Case Report

Ayurvedic Management of Duchene Muscular Dystrophy (DMD)

A Case report

Dr. Santosh N. Belavadi. M.D (Ayu), Ph.D

Professor & H.O.D, Department of P.G Studies in Kayachikitsa, D.G.M Ayurveda Medical College, Hospital & Postgraduate, PhD studies and Research Centre GADAG-582103 KARNATAKA

ABSTRACT:

Duchene muscular dystrophy is inherited X-linked recessive disorder. Females will typically be carriers for the disease while males will be affected. Dystrophin is essential for cell membrane stability. Deficiency leads to reduction in three glycol proteins in the dystrophin associated protein complex that link dystrophin to laminin with cell membranes. This occurs in people without a known family history of the condition. Because of the way the disease is inherited, males are more likely to develop symptoms than are women. In this Clinical study enlightening about 2 cases of Duchene muscular dystrophy, the concept in Ayurveda the entities like Astimajjagatavata and Pakkaroga, and the treatment carried out in this disease are Sarvanga Abhyanga (whole body massage) Musthadiyapanabasti followed by Shamanayogas (palliative medicines) like Ajamamsa Rasayana, Balarishta and cap Bontone followed by Physiotherapy.

Keywords: Duchenne muscular dystrophy (DMD), Astimajjagatavata, Pakkaroga, Musthadiyapanabasti, Physiotherapy.

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INTRODUCTION:

Duchene muscular dystrophy, a progressive neuromuscular disorder worsening form of muscular dystrophy. Because of the way the disease is inherited, males are more likely to develop symptoms than women. Early
initiation of treatment in the course of this disease can help a lot in reducing future disability and prolonging survival. Treatment is generally aimed at controlling the onset of symptoms to maximize the quality of life since there is no curative treatment. Passive Physiotherapy helps to prevent contractures in the latter stages. Genetic advice and counseling should be given to carriers.

In Ayurveda there is no specific entity which correlates to Duchene muscular dystrophy but can be considered the concept of Astimajjagatavata and Pakkaroga because majority clinical features mimics as that of Duchene muscular dystrophy. In this article an attempt was made to discuss two cases of Duchene muscular dystrophy with Ayurvedic line of management.

Duchene muscular dystrophy is not treatable but from Ayurvedic line of management can enhance the general condition and may lead a better quality of life. Duchene muscular dystrophy, the signs and symptoms of which correlates with Astimajjagatavata. Ayurvedic management was followed in terms of Sarvanga Abhyanga Musthadi yapanabasti followed by Shamana yogas like Ajamamsa Rasayana, Balarishta, cap Bontone and Physiotherapy.

This is inherited as an X-linked recessive disorders though one-third cases are mutant (chromosomal alteration). There is absence of the gene product- the protein dystrophin; a rod shaped cytoskeletal muscle protein. DMD is usually obvious by the fourth year, and often causes death by 20.

Typically, a female carrier will be unaware they carry a mutation until they have an affected son. The son of a carrier mother has a 50% chance of inheriting the defective gene from his mother. In DMD muscle affected mainly proximal and limb girdle followed by Pseudo hypertrophy of calves’ Cardiomyopathy.

**Duchene muscular dystrophy:** The most common form of muscular dystrophy; inheritance is X-linked recessive (carried by females but affecting only males).

**INCIDENCE:** 30 per 100,000 live born males.

- Duchene muscular dystrophy occurs 1 in 3000 male infants.
- Approximately one in 3,300 male in live births.

**ONSET:** Onset in early childhood before the age of 4 and 10 years, males will be affected.

At first 5 years. Duchene muscular dystrophy present at birth usually between 3 and 5 years.

**SEX:** Females will typically be carriers for the disease while males will be affected.

### CLINICAL FEATURES:

<table>
<thead>
<tr>
<th>Principles of internal Medicine</th>
<th>Clinical Medicine</th>
<th>Text book of Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Contractures of the heel, cords and iliotibialis bands become apparent by age 6.</td>
<td>- There is initially a proximal limb weakness with calf pseudo hypertrophy</td>
<td>- Walking is delayed in about half of the patients and gait is alters clumsy with frequent falls. Early involvement of glutei and hip extensors causes characters Waddling gait and Lumbar lordosis.</td>
</tr>
<tr>
<td>- Loss of Muscle strength is progressive with predilection for proximal limb muscles and neck flexors; leg involvement is more severe than arm involvement. - Between age 8-10 walking may be impaired.</td>
<td>- Difficulty running and rising to his feet from the floor- when he has to use his hands to “climb up his legs” this is Gower’s sign or (Gower’s manouevre). - The myocardium is affected.</td>
<td>- Muscular enlargement - Pseudo hypertrophy originally</td>
</tr>
</tbody>
</table>
require the use of wheelchair.

- Joint contractures and limitations of hip flexion, knee, elbow and wrist extensors are made worse by prolonged sitting; most patients are wheelchair dependent.

- The boy becomes severely disabled by the age of 10.

- Disturbed proximal weakness of arms appears later, cranial muscles and sphincter functions are spared. Some reflexes are lost.

Table 1: showing Clinical features of Duchene muscular dystrophy

PROGNOSIS: Duchene muscular dystrophy is a progressive disease which eventually affects all voluntary muscles and involves the heart and breathing muscles in later stages. The life expectancy is currently estimated to be around 25 years. The Muscular Dystrophy Campaign, which is a leading UK charity focusing on all muscle disease, states that "with high standards of medical care young men with Duchene muscular dystrophy are often living well into their 30s".

Test: Gower’s sign / Gower’s test reflects the more severe impairment of the lower extremities muscles. The child helps himself to get up with upper extremities: first by rising to stand on his arms and knees, and then "walking" his hands up his legs to stand upright.

TREATMENT:

No specific treatment, Steroids, Physiotherapy, Surgery and Genetic counseling. Glucocorticoids like Prednisolone. Treatment is generally aimed at controlling the onset of symptoms to maximize the quality of life. There is no curative treatment passive Physiotherapy helps to prevent contractures in the latter stages. Genetic advice and counseling should be given to carriers. Many women carriers choose not to have offspring.

PHYSICAL THERAPY: Physical therapists are concerned with enabling children to reach their maximum physical potential.

- Minimize the development of contractures and deformity by developing a programme of stretches and exercises where appropriate.
- Anticipate and minimize other secondary complications of a physical nature.
- Monitor respiratory function and advice on techniques to assist with breathing exercises and methods of clearing secretions.

Concept in Ayurveda:

In Ayurveda Duchene muscular dystrophy we may consider the concept of Astimajjagatavata and Pakkaroga. The Lakshanas(signs and symptoms) and Treatment of of Astimajjagatavata as mentioned in the classics are as follows

Astimajjagatavata: Due of vitiation of Asti(bone) and Majja (bone marrow), Vata get vitiated and produce Astibedha (ostealgia), Parvabedha (pain in metatarsals), Sandhishoola (pain in joints), Mamsakshaya (muscle wasting), Balakashaya (reduced strength) and satataruk (continuous pain).

Astimajjagatavata Chikitsa: Sneha prayoga (oleation) from Bahya (external) and Abhyantaramarga (internal route) will pacify Astimajjagatavata. Vatanashaka taila shareera abhyanga and Vatanashaka Taila or Ghritapan (internal oleation) that is abhyantara prayoga will pacify Asti Majjakupita.
Concept of Pakkaroga: Acharya Kashyapa said if a child cannot walk independently even after attaining a year then this is said to be as Pakkaroga.  

Ksheeral Pakkaroga (rickets during breast feed): When Dhatri Dugdha (wet nurse milk) becomes Shlaishmika (vitiated by phlegem) then it is called Pakkadugdha by consuming such dugdha (milk) by a child will leads to different disorders and because of krushata(emaciation) Pakkaroga (rickets) will manifest. This is of 3 types Ksheeraja (due to breast feed), Garbhaja (due to intra uterine causes) and Vyadhija (due to different diseases).  

Vyadhija Pakkaroga: Nija and Agantuja Jwara (fever due to internal and external factors) produce kleshata(difficulty) to balaka(child)and produces Mamsa (muscle), Bala (strength) and Tejokshaya(reduces glow), produce Spik(gluteus), Bahu (arms), Jangha (calf muscles) shushkata(wasting). Udara (abdomen)Shiras(head) and Mukha (face) becomes sthoola(enlarged), Angapeetata(icterus), Romahara (horripulations) and shareera(body) becomes emaciated, Mamsa and Balavruddhi, Janu, UruJanghashoola, Kshataksheena, Bala and Rasayana gunaprapti.

BRIEF HISTORY ABOUT PATIENTS:  

Patients by Name Ramesh and Prakash of 9 and 10yeras old respectively both are brothers  

Pradhanavedhana (Chief complaint): Mamsakshaya(muscle wasting) and Balakshaya(loss of strength) Since: birth.  

Anubandha vedhana (Associated complaint): Difficulty to sit, stand and difficulty to do daily routines. Since: birth.  

Vedhana vrittanta (History of present illness): Patient complaining of the above mentioned lakshanas since birth. Both the children had full term normal delivery as per history given by the patient’s parents. Patient’s father mother had relative marriage (Consanguine).
Chikitsa vrittanta (history of treatment): Consulted all doctors and taken different treatment but not found any relief.

DIAGNOSIS: Diagnosis was made based on Clinical features of Duchene muscular dystrophies like proximal limb weakness with calf pseudo hypertrophy, Contractures of the heel, Lumbar lordosis and presence of Gower’s sign.

MATERIALS AND METHODS:

- SarvangaAbhyanga- Bala ashvagandhataila
- Basti (enema): Musthadiyapanabasti
- Anuvasanabasti –Mahamashataila
- Niruhabasti- Musthadiyapanasiddha Niruha
- Basti pattern: Kalabasti
- Physiotherapy: Active assisted Exercises and Strengthening Exercises for 16 days
- Shamanayoga: Ajamamsa Rasayana, Balarishta and Cap- Bontone
- Posology:
  - Sarvanga Abhyanga- With Bala ashvagandhataila for 16 days
  - Basti: Musthadiyapanabasti
  - Basti pattern: Kalabasti (10 Anuvasaana and 6Niruhabasti)
  - Anuvasanabasti with – Mahamashataila- 50ml
  - Niruhabasti- Musthadiyapanasiddha around- 250ml
- Shamanayoga:
  - Ajamamsa Rasayana 1sp before food along with Ksheera
  - Balarishta 3sp with equal water after food
  - Cap- Bontone 1bd after food

Total study duration will be 16 days


Cap: Bontone: Astisoushirya (osteoporosis), Astikshaya (reduced bone density), Astishoola (ostealgia) and Astivikara (bone disorders).

Table showing Musthadiyapanabasti Matra and Yojana krama:

<table>
<thead>
<tr>
<th>Dravya</th>
<th>Matra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makshika</td>
<td>10ml</td>
</tr>
<tr>
<td>Saindhavalavana</td>
<td>5gram</td>
</tr>
<tr>
<td>Mahamashataila</td>
<td>30ml</td>
</tr>
<tr>
<td>Kalka</td>
<td>5gram</td>
</tr>
<tr>
<td>Kwatha</td>
<td>100ml</td>
</tr>
<tr>
<td>Aja Mamsarasa</td>
<td>100ml</td>
</tr>
<tr>
<td><strong>Total quantity</strong></td>
<td>250ml</td>
</tr>
</tbody>
</table>

The above mentioned dravyas are taken in specified quantity and prepared as mentioned in the classics in the sequence of Makshikam, Saindhava Sneham Kalkam Kwatha respectively and Niruhabasti was prepared. Method of Basti administration in terms of Poorva, Pradhana and Paschatkarma was followed as mentioned in classical text.

Benefits: Mamsa, Balavruddhi and Rasayana gunaprapti.

Indications: Janujangha and Urushoola
<table>
<thead>
<tr>
<th>Before Treatment</th>
<th>After Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle Wasting present on shoulder, chest and thighs.</td>
<td>Minor improvement.</td>
</tr>
<tr>
<td>Stony hard calf Muscles present on both lower limbs</td>
<td>Becomes Smooth with moveable.</td>
</tr>
<tr>
<td>Frequent fall and wounds 3-4 times/day</td>
<td>Reduced completely Frequent fall.</td>
</tr>
<tr>
<td>Body weight 19, 20kgs</td>
<td>20, 21kgs</td>
</tr>
<tr>
<td>Gower's' sign/ Test: Fell down on the ground immediately.</td>
<td>Comfortably sit on the ground without fall.</td>
</tr>
<tr>
<td>General appearance- ill look/ cachexia look</td>
<td>Good-looking</td>
</tr>
</tbody>
</table>

**Discussion:**

- By the above Ayurvedic line of management it will helps to increase Bala (Strength) by nourishing the Rasadiddhatu (body tissues) thus helps to improves quality of life.
- Sarvanga Abhyanga with Balashvagandhatala, Musthadi asthapanabasti, Balarishta, Bontone, Ajamamsarasayana these act as Balya, Brumhana, Dhatuvardhaka, Rasayana.
- These treatments will help to lead quality of life and extend the life of an individual.

**Conclusion:**

- Duchene muscular dystrophy is inherited as X-linked recessive disorders for which there is no specific treatment in contemporary science to cure.
- For this disease in Ayurveda we may think the concept of Astimajjagatavata and Pakkaroga in which the symptoms of Duchene muscular dystrophy may present in these entities like Astimajjagatavata: Astibedha, Parvabedha, Sandhisbhula, Mamsakshaya, Balakshaya and satataruk (continous pain).

**Pakkaroga:** Mamsa, Bala and Tejokshaya, produce Spik, BahuJanghashushkata. Udara, Shiras and Mukha becomes sthoola, Angapeetata, Romaharsha and sharrerabeocos Skeletal appearance, Malanata, Nityamalamutra pravratti, Nichesthakaya, Pani, Janugamana and Dourbalya.

- As this disease is said to be asadhya even there is no treatment but in Ayurveda the treatment measures like Abhyanga, Basti, Shamana chikitsa and Rasayana(rejuvenating) therapies may enhance the general condition of the patients and we can add years to life of a patients.
- The treatments like Sarvanga abhyanga, Musthadiyapanabasti, Shamanoushadha and Rasayana are helped to improve the general condition of the patients.

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