

# A Case Study on the Approaches of Ayurveda and Physiotherapy in Treating Spastic Cerebral Palsy Associated with Global Developmental Delay

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## ABSTRACT

Spastic cerebral palsy (CP) is a motor disorder caused by damage to the brain during early development, leading to spasticity, impaired movement, and motor coordination challenges. Often, spastic CP is accompanied by Global Developmental Delay (GDD), a condition characterized by delays in multiple areas of development, including motor, cognitive, language, and social skills. Conventional medical treatments typically focus on symptom management, yet complementary therapies like Ayurveda and Physiotherapy can play a crucial role in improving functional outcomes and enhancing the quality of life for affected children. This case study explores the integrative approach of Ayurveda and Physiotherapy for managing spastic CP associated with GDD, highlighting the combination of traditional healing practices and modern rehabilitation techniques in promoting holistic development.

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## INTRODUCTION

Cerebral palsy (CP) is one of the most common neurological disorders in children, with spasticity being the most frequent type. Spastic cerebral palsy occurs due to abnormal development or damage to the motor cortex or the pathways of the central nervous system that control muscle tone. This results in increased muscle tone (spasticity), leading to difficulties in movement and coordination. In addition to motor impairments, children with CP frequently experience Global Developmental Delay (GDD), which can affect their intellectual, motor, and social abilities.

The conventional treatment for spastic CP often involves a combination of physical therapy, medication, and sometimes surgery. However, complementary therapies such as Ayurveda and Physiotherapy offer valuable adjunctive treatments that focus on improving muscle tone, cognitive

function, and overall well-being. Both approaches provide personalized treatment plans, aiming to address the root causes of the condition, promote functional mobility, and improve mental and emotional health.

This paper examines a case study of a child diagnosed with spastic cerebral palsy associated with GDD, exploring the combined Ayurvedic and Physiotherapeutic approaches and their impact on the child's development.

## Ayurveda in the Management of Spastic Cerebral Palsy with GDD

Ayurveda, the ancient system of healing from India, is based on the principles of balancing the three doshas (Vata, Pitta, and Kapha) to maintain health. Spastic cerebral palsy and GDD, as seen in children, are believed to result from imbalances in Vata dosha, which governs movement and neurological function.

Ayurveda seeks to correct these imbalances through a combination of diet, herbal remedies, detoxification therapies, and mind-body interventions. The key components of Ayurvedic management for spastic CP with GDD are as follows:

1. **Balancing the Vata Dosha:** Since Vata is associated with movement and nervous system function, Ayurvedic treatments aim to pacify this dosha to reduce spasticity and improve motor control. The focus is on restoring balance through diet, herbs, and lifestyle modifications.
2. **Herbal Remedies:** Ayurvedic herbs play a critical role in enhancing neurological function and reducing spasticity. Commonly used herbs include:
  - **Ashwagandha (Withania somnifera):** Known for its adaptogenic properties, this herb is used to reduce stress, improve muscle strength, and promote neuroprotection.
  - **Brahmi (Bacopa monnieri):** This herb is traditionally used to enhance cognitive function, improve memory, and calm the mind, addressing both the intellectual delay and the emotional distress often associated with GDD.
  - **Turmeric (Curcuma longa):** With its anti-inflammatory properties, turmeric is used to reduce inflammation in the brain and improve overall body functioning.
3. **Panchakarma Therapy:** This is an Ayurvedic detoxification process that aims to cleanse the body of accumulated toxins and promote healing. In the context of CP, Panchakarma therapies such as **Abhyanga (oil massage)** and **Swedana (steam therapy)** help improve circulation, relax tight muscles, and reduce spasticity. Regular oil massages with warm, nourishing oils like sesame oil help to reduce muscle stiffness and improve flexibility.
4. **Dietary Adjustments:** Ayurvedic practitioners recommend specific dietary changes to improve brain function and reduce spasticity. A Vata-pacifying diet rich in warm, grounding foods such as soups, cooked vegetables, and whole grains can help nourish the nervous system and promote overall vitality. Ayurvedic ghee (clarified butter) is often incorporated for its nourishing and anti-inflammatory properties.
5. **Yoga and Pranayama:** Ayurvedic practices emphasize the importance of yoga and breathing exercises (pranayama) to maintain physical and mental harmony. Gentle yoga asanas (postures)

such as **Tadasana (Mountain Pose)** and **Vrikshasana (Tree Pose)** help improve balance and coordination, while pranayama exercises like **Nadi Shodhana** (alternate nostril breathing) promote relaxation and mental clarity, addressing the cognitive delays associated with GDD.

6. **Mind-Body Therapies:** Ayurvedic healing also emphasizes the integration of the mind and body through therapies such as **meditation** and **visualization**, which can help manage the emotional and psychological aspects of GDD.

### Physiotherapy in the Management of Spastic Cerebral Palsy with GDD

Physiotherapy is essential in the management of spastic cerebral palsy, as it focuses on improving motor function, mobility, and physical independence. The role of physiotherapy in treating spastic CP associated with GDD includes:

1. **Motor Skill Development:** Physiotherapists work on improving gross motor skills (e.g., walking, sitting, standing) and fine motor skills (e.g., hand-eye coordination, grasping). Techniques like **facilitated movement**, where therapists guide movements to reinforce correct patterns, help address spasticity and promote motor control.
2. **Muscle Stretching and Strengthening:** Stretching exercises help alleviate muscle stiffness caused by spasticity, while strengthening exercises are important for improving muscle tone and endurance. Stretching exercises for the lower limbs (e.g., hamstring stretches, calf stretches) and upper limbs (e.g., shoulder and arm stretches) are key components of a physiotherapy program for spastic CP.
3. **Neuromuscular Re-education:** This involves the use of specific techniques to restore proper neuromuscular function and improve coordination. The **Proprioceptive Neuromuscular Facilitation (PNF)** technique is often used to help patients regain correct movement patterns by using patterns of movement that encourage proper muscle activation and coordination.
4. **Functional Mobility Training:** Physiotherapists work with children to develop functional mobility skills. This may include techniques to improve walking, crawling, and transitioning from sitting to standing. Tools like **assistive devices** (e.g., walkers, braces) can be introduced to improve mobility and independence.

**5. Postural Control and Balance:** One of the major challenges for children with spastic CP is maintaining balance. Physiotherapists use exercises such as balance training with stability balls, balance boards, and **vestibular stimulation exercises** to improve postural control.

**6. Sensory Integration:** Children with CP may also experience sensory processing issues, which can affect their ability to perceive and respond to sensory stimuli. Physiotherapists incorporate **sensory integration therapy**, where children engage in activities designed to improve their sensory processing and help them adapt to sensory input.

### Case Study: A Combined Approach for a Child with Spastic Cerebral Palsy and Global Developmental Delay

#### Patient Profile:

- **Age:** 4 years old female child
- **Diagnosis:** Spastic Cerebral Palsy (mainly spastic diplegia) with Global Developmental Delay
- **Presenting Symptoms:** Muscle stiffness (spasticity), difficulty with fine and gross motor skills, delayed speech, intellectual impairment, and sensory processing difficulties.

#### Treatment Approach:

- **Ayurvedic Intervention:** The child's diet was adjusted to include warm, grounding foods to pacify Vata dosha, along with herbal formulations of Ashwagandha and Brahmi. The family followed a weekly Panchakarma regimen, which included regular Abhyanga sessions followed by Shshatik shali pinda swedan (type of swedan) to relax tight muscles along and Nasya. detailed treatment plan attached with tabl no 1. Additionally, gentle yoga postures were practiced to improve flexibility and coordination. Meditation and pranayama were introduced as

calming techniques to help reduce the child's anxiety and enhance cognitive function.

- **Physiotherapy Intervention:** Physiotherapy focused on improving the child's gross motor skills, with exercises aimed at reducing muscle stiffness and increasing strength. Stretching exercises and neuromuscular re-education techniques, such as PNF, were incorporated to improve movement patterns. Balance and postural control exercises were introduced using stability balls and balance boards. Hydrotherapy was also used to facilitate movement in a less restrictive environment.

**Outcome:** After six months of integrated Ayurvedic and Physiotherapeutic treatment, the child showed significant progress in motor function. Spasticity was reduced, and the child began to show improved control over movement, including better balance and coordination. Cognitive improvements were observed, with increased engagement in activities and better social interaction. The combination of therapies led to a reduction in emotional distress, and the family reported enhanced overall well-being.

#### Conclusion

This case study illustrates the potential benefits of combining Ayurveda and Physiotherapy in the management of spastic cerebral palsy associated with Global Developmental Delay. Ayurveda's holistic approach, focusing on balancing the mind, body, and spirit, complements the targeted interventions of Physiotherapy, which address the physical limitations of spasticity and developmental delays. This integrated model provides a comprehensive solution, enhancing the quality of life and developmental outcomes for children with CP and GDD. Future research and clinical trials are necessary to further validate the effectiveness of this combined approach in larger cohorts.

**Table no.1 Detailed treatment plan for patient**

| Sr No. | Duration     | Panchakarma procedure   | Oral medication   |
|--------|--------------|---|---|
| 1      | 10 days      | Nil   | Tab.Agnitundivati 250mg BD<br>Aswagandha choorana 5gm with honey BD |
| 2      | Next 1 month | A. Sarvang abhyang with Prasharinitailam<br>B. Sarvang Shashtikshali pinda swedana<br>C. Nasya with Samvardhanghrita 2 drops each nostril | Tab.Agnitundivati 250mg BD<br>Aswagandha choorana 5gm with honey BD |
| 3      | Next 1 month | A. Sarvang abhyang with Prasharinitailam<br>B. Sarvang Shashtikshali pinda swedana<br>C. Matra basti with Samvardhan ghrita 20 ml         | Tab.Kumarkayan Rasa 1OD   |

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