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Case Report

Duchenne Muscular Dystrophy

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Management of Duchenne Muscular Dystrophy by Ayurvedic Principles - A Case Report

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Duchenne Muscular Dystrophy (DMD) is primarily caused by mutations or deletions in the dystrophin gene, critical for maintaining muscle fiber integrity.[1] The estimated incidence is about 1 in 3,500 male births[2], with the condition following an X-linked recessive inheritance pattern. DMD has quite resemblance with Sahaja Mamsa Shosha in Ayurveda described by Acharya Sushrutha as muscle wasting due to loss of subcutaneous fat and muscle mass.

Case summary: A 9 years old child was brought with complaints of standing without support, inability to walk, place foot on ground, difficulty in sitting in squatting position in the last 6 year of age. He also had tightness of calf muscles and contractures in B/L ankle region in the last 2 years. The child was given with Panchakarma procedures such as Udwarthana f/b Parisheka, Sarvanga Abhyanga f/b Nadi Sweda Mustadi Rajayapana Basti, Anuvasana Basti, Pichu Bandhana along with Physiotherapy and Mahisha Dravaka, Ashwagandha Arishta internally for 10 days in 3 sittings. Significant improvement was observed after 3 sittings of treatment. This case study shows that Ayurvedic treatment is helpful in management of DMD and improving the quality of life.

Keywords: Duchenne Muscular Dystrophy, Sahaja Mamsa Shosha, Yoga Basti, Pichu Bandhana, Case report

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Introduction

Duchenne Muscular Dystrophy (DMD) is a severe X-linked recessive disorder, primarily inherited from carrier mothers. However, a smaller percentage of cases result from de novo mutations.[3] The condition typically manifests around the age of four, with rapid progression leading to loss of ambulation and wheelchair dependence by the age of 10 to 12 years.[4] Dystrophin, a structural protein, plays a critical role in anchoring the actin cytoskeleton of muscle fibers to the extracellular matrix. Its absence disrupts cellular integrity, resulting in repeated cycles of muscle fiber degeneration, fibrosis, and impaired regeneration. Clinically, DMD presents with Proximal muscle weakness, notably in the pelvic and shoulder girdles, Difficulty performing activities such as climbing stairs or rising from the floor, A characteristic Gowers' sign, where patients use their hands to "walk up" their bodies due to hip and thigh muscle weakness, Calf pseudohyper-trophy, resulting from fatty infiltration and fibrosis rather than true muscle growth, Associated signs include Achilles tendon contractures, toe-walking, and compensatory lumbar lordosis. Laboratory findings typically show markedly elevated serum creatine phosphokinase (CPK) levels, indicative of muscle membrane damage.[5] In *Ayurvedic* literature, DMD bears resemblance to *Sahaja Mamsa Shosha*, as described by *Acharya Sushruta*. This condition is characterized by muscle wasting due to the depletion of *Mamsa Dhatu* (muscle tissue) and subcutaneous fat, aligning closely with the modern pathophysiological understanding of DMD.[6] From an *Ayurvedic* standpoint, the progression of DMD is viewed as a *Dhatu Kshaya* (degeneration of body tissues), and treatment is tailored according to the predominance of *Doshas* involved—primarily *Vata*. The therapeutic goal is to nourish and strengthen muscle tissue, reduce degeneration, and improve overall quality of life through *Panchakarma* therapies, internal medications (*Rasayana*), and supportive physical rehabilitation.

Case Report

A 9 years old child was brought with complaints of standing without support, inability to walk, place foot on ground, difficulty in sitting in squatting position in the last 6 year of age. He had taken treatment before but found no result, then he came for our hospital for further management.

Associated Complaints

He had tightness of calf muscles and contractures in B/L ankle region since 2 years.

Past history

Nothing significant

Family history

No history of consanguineous marriage, No relevant family history

Antenatal and natal history

He was first child, LSCS with cord around the neck having insignificant antenatal and natal history.

Milestone history

The child attained developmental milestones as per chronological age except walking and standing without support attained at 2 years of age walking attained at 2.5yrs of age.

History of illness

At the age of 5 years child had difficulty in getting up from siting position from 3 years of age, difficulty in walking, frequent falls, calf muscle hypertrophy, selective proximal muscle weakness.

Clinical findings

The child has medium appearance, toe walking and proximal weakness. Vitals, CNS examination did not reveal any abnormality. Muscle bulk was increased in bilateral calf (pseudohypertrophy), Power grade 3/5 in bilateral lower limb and 4/5 in bilateral upper limb. Gower's sign was positive. B/L Contractures present in ankle region. Upon assessment, *Prakriti* was found to be *Vatapittaja, Vikrati* was *Vatapradhana Tridoshaja*. The patient was *Twak sara, Madyama Samhanana* and *Madhyama Satva*. He belonged to *Sadharana Desha*.

Laboratory parameters

On 9/12/2020
DMD test report suggests positive homozygous deletion in exons 46-53 of DMD gene
Elevated CPK Levels (10000U/L).

Time Plan

After proper history and examination three sittings of *Panchakarma* procedures were planned each at an interval of 30 days.

Udwarthana f/b *Parisheka* with *Dashamoola Qwatha* (DMQ) and *Sarvanga Abhyanga* with *Ksheerabala Taila* f/b *Nadi Sweda* was done alternate 2 days followed by *Niruha Basti* with *Rajayapana Ksheera Basti* and *Anuvasana Basti* with *Ashwagandha Ghrita*. *Pichu Bandhana* to B/L Lower limbs with *Ksheerabala Taila*, Physiotherapy was advised. All these procedures were performed for 10 days. *Panchakarma* procedures advised are mentioned below. *Shamana Aushadha* was also prescribed along with procedures and upon discharge.

***Panchakarma* Procedures**

SN	Procedures	Drugs used	Duration
1.	Udwarthana	Udwarthana Choorna	5 days
2.	Parisheka	Dashamoola Qwatha	5 days
3.	Sarvanga Abhyanga	Ksheerabala Taila	5 days
4.	Nadi Sweda	Vatahara Patras	5 days
5.	Yoga Basti	Niruha - Mustadi Yapana Basti (200ml) Anuvasana Basti with Ashwagandha Ghrita (40ml)	8 days (Yoga Basti)
6.	Pichu Bandhana to B/L Lower Limbs	Ksheerabala Taila	8 days

Shamana Aushadha

SN	Shamana Aushadha	Dose and frequency	Anupana
1.	Ashwagandha Arishta	10ml Twice a day after food	lukewarm water
2.	Mahisha Dravaka	10ml Twice a day after food	lukewarm water

Diagnostic Assessment

***Sroto Pareeksha*:** *Mamsavaha, Medovaha Srotas*

Symptoms: Standing without support, inability to walk, place foot on ground, difficulty in sitting in squatting position in the last 6 year of age.

Diagnosis: Elevated CPK Levels (10000U/L).

Observations and Results

Gradual improvement in the child's symptoms was observed over the course of the three treatment sittings After the 1st Sitting the child reported mild relief in generalized weakness. He showed initial improvement in motor function, as he was able to stand without support briefly. However, he remained unable to sit in a squatting position, and there was persistent difficulty in retaining footwear, as slippers continued to slip off his feet. After the 2nd Sitting Notable relief in bilateral calf muscle pain was reported. Muscle tightness showed signs of reduction, contributing to improved comfort during walking and standing.

After the 3rd Sitting the child demonstrated further progress. He was able to partially place his feet on the ground with improved control. Muscle power in both lower limbs improved from Grade 3/5 to 4/5, as per the Medical Research Council (MRC) grading system. Additionally, contractures in the bilateral ankle region showed visible reduction, and the child was able to perform limited ankle movements, which were previously restricted.

Discussion

Muscular dystrophies, particularly Duchenne muscular dystrophy (DMD), are progressive genetic disorders characterized by muscle degeneration and weakness. DMD primarily affects proximal muscles, especially in the lower limbs, resulting in symptoms such as toe-walking and a waddling gait.**[8]** By around age 12, most patients become wheelchair-bound. Though corticosteroids like prednisolone may slow disease progression, they are associated with significant side effects, including weight gain and osteoporosis.**[9]**

In *Ayurveda*, there is no direct equivalent for DMD; however, classical texts describe conditions with overlapping features. *Acharya Kashyapa's* concept of *Asadhya Jataharni*, particularly *Kulakshayakari*, suggests a gender-related survival discrepancy, which resonates with the X-linked inheritance pattern of DMD.**[10]** *Acharya Charaka's* references to *Mamsakshaya* (muscle depletion) due to prolonged vitiation of *Majja Dhatu*, and *Balakshaya* (loss of strength), mirror the clinical presentation of DMD.**[11]** The involvement of *Vyana Vayu*—responsible for muscle coordination and movement indicates that its vitiation could correspond with the impaired muscle function seen in DMD. Although restoring dystrophin, the deficient protein in DMD, is currently not feasible, *Ayurveda* emphasizes improving the patient's quality of life. *Charaka* advocated treating both depleted and aggravated *Dhatus*. Accordingly, therapies aimed at pacifying *Vyana Vayu* and strengthening muscle tissues become essential.**[12]** *Udwarthana* (dry powder massage) Facilitates circulation, reduces *Medo Avarana* (obstruction due to fat), and improves muscle tone. *Parisheka* with *DMQ* Enhances local blood flow and reduces stiffness. *Sarvanga Abhyanga* with *Ksheerabala Taila* Offers muscle nourishment and soothes *Vata*. *Basti Therapy* is Recognized as the most effective treatment for *Vata Vyadhi*.**[13]**

Mustadi Rajayapana Basti was employed for its *Sadhyo Balajanana* (instant strength-enhancing) and *Rasayana* (rejuvenative) effects.**[14]** The herbal constituents possess *Vatashamaka* properties, support *Udana Vata*, and enrich *Rasa Dhatu. Deepana* and *Pachana Dravyas* Enhance *Agni***[15]** which is central to proper *Dhatu* formation and metabolic transformation.**[16]***Anuvasana Basti with Ashwagandhadi Ghrita a*ddresses muscle weakness and degeneration, aiming to balance *Vata Dosha*. *Pichu Bandhana with Ksheerabala Taila* Supports muscle integrity and reduces contractures. In addition to these Panchakarma procedures, physiotherapy was advised to strengthen muscles. *Ashwagandharishta* Contains *Ashwagandha*, *Daruharidra*, *Vacha*, and *Chitraka*, providing *Balya* (strengthening) and *Rasayana* actions. *Mahisha Dravaka* Prepared from *Dusparsha*, *Eranda*, *Vasa*, *Ashwagandha*, *Musta*, and *Mahisha Mamsa*, which helps counteract *Mamsa Shosha* (muscle wasting). Over three treatment sessions spaced 30 days apart, the patient showed significant improvements in gait, much to the family's satisfaction. Use of *Shamana Aushadha* enhanced the efficacy of the Panchakarma treatments, reinforcing Ayurveda's holistic approach to managing DMD symptoms.

Conclusion

Duchenne muscular dystrophy is a neuromuscular disorder. There is no satisfactory treatment for DMD in allopathic system of medicine. This article is an attempt to present a case of DMD, effectively managed by *Ayurvedic* principles. It improves the lifestyle of patients.

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