



Case Study

AYURVEDIC MANAGEMENT OF SPINAL MUSCULAR ATROPHY

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ABSTRACT

Spinal Muscular Atrophy (SMA) is one among the genetic disorder characterised by progressive muscle atrophy and weakness. It is an autosomal recessive condition with an incidence of approximately 1 in 11,000, primarily affecting infants and children with varying severity. Although not specifically described in classical Ayurvedic texts, spinal muscular atrophy (SMA) may be interpreted as a *Kulaja Vyadhi* or an *Anukta Vyadhi*. This study aims to evaluate the efficacy of the *Panchakarma* approach in improving the quality of life in an SMA patient. A single case study was conducted on a 19-year-old male diagnosed with SMA, who visited SDM Ayurvedic hospital with complaints of difficulty in climbing stairs, loss of balance, and challenges in getting up from the ground. The patient underwent *Panchakarma* therapy, including *Udvartana*, *Basti*, *Abhyanga*, *Prishta Seka*, and *Shashtika shali Pinda Swedana*. After undergoing two cycles of *Panchakarma* treatment at six-month intervals, the patient's symptoms were reassessed. DEXA scanning showed significant improvement, and overall quality of life was greatly enhanced. The results suggest that the *Panchakarma* line of treatment is effective in improving the quality of life in SMA patients and could be a breakthrough in its management.

INTRODUCTION

Spinal Muscular Atrophy (SMA) refers to a group of inherited disorders that primarily affect motor neurons in the spinal cord, resulting in gradually worsening muscle weakness and wasting. The most common type is inherited in an autosomal recessive manner and is typically linked to a mutation or deletion in the SMN1 gene on chromosome 5q13. The severity of SMA varies widely, and its clinical presentation is categorized into four primary phenotypes based on the age of onset and the highest level of motor function attained.^[1] The prominent clinical features of SMA are muscle weakness and atrophy. Weakness is typically symmetrical, with the proximal muscles being more affected than the distal ones. As SMA arises from a genetic mutation, it remains challenging to achieve a complete cure;

however, significant improvements in the patient's quality of life is achievable through appropriate interventions. While spinal muscular atrophy is not explicitly mentioned in classical Ayurvedic texts, it can be aligned with the concepts of *Kulaja Vyadhi* or *Anukta Vyadhi* by analyzing the predominance of *Dosha* and *Dhatu*. Acharya Charaka mentioned that all diseases cannot labelled with some name, unsaid diseases can be studied as a *Kupita Dosha*, *Hetu*, and their *Sthana*.^[2] The concept of *Trividha Bodhya Sangraha* mentioned in the *Charaka Samhita* highlights a practical approach to understanding new or unexplained diseases. According to this principle, three key aspects should be examined: the nature of the disease (*Vikara Prakriti*), the site of origin (*Adhisthana*), and the causative factors (*Samutthana*). This helps in analyzing and managing conditions that are not directly described in classical texts.^[3]

Case Report

Chief Complaints: Patient complains of difficulty in getting up from sitting position, running, climbing stairs since 1 year.

Associated Complaints: C/o difficulty in standing without support, and wearing footwears since 1 year.

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Table 1: History of Present Illness

Birth	Born from a consanguineous marriage.
5 years	Involuntary movements in fingers noticed.
10 years	Weakness in lower limbs, unable to get up from a chair without support.
12 years	Lost ability to run even for a short distance.
Recent years	Difficulty in climbing stairs without support associated with fatigue. Visited multiple allopathic hospitals took steroids- Cap Asthalin and D rise capsule but found no relief.
	Genetic investigation confirmed Spinal Muscular Atrophy (SMA) in 2022.
First visit	Visited SDMCAH, Hassan, for <i>Panchakarma</i> therapy significant improvement in condition was observed.
Second visit	Further management of SMA planned.

Table 2: Personal History

Appetite	Reduced
Bowel	Unaltered with normal consistency
Micturation	Unaltered 3-4 times/day
Sleep	Disturbed due to stress

Systemic Examination

- Respiratory system – NVBS heard
- Cardiovascular system- S1S2 heard, no murmurs
- Gastrointestinal system – NAD
- Central nervous system- Conscious, well oriented to time place and person
- Musculoskeletal examination

Gait- Waddling gait

Arms- No abnormality

Leg- Hyper extension of muscle of left lower limb

Spine- Mild lumbar lordosis

Muscle power – Right upper arm left upper arm -5/5

Left lower limb and right lower limb -3/5

Muscle tone – Right upper arm, left upper arm-normotonic.

Left lower limb and right lower limb -hypotonic.

Table 3: Deep tendon reflexes

Right biceps jerk	+ve
Right triceps jerk	+ve
Left biceps jerk	+ve
Left triceps jerk	+ve
Right knee jerk	Diminished
Left knee jerk	Diminished
Right ankle jerk	Diminished
Left ankle jerk	diminished

Table 4: Ashtasthana pariksha

<i>Nadi</i>	<i>Vatakapha</i> 76bpm
<i>Mootra</i>	<i>Prakrutha</i> 3 times/day
<i>Mala</i>	<i>Prakrutha</i> 2 times/day
<i>Jihwa</i>	<i>Lipta</i>
<i>Druk</i>	<i>Prakrutha</i>
<i>Shabda</i>	<i>Prakrutha</i>

<i>Sparsha</i>	<i>Anushna sheetha</i>
<i>Akruthi</i>	<i>madyama</i>

Table 5: Dashavidha pariksha

<i>Prakruthi</i>	<i>Kaphavata</i>
<i>Vikruthi</i>	<i>Vata</i>
<i>Sara</i>	<i>Madyama</i>
<i>Samhanana</i>	<i>Madyama</i>
<i>Satva</i>	<i>Avara satva</i>
<i>Satmya</i>	<i>Katu rasa satmya</i>
<i>Aharashakti</i>	<i>Abyavarana shakti-avara, Jarana shakti-avara</i>
<i>Vyayamashakti</i>	<i>Avara</i>
<i>Vaya</i>	<i>Madyama</i>
<i>Pramana</i>	<i>Madyama</i>

Table 6: Intervention on 1st course

Procedure	Drugs used	Duration
<i>Sarvanga udvartana</i> followed by <i>Sarvanga parisheka</i>	<i>Udvartana choorna</i> <i>Dashamoola Kashaya</i>	From D1-D3 for the period of 30 mins
<i>Pratimarsha nasya</i>	<i>Kalyanaka gritha</i>	From D1-D8
<i>Sadyovirechana</i>	<i>Nimbamrithadi eranda taila</i> -50ml + <i>Ksheera</i> 100ml	On D2, total no of <i>Vegas</i> -8
<i>Prushta seka</i>	<i>Mahamasha taila</i>	From D4-D7
<i>Mustadi yapana basti</i>	Honey-100ml <i>Saindava</i> - 6gms <i>Sneha-mahamasha taila</i> -80ml <i>Kalka-bala, Guduchi, Ashwagandha, Shatavari, Shatapushpa</i> - 30gm <i>Kwatha-mustadi yapana ksherapaka</i> -350ml	From D3-D7
	D3 D4 D5 D6 D7 D8 D9	
	N/A N/A N/A N/A N/A N/A A	
<i>Sarvanga abyanga f/b Shashtika shali pinda sweda</i>	<i>Mahamasha taila</i>	From D8-D10 for 30 mins
<i>Annalepa</i>	<i>Shastika Shali + Shatavari + Ashwagandha + Bala</i>	D4-D8

Table 7: Intervention on 2nd course

Procedure	Drugs used	Duration														
<i>Sarvanga udvartana</i> followed by <i>Sarvanga parisheka</i>	<i>Udvartana choorna</i> <i>Dashamoola Kashaya</i>	From D1-D3, for the period of 30 mins														
<i>Prushta seka</i>	<i>Mahamasha taila</i>	From D4-D7														
<i>Mustadi yapana basti</i>	Honey- 100ml <i>Saindava</i> - 6gms <i>Sneha-mahamasha taila</i> -80ml <i>Kalka-bala, Guduchi, Ashwagandha, Shatavari, Shatapushpa</i> -30gm <i>Kwatha-mustadi yapana ksherapaka</i> -350ml	From D1-D7														
	<table><tr><td>D1</td><td>D2</td><td>D3</td><td>D4</td><td>D5</td><td>D6</td><td>DA</td></tr><tr><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td><td>A</td></tr></table>		D1	D2	D3	D4	D5	D6	DA	N/A	N/A	N/A	N/A	N/A	N/A	A
	D1		D2	D3	D4	D5	D6	DA								
N/A	N/A	N/A	N/A	N/A	N/A	A										

<i>Sarvanga abyanga</i> followed by <i>Patra pinda sweda</i>	<i>Mahamasha taila</i>	From D4-D7, for 30 mins
<i>Sarvanga abyanga f/b Jambeeera pinda sweda</i>	<i>Mahamasha taila</i>	From D8-D10, for 30 mins
<i>Veshtana</i>	To b/l limbs - <i>Mahamasha taila</i>	D4-D8
<i>Shiropichu</i>	<i>Kalyanaka gritha</i>	D2-D8

Follow-up medicines

1. *Brihat chagalyadi gritha* 1tsp-0-1tsp with lukewarm water.
2. *Brihat vata Chintamani* 1-0-1 a/f
3. *Dhanadanyadi Kashaya* 10ml-0-10ml a/f with lukewarm water.
4. *Mahamasha taila* e/a

Table 8: Assessment parameters before and after treatment

Assessment parameters Subjective and objective parameters	Before treatment	After 2 sittings	During follow up after 1 month
<i>Shareera gurutha</i>	++	Absent	Absent
Reduced appetite	+	Increased appetite	Increased appetite
Right knee jerk	Diminished	Diminished	Diminished
Left knee jerk	Diminished	Diminished	Diminished
Right ankle jerk	Diminished	Diminished	Diminished
Left ankle jerk	diminished	Diminished	Diminished
Muscle power-Left and right lower limb	3/5	4/5	4/5
Muscle tone -left and right lower limb	Hypotonic	Hypotonic	Hypotonic
Bergs balance scale	22/56	26/56	26/56

RESULTS

After the course of *Panchakarma* DEXA scanning was conducted and it showed significant improvement in Bone mineral content {BMC} which was 44.14gm before the intervention and 46.53gm after the intervention, along with BMC even Bone mineral density showed significant improvement from 0.888g/cm² to 0.936g/cm² after treatment.

DISCUSSION

Sarvanga udvartana is *Kapha-vatahara*, *Bhavaprakasha* mentions it as *Shonitam krichramapi*, which helps in relieving *Amatva* and attaining *Srotovishodana* with proper circulation. *Parisheka* acts as *Shramahara*, *Vatahara*, *Bhagnasandhanakrit*^[4]. Here *Koshtashodhana* was done with *Nimbamrithadi eranda taila* because *Koshtha Shodhana* in the form of *Mridu Virechana* will evacuate *Doshas* and *Mala* from *Pakwashaya*, which inturn may help to retain the *Basti*^[5]. Here *Basti* becomes the prime choice of treatment, as *Basti* is said to be *Ardhachikitsa/ Sampoorana chikitsa*, The administered *Basti* reaches the *Pakwashaya* (large intestine), and from there, it spreads to other parts of the body through the *Srotas* (channels), much like watering the roots of a tree-where the nourishment gradually reaches every branch, ultimately resulting in the growth of flowers and fruits^[6]. *Mustadi Yapanas Basti* is commonly used in

conditions like *Katishoola* (lower back pain), and disorders like *Vatarakta* (rheumatic conditions). It is known for its *Rasayana* (rejuvenating) properties, which help in revitalizing the body. This *Basti* works effectively in managing *Vata*-related disorders by clearing *Margavarodha* (obstruction) and does *Brihmana*, thereby addressing *Dhatukshaya* (tissue depletion) and restoring balance^[7]. *Sarvanga abyanga* was adopted with *Mahamasha taila* as it is one of the effective oils widely used for many neurological conditions. *Masha* is considered highly effective in pacifying *Vata* due to its *Madhura Rasa*, *Guru* and *Snigdha Guna*, *Ushna Virya*, and *Madhura Vipaka*- all of which contribute to its strong *Vatahara* (*Vata-pacifying*) action. *Pratimarsha Nasya*, a gentle and daily form of *Nasya*, is helps to maintain and restore balance within the body's *Doshas*, particularly *Vata* and *Kapha*. It is also believed to have a calming effect on the mind, enhance cognitive functions, and promote mental clarity^[8]. *Shashtika shali pinda sweda* works as *Brimhana* and provide *Dhatu Poshana* (nourishment). Due to *Ushna Guna*, it stimulates the sympathetic nervous system and performs vasodilation. *Sara* and *Sukshma Guna* liquefy the *Lina Dosh* and then these *Doshas* are expelled out through the micropores.^[9] *Annalepa* was performed by boiling *Shashtika shali* with the infusion of *Choornas* like *Shatavari*,

Ashvagandha, *Bala* as *Annalepa* is an effective and harmless treatment modality in Ayurveda which helps in reducing the muscle spasm, corrects joint deformities, prevents contractures, improves muscle tone, increases the bulk of muscles by proper nourishment of *Dhatu* as it is having *Brimhana* effect.^[10] *Shiropichu* with *Kalayanaka gritha* was advised for improving *Nidranasha* condition and to manage the stress of the patient. *Patra Pinda Swedana* may help in increasing blood circulation, helps in balancing *Vata dosha*, strengthens the muscles in the area, and reduces inflammation also helps to tone the muscles. *Chagaladya ghrita* is having properties of *Dhatu-vruddhikara* (nourishes the body tissues), helps in counteracting *Mamsa dhatu kshaya* also increases body weight and it is also *Ojoskara* (immune-booster)^[11]. *Brihat Vata Chintamani Rasa* is having *Medhya*, *Rasayana*, *Balya*, *Kshayagna*, *Ojovardhaka* property hence it was prescribed as *Shamanoushadi* in managing SMA.^[12]

CONCLUSION

The Ayurvedic approach to treating Spinal Muscular Atrophy (SMA) focuses on balancing the body's *Doshas*, strengthening muscles, and improving overall neurological function through *Panchakarma* therapies. While Ayurveda may not provide a complete cure for SMA, it can help in managing symptoms, improving mobility, reducing muscle degeneration, and enhancing the quality of life. Integrating Ayurvedic treatments with conventional medical care may offer a holistic approach to managing SMA effectively. Further clinical research is required to substantiate the effectiveness of Ayurvedic treatments for spinal muscular atrophy (SMA)

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