

CASE STUDY

Ayurvedic Insights into DMD: A Synergistic Approach to Muscle Degeneration

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ABSTRACT

Dystrophin deficiency causes progressive muscle deterioration in Duchenne Muscular Dystrophy (DMD), an X-linked recessive illness. Conventional treatments focus on symptomatic relief but lack curative potential. Ayurveda offers an alternative perspective through the concepts of Adibalapravritta Vyadhi, Mamsa Dhatu Kshaya, and Vata Dosha vitiation, with promising holistic management strategies. A 7-year-old male diagnosed with DMD presented with difficulty in climbing stairs and positive Gower's sign. The treatment included in 1st sitting is Shashtika Shali Pinda Sweda, Matra Basti with Bala Ashwagandha Taila for 13 days. After an interval in 2nd sitting Aja Mamsa Rasa Basti, along with Shashtika Shali Pinda Sweda & Rasayana-based oral formulations for 1 week. Significant clinical improvement was noted, including enhanced muscle tone and reduced serum CPK-NAC levels, suggesting a deceleration of muscle degeneration. This case highlights the potential role of integrative ayurvedic interventions in managing DMD by reducing disease progression and improving quality of life.

Keywords: Ayurveda, Duchenne Muscular Dystrophy, Mamsagat Vata, Case-Report, Aja Mamsa Rasa Basti, Shashtika Shali Pinda Sweda.

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INTRODUCTION

Mutations in the dystrophin gene result in either non-existent or insufficient functioning dystrophin, which causes Duchenne Muscular Dystrophy (DMD), an X-linked recessive neuromuscular disease [1]. This cytoskeletal protein plays a crucial role in maintaining the strength, stability, and functionality of myofibers. DMD is present in roughly 15.9 cases per 100,000 live male births in the United States, 19.5 cases per 100,000 in the United Kingdom, and 1 case every 3,500 live births in India [2]. Clinically, DMD presents as progressive muscle degeneration and weakness, leading to motor delays, loss of ambulation, respiratory complications, and cardiomyopathy, with fatal outcomes typically due to respiratory or cardiac failure [3, 4]. Current conventional treatments, such as corticosteroids offer symptom management but do not provide a definitive cure. Given the limited efficacy and potential side effects of these interventions, there is an urgent need for alternative approaches that enhance the quality of life and slow disease progression. Ayurveda, an ancient Indian system of medicine, does not classify DMD under a single disease entity but explains it through the concepts of *Adibalapravritta Vyadhi* (~genetic disorders) [5], *Shukra-Shonita Dosha* (~defective gametes) [6], and *Mamsa Dhatu Kshaya* (~muscle tissue depletion) [7]. The pathophysiology of DMD in Ayurveda is linked to *Vata Dosha* vitiation, leading to improper nourishment and progressive muscle degeneration. Traditional Ayurvedic interventions, including Panchakarma therapies (such as *Basti*), *Rasayana* (~rejuvenative therapy), dietary regulations, yoga, and physiotherapy, have shown potential in managing neurodegenerative conditions. This case report aims to highlight the role of an integrative Ayurvedic approach in managing DMD, focusing on improving mobility, delaying complications, and enhancing overall well-being. Through this publication, we seek to

raise awareness among healthcare professionals about the potential of Ayurveda in complementing modern medical care for DMD patients.

Sparsha Case Report

A 7-year-old male patient presented to the Kaumarbhritya OPD at IASR Kurukshetra with complaints of difficulty in climbing stairs and standing up from a squatting position for the past 1.5 years. According to the patient's father, these symptoms were first noticed at the age of four. Initially, the patient was evaluated by an orthopaedic specialist and was prescribed Vitamin D3 supplements. However, six months ago, they sought consultation at PGI Chandigarh, where the patient was diagnosed with Duchenne Muscular Dystrophy (DMD). The patient has been on Deflazacort 12 mg once a day as part of his ongoing treatment. Birth history reveals the patient was born as child of non-consanguineous parents and delivered via Full-Term Lower Segment Cesarean Section (FTLSCS) following prolonged labor, with a birth weight of 3.15 kg. The newborn cried right away and didn't need to be admitted to the NICU. There is no relevant family history of neuromuscular disorders. There is no history of tobacco smoking, alcohol consumption, or use of any other substance in the patient. Developmental milestones were reportedly normal until around 4 years of age, after which delayed motor activities were observed, particularly difficulty in climbing stairs and rising from the floor. Neuromuscular assessment revealed calf muscle pseudohypertrophy and a positive Gower's sign, indicating proximal muscle weakness. Reflexes were preserved, and no joint contractures were observed. Cardiovascular and respiratory examinations were within normal limits, abdominal examination showed no hepatosplenomegaly, and gastrointestinal and genitourinary functions were reported as normal, with regular appetite and bowel-bladder habits. Ayurvedic assessments such as *Dashavidha Pariksha*, *Ashtavidha Pariksha*, and *Sroto Pariksha* were conducted to evaluate the patient's condition in terms of *Dosha* involvement and *Srotas Dushti*. *Dashavidha Pariksha* (~Tenfold Examination) indicated *Vata-Pitta Prakriti*, *Vikriti* indicates significant *Vata Dosha* aggravation, *Sara Pariksha* reveals *Mamsa Sara Heena*, (~ poor muscle tissue quality and reduced structural strength). *Samhanana* is *Avara*, (~fragile body frame and weak musculoskeletal structure). *Satva* is assessed as *Madhyama* (~moderate mental strength), *Pramana* (~body measurements) are below average for his age, suggesting impaired physical growth. *Aaharashakti* is *Madhyama* (~average appetite and digestion). *Avara Vyayamashakti* (~ poor physical activity tolerance), *Vaya* is *Balaavastha* (childhood stage), and *Satmya* is *Madhyama* (~average suitability). The *Ashtavidha Pariksha* indicates that the patient's *Nadi* (~pulse) was found to be *Manda and Sukshma*, *Mala Pariksha* (stool examination) revealed *Samyak Mala Pravritti* (~regular bowel habits), *Mutra* (urine) was normal in frequency, color, and consistency. *Jihwa* (tongue) appeared *Shushka and Alipta* (~dry and non-coated), *Shabda* (~speech) was *Spashta* (~clear), (~palpation) revealed *Snigdhatar Mamsa-Hani* (~noticeable muscle wasting and pseudohypertrophy, particularly in the calves, with reduced tone in proximal muscles). *Drik* (~vision) was found to be *Prakrita*(~ no visual impairments). *Aakriti* (~body structure) was *Krishha* (~lean), *Sroto Pariksha* revealed substantial impairment of *Mamsavaha Srotas* due to *Dhatukshaya*, along with secondary disruption in *Medovaha Srotas*.

This case report was prepared following ethical guidelines, maintaining strict patient confidentiality. Informed written consent was obtained from the patient's parents for Ayurvedic treatment, follow-up, and publication of clinical details and laboratory findings.

Diagnostic Assessment:

The patient was diagnosed based on clinical findings and genetic testing, which confirmed a hemizygous deletion at the DMD gene (exons 8-43) on March 21, 2024. Laboratory investigations revealed significantly elevated creatine phosphokinase (CPK) levels: CPK MB at 586.27 U/L and CPK NAC at 5457.95 U/L on October 20, 2024.

Timeline and Therapeutic Intervention:

The line of treatment started with dietary modifications, panchakarma procedure included *Shashti Shali Pinda Sweda* and *Matra Basti* with *Bala Ashwagandha Taila* 20ml once a day during the initial admission from October 16, 2024, to October 28, 2024, along with oral medications: Capsule containing *Kupilu Shodhit*, *Nirgundee Ghan*, *Eranda Mool*, *Shallaki*, *Ashwagandha*, *Yograaj Guggulu* (125mg once daily with water) and Polyherbal Syp containing drugs *Bhringraj* (*Eclipta alba*), *Bhui Amla* (*Phyllanthus niruri*), *Sarpunkha* (*Tephrosia purpurea*), *Punarnava* (*Boerhavia diffusa*), *Giloy* (*Tinospora cordifolia*), *Nagarmotha* (*Cyperus rotundus*), *Pitpapra* (*Fumaria parviflora*), *Vaividang* (*Embelia ribes*), *Kalmegh* (*Andrographis paniculata*), *Saunf* (*Foeniculum vulgare*), *Kutki* (*Picrorhiza kurroa*), *Sowa* (*Anethum sowa*), *Makoi* (*Solanum nigrum*), *Haritaki* (*Terminalia chebula*), *Bibhitaki* (*Terminalia bellirica*), *Amalaki* (*Emblica officinalis*), *Tulsi* (*Ocimum sanctum*), *Daruhaldi* (*Berberis aristata*), *Mulethi* (*Glycyrrhiza glabra*),

Revandchini (Rheum emodi), (5ml twice daily with water). On discharge, the same oral medications were continued.

Upon readmission on November 6, 2024, the treatment protocol included *Shashti Shali Pinda Sweda* and *Matra Basti* with *Aja Mamsa Rasa* 20ml once a day, alongside oral medications: Capsule containing *Kupilu Shodhit, Nirgundee Ghan, Eranda Mool, Ashwagandha, Yograj Guggulu* (125mg once daily with water) and Polyherbal Symp containing drugs *Bhringraj, Bhui Amla, Sarpunkha, Punarnava, Giloy, Nagarmotha, Pitpapra, Vaividang, Kalmegh, Saunf, Kutki, Sowa, Makoi, Triphala, Tulsi, Daruhaldi, Mulethi, Revandchini*, (10ml twice daily with water). *Bilvaadi Gutika* (125mg twice daily with honey), and *Ashwagandharishta* (15ml twice daily with an equal amount of water) for 5 days. Patient developed a mild cough during the course of treatment. On discharge, the *Bilvaadi Gutika* (125mg twice daily with honey), and *Ashwagandharishta* (15ml twice daily with an equal amount of water) and Polyherbal Syrup were continued. No new complaints were reported and the patient remains on the same treatment for 2 months. [Table 1]

The patient showed improved muscle tone and slight functional benefits post-treatment, indicated by a significant decrease in CPK NAC levels, which may suggest reduced muscle degeneration. No major complications were reported during treatment.

Follow-up and Outcomes:

A follow-up test on January 15, 2025 showed a significant reduction in CPK NAC levels to 80 U/L. This suggests the potential for stabilization of muscle degeneration through the implemented treatment line. This case highlights the potential role of Ayurvedic therapies in managing DMD by slowing disease progression and improving quality of life. However, long-term follow-up and further clinical studies are needed to validate the effectiveness of this integrative approach.

Table 1

Sr. No.	Timeline/IPD	Oral medication and Panchkarma procedure	Dose	Anupanam
1	16/10/2024 to 05/11/2024	Capsule containing <i>Kupilu Shodhit, Nirgundee Ghana, Eranda Mool, Shallaki, Ashwagandha, Yograj Guggulu</i>	125mg :24 hourly	Water
		Polyherbal Symp containing <i>Bhringraj, Bhumi Amla, Sarpunkha, Punarnava, Giloy, Nagarmotha, Pitpapra, Vaividang, Kalmegh, Saunf, Kutki, Sowa, Makoi, Triphala, Tulsi, Daruhaldi, Mulethi, Revandchini, Shashti Shali Pind Sweda</i>	5ml; 12 hourly	Water
		<i>Shashti Shali Pind Sweda</i>	Once a day for 0-14 days.	
		<i>Matra Basti</i> with <i>Balaashwagandhaadi Taila</i>	20ml; Once a day for 0-14 days.	
2	06/11/2024 to 13/11/2024	Capsule containing <i>Kupilu Shodhit, Nirgundee Ghan, Eranda Mool, Shallaki, Ashwagandha, Yograj Guggulu</i>	125mg 12 hourly	Water
		Polyherbal Symp containing <i>Bhringraj, Bhui Amla, Sarpunkha, Punarnava, Giloy, Nagarmotha, Pitpapra, Vaividang, Kalmegh, Saunf, Kutki, Sowa, Makoi, Triphala, Tulsi, Daruhaldi, Mulethi, Revandchini, Shashti Shali Pind Sweda</i>	10ml; 12 hourly	Water
		<i>Shashti Shali Pind Sweda</i>	Once a day	
		<i>Matra Basti</i> with <i>Aja Mamsa Rasa</i>	20ml; Once a day	
		<i>Ashwagandhaarishta</i>	15ml ; 12 hourly	Equal amount of water
		<i>Bilvaadi Gutika</i>	125mg; 12 hourly	Water

DISCUSSION

Duchenne Muscular Dystrophy (DMD) is a progressive X-linked myopathy characterized by the absence of dystrophin, leading to muscle fiber necrosis, inflammation, and eventual replacement by adipose and fibrotic tissue. In the absence of a curative approach in modern medicine, long-term corticosteroid therapy remains the mainstay but is associated with significant adverse effects. This case report highlights the potential of Ayurveda as a complementary approach in mitigating DMD progression,

focusing on *Vata*-pacifying and *Rasayana*-based therapies. Brimhana, Snighdha, and Vata Shamaka properties of medicines used in Abhyanga and Shashti Shali Pinda Sweda balance out vitiated Vata. It is believed that vata, or sparshanendriya, resides in the skin. When these therapeutic methods are used topically, the distorted *Vata* functions are corrected, which then corrects the compromised functions [8]. *Basti* being the ultimate line of management for the pacification of *Vatadosha* and to achieve *Balya* i.e. *Mamsa Dhatu Pushtikara* effect, Acharya Charaka while explaining the benefits of regular administration of *Matra Basti* described it as *Balya*, *Sukhopcharya*, *Brimhana* and *Vataroganashaka* [9]. *Balaashwagandha tail*, formulated as per the divine guidance of the Ashwini Kumaras, is highly nourishing and serves as an effective remedy for various ailments, including all types of fevers, mental disorders, emaciation, cough, and numerous *Vata*-related disorders, without a doubt [10]. *Ashwagandhāriṣṭa* is indicated in the management of *Murccha* (~fainting), *Apasmara* (~epilepsy), *Soṣha* (~emaciation), *Daruṇa Unmada* (~severe psychosis), *Karshya* (~cachexia), *Arsha* (~piles), *Mandagni* (~low digestive fire), and *Vataroga* (~neuromuscular disorders) [11]. Polyherbal syrup exert potent anti-inflammatory, antioxidant, hepatoprotective, detoxifying, immunomodulatory, and rejuvenative (~*Rasayana*) actions, which are beneficial in mitigating oxidative stress-induced muscle degeneration and systemic inflammation seen in DMD. The collective impact of these botanicals improves digestion (*Agni*), supports *Dhatu* nourishment, and delays dystrophic progression, reflecting the Ayurvedic principles of *Rasayana chikitsa* and *Dhatukshaya-vatavyadhi* management in DMD [12-17].

CONCLUSIONS

This case report illustrates how an integrative Ayurvedic protocol combining *Panchakarma* and *Rasayana* therapy can contribute to functional and biochemical improvement in a child with Duchenne Muscular Dystrophy. Targeting the *Vata-Mamsa* imbalance through *Matra Basti*, *Swedana*, and *Rasayana* formulations may offer a promising adjunctive strategy. Further clinical studies are warranted to evaluate efficacy, long-term safety, and mechanisms of action in broader populations.

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CONFLICTS OF INTEREST

Conflicts of interest: When publishing this case report, the authors certify that they have no conflicts of interest.

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