



Original Research Article

Successful Ayurvedic management of Duchenne Muscular Dystrophy: A case study with long term follow up

Author

Gaikwad Sarita

M.D. (Manas rog), PhD (Kayachikitsa), Vol. Retd. Assistant Director, AYUSH, Pune region, Pune and Ex HoD, Ayurved Research Department, Sassoon General Hospital (Teaching hospital of B.J. Medical College), Pune (India)

*Corresponding Author

Gaikwad Sarita

Abstract

Duchenne Muscular Dystrophy is an inherited progressive myopathy called as X linked recessive disorder commonly known as Pseudohypertrophic muscular dystrophy. It is considered as incurable myopathy and death is the final outcome of the disease at the age of 20-25 years. Modern science has limitations to treat the disease but Ayurved has great potential to treat such incurable disorder. Here is the case study of Duchenne Muscular dystrophy successfully managed for last 7 years by Ayurvedic treatment. This child has now become an adult completed his Animation Software Diploma and moving independently on scooter for hundreds of Km. His total CPK value has come to normal that was unprecedented in the history of such incurable disease. This case study will infuse a ray of hope to thousands of sufferers of this disease who are frustrated in awaiting early death.

Keywords: *Duchenne Muscular Dystrophy, Ayurvedic management, Pseudohypertrophic muscular dystrophy.*

Introduction

Muscular dystrophy is a group of diseases that cause progressive, unremitting muscular weakness and loss of muscle mass^{1,2}. Duchenne Muscular dystrophy (D.M.D.) is commonest of these diseases, which is an inherited, X- linked recessive progressive myopathic disorder. Females are the carriers, but very rarely suffer with mild course of disease and males are the main sufferers. The incidence of Duchenne Muscular dystrophy is ~1 per 5200 males born³. As per one study, the prevalence of D.M.D. was found to be 15.9/100,000 live births⁴. It is mostly

detected early in childhood at the age of 5. Child experiences difficulty in walking and running. Child walks on toes. There is hypertrophy of calf muscles. Pseudo-hypertrophy is misnomer. There may be spinal deformity like lordosis or scoliosis. There is waddling gait. The weakness in limbs is progressive, by the age of 12 years the child has to be dependent on wheel chair and by the age of 20, he becomes bedridden. Death is the tragic outcome around 20-25 years of age. Death occurs due to pneumonia, respiratory paralysis due to weakness of diaphragm or by cardiac complications. As this is a genetic disorder, there

is deletion in the dystrophin gene on X chromosome (Xp-21). Dystrophin is the part of large complex of sarcolemmal proteins and Glycoproteins. Dystrophin-glycoprotein complex confers stability to Sarcolemma. Due to primary deficiency of dystrophin, there is disruption of Dystrophin-glycoprotein complex that weakens sarcolemma leading to muscle necrosis, muscle fibres break down and muscle fibres are replaced by fat and connective tissues. Contracture of joints is very common. Shortening of Tendo Achilles occurs. Cardiomyopathy is common though it is not that common as observed in Becker muscular dystrophy which occurs in teen-age, with comparatively mild course. In Duchenne Muscular dystrophy there is intellectual impairment and the average I.Q. is observed to be ~1 Standard Deviation below the mean. Serum Creatine Kinase levels are increased 20-100 times but tend to decline late in the disease as there is reduction in muscle mass. EMG reveals features of myopathy. The diagnosis of Duchenne Muscular dystrophy is definitely established on Dystrophin deficiency in muscle biopsy or mutation analysis on blood leucocytes.

Treatment

It is well established that Glucocorticoids delay the progression of the disease up to 3 years. However due to side effects of steroids like weight gain, toxicity to liver and kidney, increased risk of fractures, steroids are to be withdrawn. Many researchers tried Creatine supplements, Tricyclic compounds like Clomipromine/ Imipramine, Benzodiazepines, Taurine with limited success. Gene therapy and stem cell therapy are promising but are still in experimental stage⁵.

Case Study

This boy started walking late at the age of two and half years. The child used to fall and started walking on his toes but that was ignored by the parents. At the 7 years of age, he was referred to neurologist in Pune. Gower's sign was positive. Needle EMG/NCV study of Lt. Tibialis anterior

done on 24th Jan 2006 revealed AMUP amplitudes within range of 400-600 mv. There were multiple polyphasics and complete inter reference pattern suggestive of primary myopathic illness. His CPK value was 11785 U/L (Normal range 24-195 U/L). Molecular studies revealed that Dystrophin gene deletions were observed in exons 45 and 47. He was diagnosed as a case of Duchenne Muscular dystrophy His parents were explained about this genetic disorder by the neurologist but unfortunately father of the patient made it an excuse to take divorce. That was a great blow to his mother but she accepted it a challenge to bring-up her child. His mother, teacher by profession took every care of her son so that he would not miss his father.

He was treated by corticosteroids for some period and withdrawn gradually due its side effects. He was referred to Ayurved Research department of Sassoon General Hospital, Pune on 8/5/2013 and was admitted from 8/5/2013 to 7/6/2013.

On admission he had C/o Difficulty in walking, walking on toes with support. He had developed lordosis. His mid- circumference of Rt. calf muscle was 32.5 cm and that of Lt side was 32.6 cm. Deep tendon reflexes were absent in upper extremities

Patellar reflex +

Tendo Achilles reflex +

His CKP value was 8160 U/L.

In Ayurved, this type of genetic disorders is referred to as 'Sahaj vyadhi.' Charakacharya mentioned that *Mauns* (Muscle) is embryologically derived from Matruj awayav/bhav therefore the defective gene transferred/deleted may be said to be from mother i.e. X chromosome.

It may be called as Maunsgat Vata.

..... *Vranascha Raktago Granthin Sashulan Mauns-sanshritah I*

*Tatha Meda: shrut Kuryad Granthin Mandarujou Vranan II*⁶ Su. Ni. 1/26

The great *Acharya Sushruta* directed the line of treatment of *Maunsgat Vata* (Myopathy) by

following *Snehan, Abhyanga, Upnaha, Mardan, Alepan* and *Raktamokshana*.

Sneh-Abhyango Upanhascha Mardana Lapanani cha I

Twaka Mansa Sruka Sirapapte Kuryat Cha Sruk Mokshanam II ⁷ Su. Chi. 4/7

Similarly great *Acharya Charaka* directed that *Maunsgatvata* has to be treated by *Virechan, Niruh, Basti and Shaman chikitsa*.

Vireko Maunsmada: stha Niruha Shamanani Cha I ⁸ Cha.Chi. 28/93

Therefore in treating this *Maunsgat Vata* (Myopathy), we combined most of the treatment principles as advocated by *Sushrutacharya and Charakacharya*.

Sushrutacharya advocated that *basti*, which is said to be *Ardha chikitsa*, nourishes all dhatus of body, improves complexion (Varna), increases Bala/ Strength, Aarogya and increases life span by reducing Vata.

Follow up photographs of D.M.D. patient



Particulars of treatment

Type of treatment	From	To	Details
Deepan-Pachan	8-5-2013	14-5-2013	Sitopaladi + Avipattikar churna/powder 2gm each BD (Rasa shala,Pune)
Sarvang Abhyang	11-5-2013	7-6-2013	Mayurpichhamashi + Takra siddha Sarshap/ Mustard oil
Sarvang Pind -sweda	11-5-2013	7-6-2013	Decoction made from Dashmool, Deodar, Ashwagandha, Shatavari and Bala and in that Specially cropped rice 2 parts + Black gram dal 1 part skined off + 1 TSF black Sesame was cooked
Yogabasti (Medicated enema)	11-5-2013	17-5-2013	Nirooh with Dashmool + Erandmool+ Bala 450 ml (3 times) Anuvasan with Narayan tail/oil 40 ml (Four times)
Tiktakshir basti A/D	18-5-2013	6-6-2013	Kshirpak made from Guduchi,Deodar Ashwagandha, Shatavari and Kavachbeej 100 ml + Tiktaghrit 10 ml
Majjabasti A/D	19-5-2013	7-6-2013	Kshirpak made from Guduchi,Deodar Ashwagandha, Shatavari and Kavachbeej 100 ml + Tiktaghrit 10 ml + Majja 15 ml
Nasya	11-5-2013 22-5-2013	21-5-2013 6-6-2013	Panchendriya vardhan tail 2 drops in each nostril alternate day by Kshirbala tail
Abhyanter chikitsa (Oral medication)	8-5-2013 8-5-2013 18-5-2013	7-6-2013 17-5-2013 6-6-2013	Maunspachak vati 1 BD Laghumalini vasant 1 BD Madhumalini vasant 1 BD
Pranayam	11-5-2013	7-6-2013	Anulom-Vilom, Bhramari and Dhyan
Yogasana	11-5-2013	7-6-2013	Bhujangasana, Tadasana and Pavanmuktasana

"*Balam Alam hi dosha haram*" I

When the disease is of long duration/ Chronic/ *Sahaj*, the *Dosh bala* is strong while *Dhatu bala* has become *Kshin*, therefore, for treating such Chronic disease, *dosha bala* has to be alleviated & *Dhatu bala* has to be increased. When *Dhatu bala* is strong, *Dosha bala* cannot produce any disease. The *Aarogya* is dependent on *Bala* & *Bala* is dependent on *upchay of Dhatus*; particularly *Mauns dhatu*. While increasing *Dhatu bala* we should be cautious to see that *Dosha bala* will not increase.

Therefore we attempted to reduce *Dosha bala*, and to increase the *Dhatu bala*, we used *Tiktakshir basti*. This type of treatment said to be *Rajyapan basti* was used by the great Ayurved scholar Vaidya Haridas Kasture in 40 cases of Muscular dystrophy and barring 3, most of the cases showed good improvement⁹. Further we added Majja bone marrow from the bones of male goat in the *Tiktakshir basti* which was then called as *Majjabasti*, that further increased the *Dhatu bala* and reduced the *dosha bala*.

Chikitsa/ Treatment:-We decided to treat this case by following treatment principles:-

1. Deepan-Pachan 2. Vatanulomak chikitsa. 3. Bruhan chikitsa

After *Deepan-Pachan & Anuloman* by *Yogbasti*, the child was given Daily *Sarvang Abhyanga* (Full body medicated massage) by *Mayur-pichhamashi & Takra siddha Sarshap/ Mustard oil* (Oil specially made ash from peacock feathers and *Takra*) followed by

Pind sweda with Rice (*Sathesali*) + Black Til (Sesame) + *Udad* (Black gram skinned) cooked in Decoction of *Dashmool* (Ten roots of certain plants), *Deodar* (*Cedrus deodara*), *Ashwagandha* (*Withania somnifera*) and *Bala* (*Sida cordifolia*)

Daily *Nasya* (facial massage by *Narayan tail* and local steaming to face) followed by instilling 2 drops of *Panchendriya-varadhan/ Kshirbaka tail* in each nostril.

Majjabasti- *Deodar* (*Cedrus deodara*), *Ashwagandha* (*Withania somnifera*), *Shatavari* (*Asparagus racemosus*), *Bala* (*Sida cordifolia*),

Guduchi (*Tinospora cordifolia*) and *Kavachbeej* (*Mucuna pruriens*) made *Siddha-kshir* 100ml. with addition of 10ml of *Tiktaghrita* & Bone marrow 15ml.

Tiktakshir basti by *Deodar* (*Cedrus deodara*), *Ashwagandha* (*Withania somnifera*), *Shatavari* (*Asparagus racemosus*), *Bala* (*Sida cordifolia*), *Guduchi* (*Tinospora cordifolia*) and *Kavachbeej* (*Mucuna pruriens*) made *Siddha-kshir* 100 ml with addition of 10 ml of *Tiktaghrita*.

We administered 10 *Majjabasti* and 11 *Tiktakshir basti* during his one month period of admission.

He responded very well to the treatment. He started walking without support. His gait improved. His I.Q. was above average. On the day of discharge, his CPK value was reduced to 232 U/L which was just marginally higher than the normal value.

At the time of discharge, he was advised to take following treatment:

1. *Tab Suvarna malini vasant* 1OD
2. *Tab Mauns pachak vati* 1 BD
3. *Abhyanga* (Full body massage) by *Mayur-pichhamashi & Takra siddha oil & Narayan oil* A/D .
4. *Siddha Kshirpak* made by *Arjun* (*Terminalia arjuna*), *Guduchi* (*Tinospora cordifolia*), *Bramhi* (*Bacopa monnieri*), *Haridra* (*Curcuma longa*), *Ashwagandha* (*Withania somnifera*) *Shatavari* (*Asparagus racemosus*) & *Sunthi /Dry Ginger* (*Zingiber officinale*) one cup twice daily. There is risk of cardiomyopathy in D.M.D., therefore we administered *Arjuna* which has therapeutic protective effect on heart. *Bramhi* is specially used for brain for increasing I.Q. and preventing impairment of brain which is very common in D.M.D.. *Ashwagandha & Shatavari (Ballya & Rasayan)* is effective in *Vata-Kapha vikaras*; administered for increasing strength to *Dhatus* for alleviating to *Vata-vikar* and specially giving strength to the weakened muscles. *Guduchi* is a well-known *Rasayan draya* which rejuvenates the body by it 's *Dhatwagni pradipak* properties.
5. *Nasya* with *Panchendriya vardhan tail/Kshirbala* 101tail to be continued 7 days in one month..

6. **Pranayam:** Anulom- Vilom, Bhramari, 5-10 times each daily, followed by Dhyana/ Meditation

7. **Yogasana:** Bhujangasana, Pawanmuktasana, Tadasana

When the child was admitted in Ayurved ward, we had taught the mother about the procedure of *Abhyanga, Pindsweda, Majjabasti, Tiktakshir basti* etc. His mother was asked to follow the sequence of treatment as follows:- Two days Tiktaksir basti consecutively followed by Majja basti till 21 Majja basti gets completed. She was asked to repeat the cycle every year till child gets fully benefitted.

Her mother was teacher and could not get the leave frequently; therefore after one month of follow up following treatment was advised:-

1. *Ashwagandha* 250 mg + *Guduchi* 250 mg + *Arjun* 250 mg + *Kumari* (Aloe vera) Swaras 2 TSF twice daily.

2. *Sukshmaoushdhi* of *Prawal Bhasma & Suvarna bhasma* was given twice daily

3. *Rasaraj rasa* 3 gm+ *Brihatvat chintamani* 1 gm + *Malla sindur* 3 gm + *Praval Panchamruta* 6 gm + *Krimimudgarasa* 6 gm + *Guduchi satva* 50 gm are mixed together and equally divided in to 60 sachets; one sachet to be consumed along with *Madhu* (Honey) twice daily.

4. *Abhyanga* 3 times in a week

5. *Pind sweda* twice weekly.

6. *Nasya* with *Panchendriya vardhan tail/Kshir bala* 101 tail to be continued 7 days in one month..

7. **Pranayam:** *Anulom-Vilom, Bhramari*, 5-10 times each daily, followed by Dhyana/ Meditation

8. **Yogasana:** *Bhujangasana, Pawanmuktasana and Tadasana*

Meanwhile author was transferred to Nagpur and there was gap in communication. The mother continued the treatment in the same sequence as advised every year till 2018, when she approached again to the author in Ayurvedic OPD of Sassoon hospital, who was again transferred back to Pune. The child had grown up as an adult of 19 years. He had completed his 10+2 and was pursuing Software Computer Diploma in Animation.

It is pointed out here that till date the patient is under treatment for maintaining his health. The treatment continued is as follows:

1. Tab Madhumalini vasant 1 BD

2. Kshirpak made from *Ashwagandha+ Shatavari + Deodar + Arjun + Haridra* -One cup daily. 3. Sarvang Snehan and Pindasweda 2-3 times in a week.

4. *Nasya* by *Kshirbala/Panchendriya vardhan tail* alternately - 7 days in one month

5. *Laghu supachya aahar* -Healthy and digestible food

He is fully independent, he drives 2 wheeler Scooter, has completed the Computer Animation Software Diploma course, and now searching for the job in film industry. His latest CPK value was 105 U/L, which is very well within the normal range. It shows that Ayurved has not only halted the progress of the disease but the biochemical damage was also corrected to a great extent.

Conflicts of interest- None

Funding source- Nil

References

1. Muscular dystrophy: <https://www.mayoclinic.org/diseases-conditions/muscular-dystrophy/symptoms-causes/syc-20375388>.
2. Harsh Mohan: Musculoskeletal system: Skeletal Muscles. Chapter No. 26 in Textbook of pathology, Seventh edition. Jaypee The Health Sciences Publishers, New Delhi. 2015: 848-850.
3. Anthony A Amato, Robert H. Brown, Jr. Muscular Dystrophies and Other Muscle Diseases Chapter No. 462e in Harrison's Principles of Internal Medicine Vol 3. 19th Edition. McGraw Hill Education (India) Private Limited, New Delhi. 2016: 462e 1-8.
4. S Rider, R.M. Leadley, N Armstrong, M. Westwood et al. The burden, epidemiology, costs and treatment for Duchenne muscular dystrophy: an

- evidence review. Orphanet Journal of Rare Diseases (2017) 12:79. DOI 10.1186/s13023-017-0631-3.
5. Dorota Sienkiewicz, Wojciech Kulak, Bożena Okurowska-Zawada, Grażyna Paszko-Patej, and Katarzyna Kawnik. Duchenne Muscular Dystrophy: current Cell Therapies. Ther Adv Neurol Disord. 2015 Jul, 8(4):166-177. doi:10.1177/1756285615586123.
 6. Editor Dr. Ananr Ram Sharma. 'Susruta Samhita of Maharshi Susruta' Vol.1 (Sutra- Nidan Sthana). Nidan Sthana: Chapter 1, Verse 26. Chaukhambha Surabharati Prakashan, Varanasi. (2015). p: 460.
 7. Editor Dr. Anana Ram Sharma. 'Susruta Samhita of Maharshi Susruta' Vol.2 (Sarira-Chikitsa Sthana). Chikitsa sthan: Chapter 4, Verse 7. Chaukhambha Surabharati Prakashan, Varanasi. (2015).p: 205.
 8. Editors Pt. Rajeswardatta Sastri, Pt. Yadunandana Upadhyaya et al. 'Caraka Samhita of Agnivesa' Part -II. Chikitsa sthan. Chapter No.28, Versa 93. Chaukhambha Bharati Academy, Varanasi .19th Edition (1993). p: 793.
 9. Editor Mahesh M. Thakur. 'Vyavharik Yashaswi Chikitsa'. Publishers Ayurved Seva Sangh, Nashik. Second edition (2019). p 201.
-