Govt Ayurveda College, Thiruvananthapuram, Kerala

³ Associate Professor, Department of Kaumarabhritya, Monark Ayurved Medical College and Hospital, Ahmedabad, Gujarat,

⁴ Assistant Professor, Department of Kaumarabhritya, Vaidyaratnam Ayurveda College, Ollur, Kerala

⁵ Assistant professor, Department of Streerog prasutitantra NKDC Trust's Nallasopara Ayurvedic medical College & Hospital

*Author for Correspondence: Dr Mini S Muraleedhar, Professor & HOD, Department of Kaumarabhrithya, Govt Ayurveda College, Kannur, Kerala

ABSTRACT

Introduction: Cerebral palsy (CP) is a non-progressive neurodevelopmental disorder affecting movement and posture. Hypotonic CP is a rare subtype; however, early hypotonia may represent an initial stage in the evolution of spastic cerebral palsy. Early recognition of this transition is crucial for timely intervention.

Methods: A 2.5-year-old female child presenting with global developmental delay and generalized hypotonia with exaggerated deep tendon reflexes was managed using an integrative Ayurvedic approach. The condition was interpreted as *Kapha-āvruta Vata* under *Vatavyadhi*. Treatment included *Deepana-Pachana*, *Rookshana*, *Snehana*, *Swedana*, *Shodhana* (Basti), and *Brimhana* therapies along with internal medications, physiotherapy, and speech therapy. Muscle strength was assessed using the Medical Research Council (MRC) grading scale, and Muscle tone was assessed clinically and graded as mild, moderate, and severe hypotonia based on resistance to passive movement and posture control.

Results: After 45 days of treatment, the child demonstrated improvement in muscle strength, tone, posture, and functional abilities. There was better sitting balance, improved hand function, increased speech output, and reduction in hypotonia with normalization trends in lower limbs. Ankle stiffness also showed reduction.

Discussion: The findings suggest that early hypotonia with exaggerated reflexes may indicate evolving spasticity. Ayurvedic management targeting *Agnimandya*, *Kapha Avarana*, and underlying *Vata dushti* may help in improving neuromuscular function and modifying disease progression.

Conclusion: Early integrative Ayurvedic intervention may play a beneficial role in improving functional outcomes and quality of life in children with evolving spastic cerebral palsy. Further studies are required to validate these findings.

Keywords: Cerebral palsy, Hypotonia, Kapha-āvruta Vata, Vatavyadhi, MRC grading

How to cite this article: Panicker MS, Arathi G, Divya TN, Rose L, Prajapati C. Early Hypotonia as a Presentation of Evolving Spastic Palsy - A case report. Int J Drug Deliv Technol. 2026;16(5): 1260-1265. DOI: 10.25258/ijddt.16.5.116

Introduction: Cerebral palsy (CP) represents a group of permanent, non-progressive neurodevelopmental disorders affecting movement and posture, resulting from injury to the developing brain.⁽¹⁾ It is frequently associated with impairments in cognition, communication, and behaviour, contributing significantly to childhood disability worldwide. In India, the estimated incidence is approximately 3 per 1000 live births, making it a major public health concern.⁽²⁾

Among the various clinical types, hypotonic cerebral palsy is relatively rare, accounting for less than 5% of cases.⁽³⁾ Traditionally, hypotonia presenting in early infancy has been considered a distinct subtype; however, emerging clinical observations suggest that early hypotonia may often represent an initial phase in the evolution of spastic cerebral palsy. Such cases may later develop features like hypertonia, exaggerated deep tendon reflexes, and extensor plantar responses, indicating a transition toward spasticity.⁽⁴⁾

Early identification of this evolving pattern is crucial for prognosis, timely intervention, and appropriate therapeutic planning. This case report highlights a child presenting with early hypotonia and global developmental delay, who demonstrated clinical features suggestive of evolving spastic palsy. The report also explores the role of integrative management approaches, including Ayurvedic interventions, in improving functional outcomes. While observing the etiology and clinical features, the predominance of *Vata* is obvious and put this disease entity nearer to *Vata* dominant conditions or *Vata Vyadhi*. In this study, based on the concept of *Vatavyadhi* chikitsa, *Snehana*, *Swedana*, *Sodhana* and *Brimhana* therapy with appropriate Panchkarma procedure was done.

Case Presentation

A 2.5-year-old female child presented with global developmental delay and inability to achieve age-appropriate motor milestones.

Chief Complaints

- Inability to sit or stand without support
- Impaired fine motor skills
- Delayed speech and communication
- Generalized joint laxity with ankle tightness
- Drooling of saliva

History of Present Illness

The case history revealed that the child was the firstborn of third-degree consanguineous parents, delivered at term through normal vaginal delivery with birth weight 2.4 kg. The neonate had a history of delayed and feeble cry at birth, with suspected meconium aspiration syndrome (MAS), necessitating NICU admission for 5 days. Both mother and child were stable at the time of discharge.

Hypotonia became evident at around 5 months of age and was associated with global developmental delay. The child was unable to achieve independent sitting even by 1 year of age and has since been undergoing physiotherapy and developmental therapy. By the age of 2 years, the child attained tripod sitting with a stooped posture; however, other developmental milestones remain unachieved. The caregivers subsequently presented at Government Ayurveda College and Hospital for Women and Children, Thiruvananthapuram seeking further management options.

Antenatal History

The mother was 23 years old and the father 29 years old. There was a history of infertility treatment for a duration of two years prior to conception. The mother underwent regular antenatal checkups throughout the pregnancy, and there was no history of maternal stress reported.

Natal history & Postnatal History

The patient was born at term via normal vaginal delivery. The neonate had a delayed and feeble cry at birth, with a birth weight of 2.4 kg. The baby required NICU admission for 5 days due to suspected meconium aspiration syndrome; however, no medical records pertaining to this admission were available.

Developmental History

Gross Motor

- Neck holding – 9 months
- Turning over – 9.5 months
- Sit with support (tripod) – 2 years
- Sit without support – Not attained
- Stand with support – Not attained

Fine Motor

- Palmar grasp – Not attained
- Pincer grasp – Not attained

Social & Language

- Social smile – 4 months
- Responds to name – 11 months
- Bisyllables -1.5 years, Knows 10 words

Family history: Nothing relevant.

Immunization history: Adequate for the age.

Dietic history: Exclusive breast feeding was done till 6 months of age and weaning began with porridge, banana powder etc.

Personal history

Diet: Mixed

Appetite: Good

Bowel: normal, bowel control not attained

Bladder: Within normal limit (WNL), control not attained

Sleep: Sound

General examination

General examination revealed a comfortable and cheerful child who was moderately nourished with a moderate build. Facial features were normal. She exhibited a stooping posture and was able to sit only in a tripod position.

Vital signs: Pulse rate (PR) –100/min Heart rate (HR) – 100/min Respiratory rate (RR) –24/min.

Anthropometry

Head circumference (HC) –46 cm

Chest circumference (CC) –53 cm

Mid arm circumference –13 cm

Height –85 cm

Weight. –13 kg

Central Nervous System Examination

Higher Mental Functions (HMF):

The child appeared cheerful, alert, and conscious. Receptive speech was intact, while expressive speech was impaired, limited to two-word phrases with a vocabulary of approximately 10 words.

Motor Examination:

Gait was not attained. Muscle bulk was bilaterally symmetrical in both upper and lower limbs. Tone was reduced, with hypotonia and flaccidity noted in all four limbs. No contractures were observed; however, tightness was present in both ankle joints. Muscle power was graded as 3/5 in both upper and lower limbs.

Reflexes:

Superficial reflexes were normal. Deep tendon reflexes were exaggerated, with bilateral extensor plantar responses.

Cerebellar Signs:

No cerebellar signs were elicited.

Cranial Nerve Examination:

Could not be elicited.

VYADHI VISLESHAM

- *Dosha –Vata kaphothara sannipatikam*
- *Dooshyam – Saptadhathus* are involved, Predominance of *rasa,rakta,asthi,majja*
- *Agni –Jadaragni,dhatvagхни mandyam*

- *Srothus –Rakta, Asthi, Majja*
- *Rogamarga –Madyama*

Samprapti (Pathogenesis):

History of infertility treatment and third-degree consanguinity leads to *Beeja dushti*, resulting in an *Adibala pravritta vyadhi*, which initiates *Tridosha dushti* with *Vata* predominance.⁽⁵⁾ Meconium-stained amniotic fluid (fetal distress) contributes to *Ulbaka vyadhi* causing *Rasavaha srotorodha*, leading to impaired circulation of *poshaka rasa*.⁽⁶⁾ This obstruction results in *Jatharagni mandya*, which subsequently causes *Dhatvagni mandya*, leading to inadequate nourishment and improper formation of dhatus. Consequently, *Asthi* and *Majja dhatu kshaya/dushti* occurs, affecting structural and neurological integrity. Further, *Vata-Kapha dushti* along with vitiation of *Prana, Udana*, and *Vyana vayu* leads to impairment of speech and motor activities, ultimately manifesting as Global Developmental Delay (*Vak and Gati Sanga*).

Treatment

Internal Medicines

- ❖ Ashtachurnam - 2.5gm twice daily with the first bolus of rice
- ❖ Dhanadanayanadi kashayam - 5 ml with equal amount of lukewarm water twice daily 30 mins food.
- ❖ Dhanwantharam Gulika - 1 tablet twice daily after food
- ❖ Kalyanavaleha churnam - 2.5gm twice daily with honey after food
- ❖ Manasamitra vatakam – Half tablet twice daily after food
- ❖ Gorochanadi Gulika - 1 tablet twice daily after food
- ❖ Kalyanaka ghrtam – 2.5 ml melted ghee twice daily after food

External Procedures Done

- ❖ Udwartanam with kolakulathadi churnam for 7 days

- ❖ Sravangabhyangam with Dhanwantharam tailam for 7 days
- ❖ Patra potala swedam with Dhanwantharam tailam for 7 days
- ❖ Kayasekam with Dhanwantharam taila for 7 days
- ❖ Mustadi rajayapana vasti for 8 days
- ❖ Sirodhara with Dhanwantharam taila
- ❖ Shastika lepam for 7 days

Treatment was done for 45 days. Physiotherapy was done along with the treatment.

Result

Following intervention, the child demonstrated notable gains in gross motor stability and functional abilities, particularly in maintaining posture and initiating independent sitting. Hand function showed qualitative improvement, with better control and coordination during grasping activities. Language development also progressed, indicating gradual cognitive and communicative advancement.

An overall enhancement in muscle strength was observed, especially in upper limbs, contributing to improved activity performance. Muscle strength was assessed using the Medical Research Council (MRC) Muscle Strength Grading Scale, which grades muscle power on a scale from 0 to 5.⁽⁷⁾ Additionally, there was a reduction in abnormal muscle tone patterns. Muscle tone was assessed clinically and graded as mild, moderate and severe hypotonia based on resistance to passive movement and posture control.⁽⁸⁾ Previously persistent hypotonia became less pronounced and more intermittent, with a trend toward normalization especially in the lower limbs. Although generalized spasticity was not observed, localized stiffness at the ankle joint was noted. This was assessed using the Modified Ashworth Scale, which demonstrated a reduction following the course of treatment.⁽⁹⁾ A comprehensive summary of pre and post intervention findings is shown in Table No:1 & Table No: 2

Table 1: Pre and Post Intervention Functional and clinical Outcomes

Outcomes	Before Treatment (BT)	After Treatment (AT)
Sitting without support	Not attained	Able to sit without support for 2 minutes with improved erect posture
Palmar grasp	Not attained	Improved and more stable grasp
Speech	10 meaningful words	15 meaningful words
Power in bilateral upper limbs	Grade 3	Grade 4
Ankle joint spasticity	Grade 1	Grade 0

Spasticity is assessed by Modified Ashworth Scale

Table 2: Changes in the Muscle Tone Following Intervention

Regions	Before Treatment (BT)	After Treatment (AT)
Right Upper limb	+++	++
Left Upper limb	+++	++
Right Lower limb	++	+

Left Lower limb	++	+
-----------------	----	---

Hypotonia graded clinically as: + (mild), ++(Moderate), +++(severe)

Discussion:

Cerebral palsy (CP) is classically described as a non-progressive neurological disorder; however, its clinical manifestations evolve with brain maturation. One of the important yet often under recognized presentations is early hypotonia preceding spasticity, as observed in this case. The presence of hypotonia along with exaggerated deep tendon reflexes and extensor plantar response suggests early cortico-spinal tract involvement, indicating transition towards spastic cerebral palsy rather than a purely hypotonic subtype. Such case carries a comparatively better functional prognosis if identified early and managed appropriately. The index case demonstrated this transitional pattern, highlighting the importance of detailed neurological examination in early childhood hypotonia.

From an Ayurvedic perspective, the clinical presentation can be understood as a *Kapha* dominant manifestation with underlying *vata* pathology (*kaphaavruta vata*). The initial hypotonia characterized by flaccidity, increased range of motions of joints and reduced motor activity, reflects *kapha dushti*, which is associated with *sthira*, *manda* and *guru* qualities leading to diminished neuromuscular responsiveness. This *kapha* predominance masks or obstructs the normal functioning of *vata*, resulting in impaired movement and delayed milestones. At a deeper level, the pathology is fundamentally rooted in *vata* vitiation, particularly involving *prana*, *udana* and *vyana vata*, which governs higher neurological functions, motor activity and coordination. The associated factors in this case such as *beeja dushti*, perinatal insult and early developmental delay can be interpreted as contributing to *Adibala Pravvrutha Vyadhi* with *Tridosha dushti*, eventually localizing in *Madhyama roga marga* affecting *asthi* and *majja dhatu*. The progression from hypotonia to emerging spasticity reflects gradual unmasking of *vata* pathology as *kapha* obstruction reduces over time. This aligns with the observation that hypotonia in early life may later evolve into hypertonia as neural pathways mature or maladapt. The treatment approach in this case was based on the principles of *Vata Vyadhi Chikitsa*, along with simultaneous correction of *Kapha Avarana* and *Agnimandya*. While planning external therapies and internal medications, careful consideration of *Kapha* is essential, as many therapeutic measures indicated for *Vata* disorders possess *Snigdha* and *Guru* properties, which may inadvertently aggravate *Kapha* if not appropriately balanced.

A combination of the therapeutic interventions, including internal (*Abhyantara*) and external (*Bahya*) *Snehana*, *Swedana*, *Shodhana*, *Shamana*, and *Brimhana*, was employed.⁽¹⁰⁾ Emphasis was placed on maintaining proper *Jatharagni*, as gut microbiota plays a crucial role in the functioning of the central nervous system.⁽¹¹⁾ Therapies aimed at enhancing digestion (*Deepana*) and metabolizing undigested substances (*Pachana*) help in normalizing gut microbiota, which may regulate

neuroinflammatory responses and support neural recovery.⁽¹²⁾ Both internal and external *Rookshana* procedures were used to restore optimal gut microbial balance and to eliminate *Kapha Avarana*, which is essential before addressing the underlying *Vata* pathology.

To enhance the *Agnibala* (digestive and metabolic capacity) of the child and to eliminate the existing *Ama dushti*, along with clearing *Kapha Avarana*, *Ashtachooranam* was initiated. It is well known for its *Deepana* and *Pachana* properties.⁽¹³⁾

Dhanadanayanadi Kashayam and *Dhanwantharam Gulika* were administered as part of *Shamana Chikitsa*, owing to their significant *Vata-shamana* effects.⁽¹⁴⁾ *Kalyanavaleha Chooranam*, which contains ingredients such as *Vacha*, *Yashti*, and *Madhukam*, is known to enhance speech and cognitive functions.⁽¹⁵⁾ *Gorochonadi Gulika* is also traditionally indicated for its neurological benefits. *Manasmitravatakam*, a widely used neuroprotective Ayurvedic formulation, possesses properties such as *Sarva Manodoshahara* and *Medhya* (cognitive enhancing), thereby contributing to improved brain function.⁽¹⁶⁾

After gradually attaining adequate *Agnibala*, both internal and external *Snehana* (oleation) therapies were initiated simultaneously. Internal oleation was performed using *Kalyanaka Ghrita*, while external oleation was carried out with *Dhanwantharam Taila*. *Kalyanaka Ghrita* is known for its broad therapeutic benefits, particularly in enhancing muscle strength and supporting higher neurological functions. The individual herbs possess nootropic, rejuvenative (*Rasayana*), anxiolytic, neuroleptic, anticonvulsant, antidepressant, adaptogenic, and sedative properties, and are widely referenced in classical Ayurvedic texts as well as included in various other formulations.⁽¹⁷⁾ *Dhanwantharam Taila*, recognized for its neurotonic and *Vata-Kapha* balancing properties, is especially beneficial in conditions involving neuromuscular impairment such as hypotonia.⁽¹⁸⁾

Following *Snehana*, *Patra Potala Swedana*, was administered, which is highly effective in alleviating *Vata-Kapha* imbalance.⁽¹⁹⁾ Both *Snehana* and *Swedana* help in loosening and mobilizing accumulated metabolic waste, liquefying them and facilitating their movement towards the *Koshtha* (gastrointestinal tract) for elimination.

Subsequently, *Kayaseka* with *Dhanwantharam Taila* was performed, further aiding in balancing *Vata* and *Kapha doshas*. Once the mobilized toxins reached the *Koshtha*, elimination was carried out through *Basti* therapy, which is well tolerated in pediatric patients.

Mustadi Rajayapana Basti was administered with the dual objective of *Koshtha Shodhana* (systemic cleansing) and *Brimhana* (nourishment).⁽²⁰⁾ Following adequate *Shodhana*, *Shashtika Lepam* was applied to provide deeper nourishment to the *Dhatu*s (body

tissues), thereby supporting overall neuromuscular strength and development.

Conclusion:

This case highlights the clinical significance of early identification of hypotonia as a possible precursor to evolving spastic cerebral palsy. The presence of hypotonia along with exaggerated reflexes indicated early corticospinal tract involvement, emphasizing the need for timely and targeted intervention.

The integrative Ayurvedic management, based on the principles of *Vatavyadhi Chikitsa*, focusing on correction of *Agnimandya*, and alleviation of *Kapa Avarana*, demonstrated notable clinical improvement. A structured treatment protocol incorporating *Deepana-Pachana*, *Snehana*, *Swedana*, *Shodhana (Basti)*, and *Brimhana* therapies, along with appropriate internal medications, contributed to enhanced neuromuscular function, improved muscle tone, and better developmental outcomes.

The observed improvements in posture, muscle strength, hand function, and speech suggest that early Ayurvedic intervention, when combined with supportive therapies like physiotherapy and speech therapy, can play a beneficial role in modifying disease progression and improving quality of life in children with cerebral palsy. However, as this is a single case study, further large-scale clinical studies are warranted to validate these findings and establish standardized treatment protocols.

References:

1. A.Santhosh Kumar. Pediatric Clinical Examination. First Edition 2004.Hyderabad. Paras medical Publisher. P-155 -161.
2. NICE publishes guideline on diagnosing and managing cerebral palsy in young people
3. *BMJ* 2017; 356 doi: <https://doi.org/10.1136/bmj.j462> (Published 27 January 2017)
4. Levy JP, Oskoui M, Ng P, Andersen J, Buckley D, Fehlings D, Kirton A, Koclas L, Pigeon N, van Rensburg E, Wood E, Shevell M. Ataxic-hypotonic cerebral palsy in a cerebral palsy registry: Insights into a distinct subtype. *Neurol Clin Pract*. 2020 Apr;10(2):131-139. doi: 10.1212/CPJ.0000000000000713. PMID: 32309031; PMCID: PMC7156190.
5. A.Santhosh Kumar. Pediatric Clinical Examination. First Edition 2004.Hyderabad. Paras medical Publisher. P-155 -161.
6. Kiran et al "Ayurvedic perspective of Cerebral Palsy : A Review": 2022; 5 (11):129-136
7. Vāgbhāṭa. *Aṣṭāṅga Saṅgraha*. Uttarasthāna, Chapter 2, Verse 138. Varanasi: Chaukhambha Sanskrit Series Office; Reprint edition
8. Naqvi U, Margetis K, Sherman AL. Muscle Strength Grading. [Updated 2025 Apr 27]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK436008/>
9. Hidalgo Robles Á, Paleg GS, Livingstone RW. Identifying and Evaluating Young Children with Developmental Central Hypotonia: An Overview of Systematic Reviews and Tools. *Healthcare (Basel)*. 2024 Feb 18;12(4):493. doi: 10.3390/healthcare12040493. PMID: 38391868; PMCID: PMC10887882B R, Gupta A, Misar S, Rudey M, Khedekar S, Patil M. Contribution of Ayurveda in augmenting motor function in a child with cerebral palsy: A case report. *J Res Med Dent Sci*. 2022;10(2):91–96
10. Peter G. Levine. Testing spasticity: The Modified Ashworth Scale, June 2, 2009 [http://physical-therapy.advanceweb.com/Article/Testing-Spasticity - The Modified Ashworth Scale.aspx](http://physical-therapy.advanceweb.com/Article/Testing-Spasticity-The-Modified-Ashworth-Scale.aspx). And Bohannon R, et.al.
11. Vagbhata, Ashtanga Hridayam. (Chikitsa sthanam) Varanasi. Krishnadas Academy Reprint 2000. P -193 –194.
12. Sohini. S, Roshni Anirudhan. Conventional Ayurvedic Management in Spastic Cerebral Palsy: A Case Study. *International Journal of Ayurveda and Pharma Research*. 2017;5(4):38-41
13. Purnima BU, An Insight to effect of Deepana Panchana Herbs on Gut microbiota. *J Ayu Int Med Sci*. 2025;10(3):178-183.
14. Agniveśa, Caraka, Dṛḍhabala. *Caraka Samhitā*. Chikitsāsthāna 5 (Gulma Chikitsa Adhyaya). Varanasi: Chaukhambha Orientalia; Reprint ed.
15. Nishteswar K, Vidyanath R, editors. *Sahasrayogam*. Kashaya Prakarana. Varanasi: Chaukhambha Sanskrit Series Office; Reprint edition.
16. Prof. (Dr.) Gyanendra Pandey, Bhaisajya Ratnavali, Vol -2 Varanasi. Chaukhambha Sanskrit Series Office. Chaukhambha Press. 2007. P-653
17. Thirunavukkarasu SV et al. Neuroprotective effect of Manasamitra vatakam against aluminum induced cognitive impairment and oxidative damage in the cortex and hippocampus of rat brain. *Drug Chem Toxicol*. 2012 Jan;35(1):104-15. doi: 10.3109/01480545.2011.589442. Epub 2011 Sep 22.
18. Singh, Yashika1; Ansari, Amzad3; Singh, Vidhu1; Parhate, Saroj2; Sharma, Rajendra Prasad1; Singh, Thakur Rakesh1. Therapeutic potential of Kalyanaka Ghrita (polyherbal-medicated Ghrita) in purview of Alzheimer's disease: A literary review. *Journal of Drug Research in Ayurvedic Sciences* 8(3):p 201-212, July-September 2023. | DOI: 10.4103/jdras.jdras_164_22
19. Brindha TR, Prabhu K, Jones S, Janaki CS, Sheriff D, Kumar HM, Kalaivani S, Lakshmi D. The GC-MS Study of the Ayurvedic Formulation "Dhanwantharam Thailam" Used for Rheumatism. *J Pharm Bioallied Sci*. 2024 Apr;16(Suppl 2):S1829-S1832. doi: 10.4103/jpbs.jpbs_14_24. Epub 2024 Apr 16. PMID: 38882853; PMCID: PMC11174314.

20. Kumawat J, Singh SK, Rajoria K. Conceptual review on Patra Pinda Pottali Sweda: An Ayurvedic therapeutic approach. *World Journal of Pharmaceutical and Medical Research*. 2025;11(2):334–338.
21. Febina NC, Sivakumar CS, Aneesh S. Ayurvedic approach in thoracic myelopathy. *International Journal of Ayurveda and Pharma Research*. 2025;13(7):126–130.