

## Case Series



### AYURVEDA MANAGEMENT OF DUCHENNE MUSCULAR DYSTROPHY (DMD) WITH RASAYANA – A CASE SERIES

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#### ABSTRACT :

**Background:** This case series of Duchenne muscular dystrophy—a genetic condition that causes gradual muscle weakness—are examined. *Karma karshya* (loss of strength) and *beeja dushti* (genetic deficiency) were identified as the underlying diseases by Ayurvedic diagnostics. **Case reports:** Two male patients diagnosed with DMD with aggressive symptoms low back pain, difficulty in routine activities and Positive Gower’s sign came to our hospital for management. Treatment plans included *Rasayana* therapies like *Maha vata vidhvamsana rasa*, *Vidaryadi Kashaya*, *Vatagajankusha rasa* and *sneha basti chikitsa* with *Brihat saindhavadi taila* was done for 6 months with regular follow up and enhanced quality of life was seen with no any adverse effects or *sneha vyapat*. **Results:** Over the course of a year, monitoring of biochemical markers like CPK and CPK total along with clinical evaluations, Barthel index and *lakshanas* revealed notable gains in muscular strength and functional ability. **Conclusion:** These results highlight the promise of Ayurvedic methods, which emphasize holistic treatment and symptomatic relief, in treating chronic hereditary disorders such as muscular dystrophy.

**KEYWORDS:** Duchenne Muscular Dystrophy, *Rasayana*, *Karshya*, *Beeja Dushti*.

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## 1. INTRODUCTION:

Abnormalities in dystrophin gene X chromosome, boys are primarily affected with Duchenne muscular dystrophy (DMD), a hereditary condition. It is thought to affect roughly 1 in 3,600 live-born boys. Mutations in the gene producing the 427-kDa cytoskeletal protein dystrophin cause Duchenne muscular dystrophy (DMD). A greater understanding of the role of dystrophin in muscle function and its development has led to a better understanding of how DMD develops [1]. Skeletal muscle weakness and degeneration is caused by dystrophin deficiency, an X-linked recessive condition. Before the age of ten, this disorder, which is defined by the loss of muscular integrity, finally causes the inability to stand, walk, and move independently. A characteristic waddling gait and compensating bend of the lower spine emerge[2]. The first symptoms of DMD often include difficulty climbing stairs, with individuals using their hands for support and leaning against a wall or railing[3]. The Ayurvedic diagnosis of the condition was considered as *Mamsagata Vata* (~neuromuscular diseases), a type of *Vatavyadhi* (~neuromuscular skeleton disorders)[4]. Because of *Beeja dusti* and *Adibalapravritta vyadhi*, this illness can be classified under *Vata vikara*. "*Chestahani*," the primary symptom, denotes a decline in the *Chala guna* and *Pravarthaka chestana* of *Vayu*. During the *shukra shonita Samyog*, the *prakruti* will change, resulting in *Utkata* (*vitiating of beeja*) and *beeja dushti*, among other *prakruti* as byproduct. The concept of *Adibalapravritta Vyadhi* (inherited diseases), *Shukra-shonita Dosha* (gametes), *Bijabhagavayay Dushtijanya Vyadhi* (genetic disorder),

and *Sthanasamshraya* (situated) primarily in *Mamsa Dhatu* (muscle tissue) are used to explain its development instead. *Vata* vitiation results in *Mamsa-dhatvagni* and *Medodhatvagni*. Seeing *Mamsa Dhatu Kshaya*, *Karshya* exclaims, "*Gamana hani*," "*Kriya nasha*," etc.[5]. Depending on the symptoms, DMD can be categorized as *Mamsagata vata* with *beejadushti*. These patients have a shortened lifespan due to the rapid deterioration of their heart muscles. No single Ayurvedic condition may be directly linked to this one. Acharyas have explicitly highlighted this type of disease, which they explain because of the *karma-karshya* idea at the *beeja dushti* ~ genetic level. Defective *Beeja, shukra*, which results in *karshya* as *karma karshya* and *dhatu kshaya janya karshya*. *Ayu* is explained by *Shareera pareeksha*, implies that the individual is likely to live long life[6]. Death may occur by the hindrance of *panchamahabhuta* at any moment, during a day, three days, five days, a week, or ten days, after two weeks, month, six months, or a year by *swabhava*, *Uparama* stated as *marana*[7]. A person's life is assessed by their *pramana*, *alpa ayu*, and *Madhyama ayu*, which indicate how long they may live. Therefore, therapeutic modalities must be used to provide a high quality of life within the *alpa ayu's* given span. *Krishna* with *upacahaya lakshana* and *bala kshaya krisha*, with a shorter life span. *Krishna* with *upchaya lakshanas* one with *upachaya lakshana*, nutritional deficiency and other with good nourishment but *bala abhava* will be seen. Impairment results in the buildup of aberrant tissue called *Meda Dhatu* (adipose tissue) in place of *Mamsa Dhatu* and formation of dysfunctional *Mamsa Dhatu* occurs[8]. This

impaired *Mamsa Dhatu* is unable to carry out *Mamsa Dhatu's Prakrita Karma* that is *Sharira Pushti*, *Meda Dhatu Pushti*, and shows symptoms of *Mamsa Dhatu Kshaya* (decreased muscle tissue) *Gateeranam Sadanam* (paresthesia), *Dhamni Shaithilya* (loose and flabby arteries), *Aksha Glani* (debility of the sense organs), *Sandhi Vedana* (pain in the joints), *Sphik Griva Shushyata* (muscle wasting in hip and cervical region) The term *Rasayana* means rejuvenation or promoter of vitality. Thus, *Naimitika* type of *Rasayana* can be defined as *Rasayana* specific to a disease which will improve the vitality of individual towards the specific disease. *Naimittikam Vyadhinimittam*, one of Ayurveda's comprehensive disciplines, *rasayana*, involves the specialized use of herbs, herb-mineral formulations, food items, lifestyle, self-discipline, and social etiquette in order to achieve the optimal state of the body's tissues and systems and minimize the impact of etiological factors on the body. To put it another way, *Rasayana* is a means of achieving homeostasis, which delays the aging process and helps avoid illness[9]. The Barthel Index was used to assess and manage Beeja Dushti symptoms. Targeted therapies were used, despite the fact that the illness is genetic and likely to get worse with time. This article supports future research and clinical management strategies by providing useful preliminary data for evaluating the efficacy of treatment options for Beeja Dushti.

### 3. OBSERVATIONS:

**Table 1: Investigations of case 1**

Date	CPK MB VALUES(U/L)		CPK TOTAL VALUES (U/L)	
	18-10-2021 to 27-06-2024	BT- 210	AT- 85	BT- 1470

### 2. MATERIALS AND METHODS:

**Case 1:** This 15-year-old male patient complained of lower back pain, which had been bothering him for the previous five years. He had difficulty in walking, going to school, and performing daily tasks. On a level surface, the patient could not walk. Both upper and lower extremities gradually became heavier and weaker. Going up stairs, crouching, sitting, moving heavy objects, and performing overhead tasks like climbing or bathing have been problematic for the past five years, with positive Gower's sign. The patient received a diagnosis of DMD after visiting the neurology departments of many hospitals.

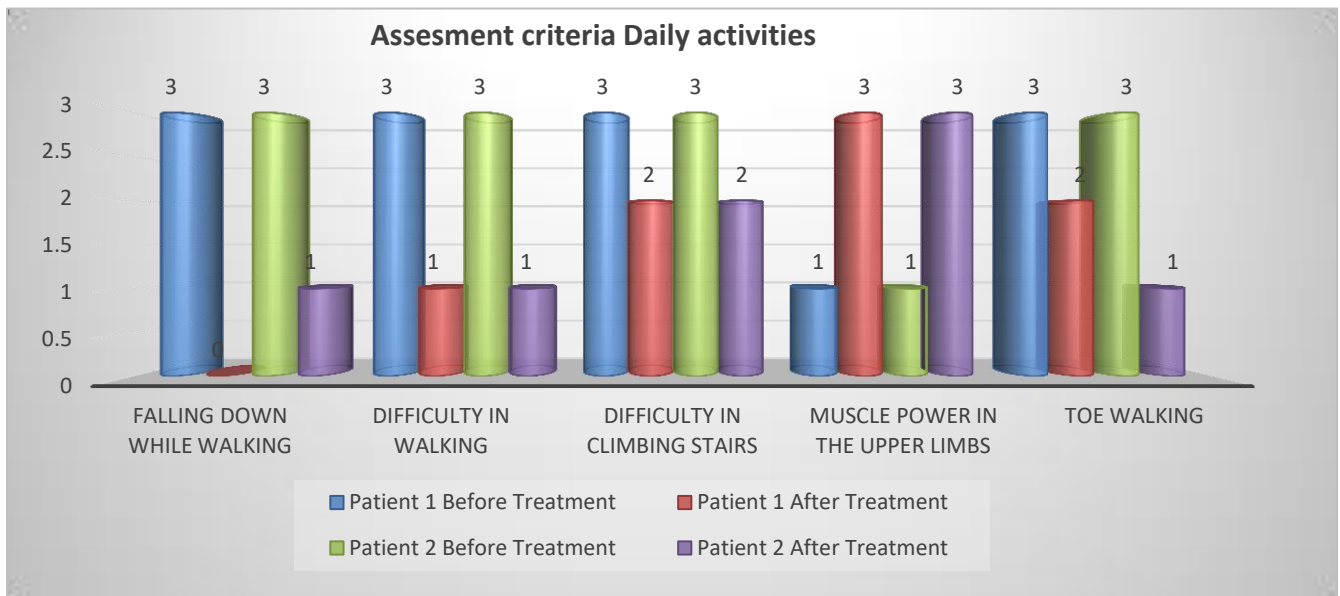
**Case 2:** An 18-year-old male patient arrived complaining of three years of difficulty in walking, attending college, and carrying out daily tasks. The patient had trouble walking on a level surface. Both the upper and lower limbs gradually became weaker and heavier. For three years, there has been trouble getting out of bed, getting into chair, squatting or sitting down, climbing stairs, and performing overhead tasks like taking a shower or brushing hair. Gower's sign was positive. The patient was diagnosed with DMD after consulting the neurology department at many hospitals. Genetic analysis and conservative treatment were recommended for him. The patient came to KLE Ayurveda Hospital for additional management because they were dissatisfied with their treatment.

**Table 2: Investigations of case 2**

Date	CPK MB VALUES(U/L)		CPK TOTAL VALUES(U/L)	
	11-12-2017 to 02-11-2020	BT- 38	AT- 32	BT- 77

**Table 3: Timeline**

SL. NO	Name of the Drug	Dose	Anupana	Duration
1	<i>Maha vata vidhvamsana rasa</i>	1 BD	After food with water	6 months
2	<i>Vidaryadi Kashaya</i>	3teaspoon TID	After food with water	6 months
3	<i>Vatagajankusha Rasa</i>	1 BD	After food with water	3 months
4	<i>Matra Basti with Brihat Saindhavadi taila</i>	30 ml	-----	Every day for 3 years



**Chart 1: Assesment criteria Daily activities**

**Table 4: Barthel Index**

SL No	Activities	Case 1		Case 2	
		Before Treatment	After Treatment	Before Treatment	After Treatment
1.	Feeding	5	10	5	15
2.	Bathing	0	5	5	5
3.	Grooming	5	5	5	5
4.	Dressing	5	5	5	10
5.	Bowel	5	10	5	10
6.	Bladder	5	10	5	10
7.	Toilet use	5	5	5	10

8.	Transfer bed to chair and back	5	10	5	15
9.	Mobility on level surface	5	15	5	10
10.	Stair negotiation	5	10	0	5
	Total Score for 100	45	85	45	95

#### 4. OUTCOME:

The following parameters were measured during the intervention: S.CPK level, CPK Total, pseudohypertrophy of the calf muscles, walking ability, power, and reflexes of both upper and lower limbs. [Table 1 & 2]. Walking, attending school, carrying out daily tasks were all easier when there was less low back pain. The adequate quality of life (ADL), as determined by the Barthel Score, has significantly improved [Table 4] illustrates. Case 1 had increased levels of Sr CPK and CPK total as patient had discontinued the medication. Patient's mother was trained to Give *Matra basti* at home with catheter for every 10 days with gap of 10 days throughout the year.

#### 5. DISCUSSION:

There is involvement of *prakruti*, *shukra Shonita sanyoga*, *beeja beeja bhaga avayavas* leading to *beeja dusthi* and the case was diagnosed with *lakshanas of karma Karshya*. Treatment modalities were more towards giving quality of life to the patient as it is well explained such person will have *alpayu* with *karma hani* from the time of birth. As both patients had good *meda dhatu* but *bala hani*, assessed by *lakshanas* and Barthel index *brumhana*, *balakrutham vrushyam Rasayanam* was adopted as explained in *samhitas*, to prevent the complications *pleeha kasa marana* by which *agni bala* and *deha bala* was maintained by the treatment. [Table 4 and Chart 1]

The main pathology in DMD is gene mutations causing autosomal, heterogeneous hereditary disorder. In *Ayurveda* there is concept of *Beeja dushti*, *Aadibala Pravrita Vyadhi* (hereditary disorders) leading to *Karma karshya*. *Vata* plays prime role in the organogenesis, tissue formation on vitiation through *Swaprakopaka Karana (Beeja Dosha)*, *Dhatukshaya* (depletion of body tissue) and *Margavarana* (obstruction in the pathway of *Vata*), *karma Karshya* is explained by *acharya* where *beeja dushti* is one of the causes of such disorders. Thus, *Naimittika Rasayana* can be defined as *Rasayana* specific to a disease which will improve the vitality of individual towards the specific disease. *Naimittikam Vyadhinimittam* diseases are produced because of the *Dhatu-Vaishamyam*.

*Rasayana* also known as *Urjaskara*, i.e., giving strength towards the specific disease, by improving the resistance i.e., Immunity, or "Apunarbhava" (which does not allow the recurrence of the diseases). Oral medicines were given as *Naimittika rasayana*. The *shamana* which was given as *rasayana* [Table 3] and during the intervention serum CPK total and CPKMB values were monitored, significant reduction in levels [Table 1 and 2]. It shows the cellular level changes with these *rasayana* were present which in turn reduced symptoms [Table 4 and Chart 1]. Treatment to a sufficient proportion of muscle mass to provide benefit. Since the patient was on treatment for half a year, and

as per *Ashtadashaashtadashakan*, the patient received *Sneha basti* with *Brihat saindhavadi taila* for a year at a rate of ten *basti* per month while receiving training from their attendant, the goal was to balance the *kleda* since neither the *kleda* nor the *ama* should increase in the body and no any *Sneha vyapat* was seen observed throughout the course of treatment [9].

*Maha vata vidhvamsana rasa* contains 10 gm of each of the following: *Shuddha parada*, *Shuddha gandhaka*, *Naga*, *Vanga*, *Loha*, *Tamra*, *Abhraka*, *Pipalli*, *Tankana*, *Maricha*, *Shunthi*, *Shuddha vatsanabha*, *Trikatu*, *Triphla Kwath*, *Chitraka Moola*, *Bhringraja*, *Kushtha*, and *Nirgundi*. *Vatavidhwansa Rasa's* primary purpose is to cure *vata dushti* and establish *vata-samyak*, which relieves pain. With these patients' daily activity was preserved without any pain. The medication used to produce the *rasayana* effect was the same one used throughout the course of treatment [10]. For therapeutic effect of *rasayana*, the dose, duration, and *anupana* are taken into consideration.

*Vidaryadi Avaleha* having property of *Madhura Rasa* and *Madhura-Vipaka*, *Vata Shamaka* effect. This helps in nourishment of *Dhatu* which means it is responsible for *Uttarottara Dhatu Poshana*. *Vatanulomaka* and *Pitta shamaka* property of formulation helps in balance and maintenance of *Agni* and ultimately causes *Samyak Aharpaka*. *Vrishya* property helps in triglyceride synthesis, which is *Deha vridhikara Bhava*. On the other hand, *Guru*, *Shita*, *Snigdha* and *Mridu Gunas* are directly responsible for *Brimhana* effect. *Rasayana* property improves general health and immunity. *Jivaniya* property maintains an equilibrium of *Dosha*, *Dhatu* and

*Malas*. Apart from this *Avaleha* has a remarkable property to assimilate the properties of other drugs when added to it without losing inherent properties (*Samskarasya anuvartanam*) [11].

*Vatagajankusha Rasa* is herbal-mineral blend that contains ingredients such as *Loha bhasma*, *Rasasindhura*, *Gandhaka*, *Hartala*, *Vatsanabha*, *Tankana*, *Trikatu*, etc. *Nirgundi* and *Mundi* are added as a *bhavana* to enhance the drug's potency against *vata* and *kapha* disorders [12]. By this treatment major complaints of frequent falls while walking completely ceased, improvement in quality of walking, difficulty in climbing stairs, muscle power in the upper limbs and toe walking, the overall change in the total score of Barthel index [Table 3].

Gower's sign is often evident by age 3 years and is fully expressed by age 5 or 6 years. This is a clinical assessment of pelvic muscle weakness in which considerable result and it remained persisted, their significant improvement in scores of adequate qualities of life (ADL) assessed through Barthel Score [Table 3].

## 6. CONCLUSION:

The major complaints of difficulty in walking and unable to perform day to day activities since several years showed significant results with improvement in overall quality of life. The therapeutic strategy was planned to improve health and control the genetic disorder's symptoms, the body's humors were balanced and tissues were strengthened. The *Sneha Basti* and *Rasayana* therapies like *Vatagajankusha Rasa* and *Vidaryadi Avaleha* given to promote systemic regeneration and reduce *Vata* imbalance for a period of

more than 6 months with the follow up on every month with no adverse effect. Keeping an eye on biochemical markers such as CPK levels revealed positive cellular reactions to therapy. The comprehensive strategy of the treatment addressed both long-term wellness initiatives and symptomatic alleviation.

**Patient perspective:** The patient was initially anxious after being diagnosed with DMD, worried about the future of life. As treatment progressed and quality of life was good, anxiety gradually eased. Following the intervention and follow up, they expressed relief and satisfaction with the outcome, particularly the healthy condition.

**Informed consent:** The authors hereby declare that they have received consent form from the patient prior to study which state that the author can use the patient details in the form of image/video and other clinical details for publication with due effort to conceal the name and other identity.

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