

CLINICAL EFFICACY OF CHHAGALADYA MAMSA BASTI IN THE MANAGEMENT OF DUCHENNE MUSCULAR DYSTROPHY - A CASE STUDY

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ABSTRACT

Muscular dystrophies are a clinically and heterogeneous group of disorders that all share clinical characteristics of progressive muscular weakness. Duchenne muscular dystrophy (DMD) is the most common X-linked disorder muscular dystrophy in children, presenting in early childhood and characterized by proximal muscle weakness and calf hypertrophy in affected boys. There is usually delay in motor development and eventually wheelchair confinement followed by premature death from cardiac or respiratory complications. Treatment modalities is concern in case modern therapies almost all the intervention like corticosteroid, ambulation, improving the quality of life etc. almost all are not showing some remarkable result therefore to cure the devastating disorder Ayurvedic novel intervention like *Chhagaladya Mamsa Basti* has been planned. According to the therapeutic guideline of Panchakarma therapy as specified in different Shastra like *Snehapan* then *Virechan* followed by *Anuvasana basti* – After 33 days with different Ayurvedic Panchakarma therapy the patient's muscle power and Grower sign etc showing very remarkable significant results in the case of 8 years old male child.

Keywords: Calf hypertrophy, Grower Sign, Muscular Weakness, *Chhagaladya Mamsa Basti*

INTRODUCTION

It is the commonest and severe^[1], from hereditary muscular dystrophy in children, affecting all races and ethnic groups which is recognized by progressive weakness, intellectual impairment, and hypertrophy of the calves and proliferation of connective tissue in the muscle^[2]. It is the result of mutations (mainly deletions) in the dystrophin gene located on the locus Xp 21. 2 chromosomes and mutations lead to an absence of or defect in the protein, i.e. dystro-

phin, which results in progressive muscle degeneration leading to loss of independent ambulation by the age of 13 years^[3].

Its prevalence estimated to affect 1 in 3,800 - 6,000 live male births^[4]. The DMD is diagnosed between 4 to 5 years of age group^[5], when children's start to show signs of physical disability including walking and climbing along with mild delayed developmental milestones of affected child, which also results in

the use of the classic Gowers' maneuver when arising from the floor [6]. It is suspected during infancy to early childhood based on mildly delayed developmental milestones and non-progressive cognitive dysfunction with increased serum creatine kinase activities [7].

Case Report:

A 8 years old (*Aparipakka Dhatu bal*) patient report-



Figure-1



Figure-2

On general physical examination the child (*Aparipakka Dhatu bal*) presented with difficulty in standing, walking, getting up from sitting position and climbing stairs, proximal weakness, calf hypertrophy, hamstring muscle contracting and positive Gower's sign (Fig 1, 2). There was no thinning and twitching of muscles, muscle tone, and cranial nerve examination also normal. As per Ayurveda all *srotas* has been examined, *khavaigunya* of *mamsavaha srotas* noted due to *dhatvagni* impairment. In case of *Aturabala Pramana Pariksha* the patient shows *madhyam vaya*, with *Hina Vyama Sakti*. The patient was subject to radiological laboratory and electromyographic examinations done earlier. The following Panchakarma procedure has been done from admission to till the discharge of the patient from hospital.

Materials and Methods

First of all, the patient indicated with *Deepan* and *Panchanaushudhi* like *Trikatu churna* 3gm for 3 days and *udvartana* by *Yava*, *Masa*, Coarse powder for 3 days then the *sneha* (Oleation) therapy for 7 days with both *Abhayantara sneha pano* by *Chagaladya Ghrita* 20ml with warm water the dose increases 20ml every day and maximum increase doses up to 140ml on 7th

ed to the Indoor Patient Department of Central Ayurveda Research Institute for Drug Development, Kolkata with chief complaint of his parents gave medical history of repeated falls, fatigue, muscle weakness as inability to climb stairs. There was no history of muscular pain and cranial nerve involvements. His intelligence quotient was claimed to be in normal range.

day and *bahya Sneha* that is local application of oil with *Mohamasa taila (Amisha)* by relaxation and contractures and giving nourishment to the muscles, for promoting the strength of muscles and nerves system followed by *Sastik shali pinda Sweda* apply all over the body specially effected lower limbs. It should be applied followed by subsequent measure of *Snehan karma* in muscular dystrophy is the result of *Meda-Mamsa* imbalance disorders that's why SSPS was found very effective for nourishment as well as providing strength of the muscles and nervous tissue. After compilation of *Snehan* procedure (*Abhayantara & Bahya*) after 1 day gaping period the patient instructed with *Virechan* treatment by *Gandharvahastadi taila* (10ml) for 1 day followed by instructed for *Sansarjan karma* for 5 days (D1-*Peya +Peya*, D-2 *Vilepi+ Vilepi*, D-3 *Krita Juice +Krita Juice* D-4 *Akrita Mansa Rasa+ Akrita Mansa Rasa*, D-5 Normal Diet). Lastly the main course of therapy that is *Chagaladya Mamsa Basti* is a kind of *Anuvasan Sneha Basti* prepare by 200 gm of *chagalmansha (Muton kimma)* boiled with 600 ml of water and prepare a *Mansha juice* of 150ml. In another container 2 gm *Rock salt*, 20ml *kasheera bala* oil, 10ml *Go ghri-*

ta, 10gm *Yasthimadhu Kalka*, mixed with 500 ml of milk then after boiling it reduce to 125ml. Finally, both the materials mixed together and sieving with a fresh cloth to prepare 275ml of *basti drabya*, that *basti drabya* introduce into the rectum for 3 hours of the child slowly daily and *vasti dravya* retention power is 2hour as this a 8 years old children and same procedure continued for 9 days . In context to the *Mansagata Vata Vyadhi* where *sthanasanshraya* effect in *Mansa* and *Meda* dhatu creates vitiation and depletes by which later progressive degeneration of *Mansadhātu Kshaya* leads to Muscular dystrophy thus after *Snehan*, *Swedana*, *Virechan* the subsequent effect of *Anuvasana Sneha Vasti* shows significant effect in case of muscle power, tone etc. Finally, after completion 23 days of treatment by different *somso-dhan chikitsa* the imbalances of *dosha* and *dhatu* can be maintained by appropriate planned diet, drug and lifestyle interventions like *Rasayana* Therapy and Yogic treatment to improve the protective influence of the patient.

Observations & Results

Practically on the basis of subjective criteria like gait reflexes, muscle tone calf muscle circumferences spine curvature other symptomatically sensory improvement like total duration in setting lifting from the floor particularly Gower's signs etc. the results had been assisted, on the basis of subjective improvement only the assessment has been done. The objective parameter like Serum CPK level shows significant reduction after 33 days of treatment from before treatment level 1056 U/L to after 33 days treatment level 456 U/L.

DISCUSSION

DMD is the most common muscle dystrophy in India as well as the world, caused by mutations in dystrophin gene as a result of which the body is unable to synthesize the protein dystrophin required for muscle contraction. Every time the muscle contracts, muscle damage occurs which is repaired but with deficient protein resulting in repaired muscle which is also a damaged one. This continuous succession of damage and repair and eventually replacement of muscle with

fibro fatty tissue is responsible for the clinical signs of progressive muscle wasting and degeneration that is usually evident by 3–4years. [1,4]

DMD is caused by mutations in the DMD gene encoding a protein called dystrophin, which localizes to the cytoplasmic face of the sarcolemma of the skeletal muscle, forming one component of a large glycoprotein complex (dystrophin – associated glycoprotein complex). Dystrophin consists of an N-terminal actin-binding domain, 24 spectrin – like repeat units interspersed by four hinge regions, followed by a cysteine-rich domain and a C-terminal domain. The cysteine – rich domain binds to laminin-2 through alpha and beta-dystroglycan, and therefore acts as mechanical link between actin in the cytoskeleton and the extra-cellular matrix. The DMD gene contains 79 exons but accounts for only 0.6% of the gene; the rest made of large introns. The large size of the DMD gene makes it susceptible to mutations, leading to loss of function of dystrophin, resulting in a prematurely truncated and unstable dystrophin protein. Most mutations are in trigenic deletions, which account for 65–72% of all DMD patients. The precise mechanism of how dystrophin deficiency leads to degeneration of muscle fibers remains should unclear. The absence of dystrophin at the plasma membrane leads to delocalization of dystrophin-associated proteins from the membrane, disruption of the cytoskeleton with result ant membrane instability and increased susceptibility to mechanical stress. In addition, altered membrane permeability and abnormal calcium homeostasis are thought to play a role, with increased cytosolic calcium concentration leading to activation of proteases such as calpains^[3].

Affected boys clinically present with difficulty in running or getting up from the ground, frequent falls, or toe-walking. Patients have a waddling gait, calf enlargement, and lumbar lordosis which disappear on sitting. There is weakness of the proximal muscles of the lower limb as in which a patient uses his hands and arms to “walk” up their own body from a squatting position due to lack of hip and thigh muscle strength suggestive of Gower's sign^[5]. In this case, the affected child clinically presented with signs of de-

layed motor development, difficulty in walking and climbing stairs, positive Gower's sign, and muscle weakness.

Ayurveda and Muscular Dystrophy

Muscular dystrophy is cannot be directly correlated to any of disease in Ayurvedic science. This type of phenomena may an attribute under the concept of *adibala pravritta vyadhi* as which occurs due to the *Beejadusti and Aatmakarma*^[8] (self-deeds), leads to *khavaigunya of mamsavaastrotas* causing *dhatvagni*^[9] impairment, its means *dhatwagni* play a major role in the pathogenesis of Muscular dystrophy. It is the result of an imbalance of *vata dosha*, *saptadhatu* (basic elements for formation of *garbha* both functional as well as structural – to the level of *dhatwagni*) and *ojas* considering its progressive degeneration to systemic involvement.

Pathogenesis of Muscular Disorders

Vitiated *Vata dosha* play a major role in muscular dystrophy that is developed after mutation in the genome because the *Vata Dosha* is more provoked & obstructed (*Avrita*) by *Rasa, Raktadi Dhatus*, then mainly *Mansa* and *Meda* are affected as they are the main constituents of our body (As the body of human being is mainly supported by skeletons & muscles, which are the chief sites of *Vata Dosha*. As a result of this, *Meda & Mansa Dhatu Kshaya as well as Virdhi* (Degeneration and regeneration of muscle fibers, particularly calf muscles that is responsible for pseudohypertrophy of calf muscles and hypertrophy of tongue) occurs, by which nervous tissues supplying to that affected parts lacks proper nutrition & gets deactivated. This pathophysiology leads to Muscular Disorders. In Ayurvedic texts muscular dystrophy is considered under *Meda-Mamsa dhatu dusthi* due to vitiated

Shodhana Chikitsa

- *Deepana* and *pachana Trikatu churna* 3gm for 3days and *udvartana* by *Yava, Masa, Coarse powder* for 3 days^[10] very effective to treat hypertrophy of calf muscle and strengthen weak muscle effected with *meda meda* and *kapha* properties and stimulates nerve ending ,relax muscles and relives pain.
- *Snehana* (Oleation Therapy): It is indicated in

Krishna (Emaciated) and *Vatarogas* (Neurological disorders^[11]), depending upon the application of *Snehana*, it can be divided into 2 types, viz: *Abhyantara Snehana* (Internal Oleation) and *Bahya Snehana* both are implemented to the patient for 1 week.

a. ***Snehapana***^[12]: *Abhyantara Snehapana* should be done with *Chagaladyaghruta*—for in case of this patient simple provocation of *Vata* without any *Upasambha* or *Avarana*.

b. ***Bahya Snehana***: The muscular dystrophy is especially muscular disorders so *Bahya Snehana* or massage plays a major role as following properties of the massage therapy:

- Abhyanga* with *Mahamash tailo (Amisha)*^[13] effects local increase in circulation in the treated area^[14], which helping in the remove of despite west products to the muscles tissue.
- Snehana* pacifies *Vata*; lubricates and softens the *Dosha* and improve the digestion, regularizes bowels; improve the strength and complexion^[15].

Shastika Shali Pinda Sweda

Sastik shali pinda Sweda apply all over the body specially effected lower limbs. It should be applied followed by subsequent measure of *Snehan karma* in muscular dystrophy is the result of *Meda-Mamsa* imbalance disorders that's why SSPS was found very effective for nourishment as well as providing strength of the muscles and nervous tissue.

Anuvasana Basti

Basti Karma is the best treatment for *Vata Vyadhis* (diseases occurring due to vitiation of *Vata*), when the *Vata* is controlled in the *Pakwashaya*, which is the centre of administration of *Vata*, the other sub types of *Vata* located in all the parts of the body will be automatically controlled and provided nourish to the muscles tissue and improve strength of child due to its *brumuhana* property some example of *basti* which broadly used in muscular dystrophy i.e. *Chagaladya Mamsarasa Basti*,9 days implementation *Anuvasana Sneh Vasti* shows significant effect in case of muscle power, tone etc.

Samsamana Chikitsa

The imbalances of *dosha* and *dhatu* by appropriate planned diet, drug and lifestyle interventions had implemented. Therefore, we have implemented *Mansa* juice to strengthen the Muscle power and to nourish the weak muscle. The *Rasayana* group of herbo-mineral or gold-based medicine like *Kumarkalyan rasa*, *Ekgangaveer rasa*, *Praval Pisti* for 5 days in our hospital and advised the patient for 6 months to increase enzymatic essence of each *dhatu* starting from *Rasa dhatu* to *mansa* and *majja dhatu*. As gold *Bhasma* in low dose has been used successfully in the management of degenerative diseases of *Mansa* and *Majja dhatu*¹⁷. At the same time continuation with Yogic interventions and Physiotherapies shown definite protective influence and longer survival in case of muscular dystrophy patient particularly *Pawanmuktasana* and *Bhastrica Prayanayama* is effective for prevention of respiratory problems in muscular dystrophy because respiratory diseases in DMD is a major cause of mortality.

CONCLUSION

Muscular dystrophy is a genetic disorder with no specific treatment in any system of medicine and disease prognosis is unpreventable. In Ayurvedic classics, muscular dystrophy is characterized by *Adhibalapravritta vyadhi* occurs due to the *Beejabhagavayavadusti* which leads to *Mamsa vata dushta* with manifestation of vitiated *Vata Dosha*. The *Dhatupaka avastha* clearly signifies the importance of *Agni* which is responsible for the formation of next *Dhatu*. *Purva-Panchakarma* therapies (*Snehana*, *SSPS*), with *Chhagaladya Mamsa Basti* is useful in the long-term management of DMD. *Basti Karma* offers the *Shamana* of provoked *vata* which is evident in Muscular Dystrophy as the reason brings a chain of *Dhatu Kshaya* leading to *Vataprakopa* and further *Dhatu Kshaya* due to *Vataprakopa*. Thus, administration *Chhagaladya Mamsa Basti* should be done for the correction of *Agni*, balancing *Doshas* eliminating metabolic toxins from *Dhatu* and nourish to the various *dhatu*s. Various research works has been done on *Vata vyadhi* with special reference to DMD in various institute of India,

where it can be concluded that herbo-mineral medicine along with Panchakarma therapy has a major role to prevent further complication of DMD. The *Yogic* exercise with Panchakarma therapy is very effective for prevention as well as treatment of various complications in muscular dystrophy in children. Single Ayurvedic drugs possessing properties like *Medhya* (memory boosting), *Balya* (strengthening), *Rasayana* (rejuvenative), *Agnivardhana* (digestive & carminative) & *Vatadoshahara* are administered both internally and externally as a principle guideline for nourishment, followed by strengthening and rejuvenation of *Mamsa dhatu*.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has / have given his / her / their consent for his / her / their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

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