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UNMASKING THE COMPLEXITIES BY TAILORING AYURVEDIC INTERVENTION IN A RARE CONDITION " THE FRIEDREICH'S ATAXIA" – A CASE REPORT

Ayurveda

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ABSTRACT

Background: Friedreich ataxia (FA) is the most common hereditary ataxia accounting for approximately 50% of all ataxia cases. 75% in patients less than 25 years of age. The prevalence of FA globally is 1 in 40,000. It frequently occurs in Europe, the Middle East, South Asia, and North Africa[1]. **Methods:** This report discusses a case of a 23-year-old male, previously healthy, presented with a 1-year history of progressive gait instability and frequent falls. The patient also experienced numbness and tingling sensation in the extremities with a Family history was treated with panchakarma procedures like Rukshana Chikitsa followed by Brihmana chikitsa along with Oral medications. **Result:** After 3 sittings there was some relief in symptoms. **Conclusion:** The present case of FA is managed with the treatment principle of Kaphavruta vata.

KEYWORDS

Brihmana chikitsa, Friedreich's Ataxia, Kaphavruta vata, Rukshana Chikitsa

INTRODUCTION

Friedreich's ataxia (FRDA) is an autosomal recessive spinocerebellar ataxia[1]. This is caused by the mutation of FXN (Frataxin gene) which is located in the centromeric region of chromosome 9q. It consists of the expansion of GAA repeats in the FXN gene. The severity of the disease depends on the number of repeats. FXN encodes are very essential for the iron homeostasis and metabolism. FRDA shows specific neurological deficits involving different subsets of neurons. The most affected areas of the nervous system are the dorsal root ganglia, corticospinal tract, ventral/dorsal spinocerebellar tracts, and the cerebellar dentate nucleus. Limb and gait ataxia is the most common presentation in FRDA patients and the other neurological features include dysarthria, absent reflexes, and loss of vibration and proprioception sensation reflecting the underlying peripheral neuropathy etc . The three major neuroanatomical systems affected by FRDA include the proprioceptive system, the dentate nucleus of the cerebellum and the corticospinal tracts.

The clinical features are multisystemic, affecting both peripheral and central nervous system, the myocardium, the musculoskeletal system, and the endocrine pancreas. *Adibalapravrutta Vyadhi* is the ayurvedic concept of hereditary abnormality explained by *Acharya Charaka*. Hereditary abnormalities depend upon *gotra*, the condition of *Beeja* etc ; the body part developing from that portion of *Beeja* will be abnormal. Among the *Shadgarbhakara bhavas*, the *atmajabhava* is likely to produce the autosomal recessive or dominant traits running in the family to that *Garbha*. As *kulaja vikaras* are *Asadhya* by prognosis. Hence the treatment protocol should focus on the symptoms of the *vyadhi* as the *nidana parivarjana* is impossible. So, this can be established parallel to the concept of *Kapaha Avaruta Vata*.

HISTORY OF PRESENT ILLNESS:

A 23-year-old boy complaints of gait imbalance with weakness of the limbs since 4months visited the Kayachikitsa OPD of Sri Jayendra Saraswathi Ayurveda College and Hospital, Chennai. He developed dengue fever which lasted for about 1month and had a conservative treatment. Then gradually he developed difficulty in walking with a gait imbalance along with dysdiadokinesia. Over last 2months, the patient developed speech abnormality in the form of slurred speech with decreased verbal output. Over the next 1month, he was not able to grip his slippers while walking, leading to slippage of slippers. He developed difficulty in climbing the stairs up / down. There was tremulousness of hand while reaching for objects and holding them. There is no history of sensory disturbance. He was able to appreciate the touch and pain sensation. There is no history of visual disturbances, swallowing food, loss of consciousness, behavioural symptom such as laughing, crying, psychosis such as delusions or hallucinations. History of anaemia since 2009. He has a history of similar complaints in father sister's daughter born out of consanguineous marriage diagnosed with Ataxia – neurodegenerative(Friedreich Ataxia).

Table:1 – Showing Timeline Of The Case.

Date	Clinical presentations and Interventions
12/10/2023	Tingling sensation in the lower limbs along with stiffness of extremities. Difficulty in walking in the form of imbalance.
08/01/2024	Visited CMC, Vellore and got admitted and diagnosed with Probable Friedreich's ataxia. (Genetic testing was awaited)
11/01/2024	MRI – Brain showed generalised volume loss in the cerebral and cerebellar region. MRI – Spine showed minimal anterolisthesis of L5 – S1 disc degeneration. No Nerve root Compression. USG (Abdomen) – no significant abnormality.
09/02/2024	Genetic testing confirmed Friedreich's Ataxia.
14/02/2024	Underwent ayurvedic treatments – *Dhanyamladhara, Abhyanga and Matravasti*.
10/03/2024	Brain Stem Auditory evoked response – Bilateral peripheral pathway dysfunction. Visual evoked potential – Bilateral optic pathway dysfunction Somatic sensory evoked potentials – Bilateral Central pathway dysfunction.
24/04/2024	Had severe stiffness, dysdiadokinesia and loss of coordination while walking. Underwent treatments like *Udwartanam, shirodhara, abhyanga, PPS, SSPS, Yogavasti*
12/05/2024	Underwent physiotherapy daily
12/07/2024	Underwent treatments like *Utsadanam* with *Kashayadhara, Abhyanga, PPS, Kalavasti*

EXAMINATIONS ON THE 3RD VISIT :

Patient was a febrile with pulse 92/min and Blood pressure of 120/86mmHg.

Physical Examination:

I. Respiratory and Cardiovascular : No added sounds
II. Per abdomen : Non – Tender and Bowel sounds were present.
III. Higher function : conscious, oriented, memory normal
IV. Cranial nerves:

1. Motor system:

Table:2- Motor System Examination

	Right side		Left side	
MUSCLE BULK	B.T	A.T	B.T	A.T
Mid-arm circumference	22.5cm	23.2cm	22cm	22 cm
Mid forearm	19cm	19 cm	18.5	19cm
Calf	24.5cm	25.6cm	24.6cm	25 cm

POWER				
Shoulder, Elbow	1/5	1/5	1/5	1/5
Handgrip	Nil	can hold pen	Nil	Nil
Hip, Knee and Ankle	2/5	2/5	1/5	2/5
TONE				
Upper limb	Normal		Normal	
Lower limb	Normal		Normal	

(1) Sensory examination :
(a) Pain and touch – normal
(b) Light touch – normal
(c) Vibration – decreased in ankle joint
(d) Joint position sensation – absent till ankles
(e) Rhomberg's sign – positive
(f) Pseudo arthrosis – positive ++
(g) Cortical sensations – normal

V. Reflexes :
i) Superficial abdominal reflex – present in all four quadrants
ii) Deep tendon reflex: completely absent
iii) Plantar reflex – bilaterally flexor
VI. Signs of cerebellar dysfunction : gaze evoked Nystagmus
Dysmetria +
VII. Heel shin test – abnormal
VIII. Dysdiadokinesia - +
IX. Gait – Ataxic gait
X. Meningeal signs – Absent
XI. Skull – normal
XII. Spine – mild scoliosis

TREATMENT INTERVENTION:

Table3: Details Of 1st, 2nd And 3rd Visit :

Date	External therapies	No. of days of external therapies	Internal medicines	Observation
14/02/2024	*Dhanyamla dhara*	3days	*Amruthotharam Kashayam*	Body ache reduced
	Ahyangam(Dhanwantaramtaila+ mahamash taila) & PPS	7days		Slight improvement in waking
	Matravasti(Dhanwantaram mezhugupakam)	7days	Cap.Palsinueron	Improvement in bowels
24/04/2024	*Udvartanam(Kolakulathadi churnam)*	3days	*Ashtavargam kashaya*	Stiffness reduced
	Abhyanga (Dhanwantaram tailam)	5days	*Ksheerabala 101 Aarti*	Improvement in the walking
	Shirodhara (Mustamalaki siddha takram)	5 days	Cap.Palsineuron	Improvement in speech Nystagamus reduced
	SSPS	3days	*Saraswatharistam with Gold*	
	Yoga vati (Sneha vasti- Dhanwantaram mezhugupakam) Kashaya vasti – Erandamooladi Kashaya vasti	8days	*Syp. Shankhapushpi*	Weakness is reduced slightly, able to walk without support for 5steps
	Utsadanam (Kolakulathadi churnam + dhanwatanram tailam) followed by dashamoola Kashaya dhara	3days	*Vidaryadi Kashayam*	Stiffness reduced
	Abhyanagam (Mahamasha tailam) followed by patra pinda swedam	7days	*Shilajathu Tablet*	Feels lightness of the body.
	SSPS	5days	*Shiva gutika*	Increase in Muscle bulk
	Kala vasti Anuvasana vasti – bala tailam Niruha vasti - Makshika Lavanam Guggulutikita Ghrita Shatapushpa Kalakam Erandamooladi Kashayam	15days	*Balaristam + Ashwagandharistam*	Weakness is reduced, restricted movements and pain reduced, improvement in sleep

Table:4 - Scoring Pattern Of Friedreich's Ataxia

S. NO	Examination	Score (B.T)	Score (14.2.24)	Score (24.4.24)	Score (12.07.2024)
	Gait	7	7	6	6
	Stance	6	6	6	6
	Sitting	3	3	3	2
	Speech disturbance	5	5		
	Finger chase	2	2	1	1
	Nose – Finger Test	2	2	1	1
	Fast alternating hand movement	2	2	1	1
	Heel – Shin slide	3	3	2	1

DISCUSSION:

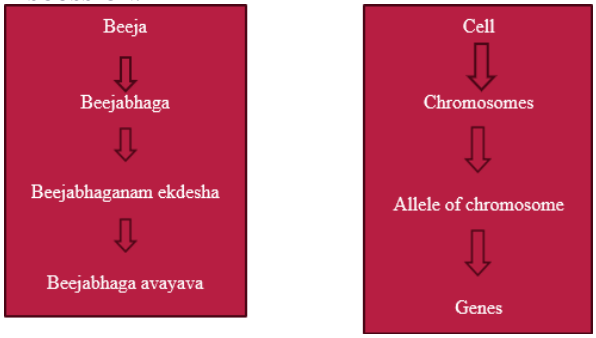

Fig.1 shows the description of Hereditary disorders in *Charaka*. *Yasya yasya hi anga avayavasya beeje beejabhaga upatapto bhavati, Tasya tasya anga avayavasya vikritir upajaayate* - *Charak* states that the *Sahaja Vyadhis* develops in those parts of the body whose corresponding chromosome is damaged. As *kulaja vikaras* are *asadhya* in prognosis, we have to treat it symptomatically. Hence it can be considered as *Kaphavruta vata*. If we go more deeper into the specific vata that is involved, then its *Kaphavruta vyan* and *Kaphavruta udana*. The *lakshanas* of *Kaphavruta vyana* include *parshvagraha* and *asthigraha* that is the stiffness of the extremities, *angeshu guruta* where patient feels heaviness of body due to stiffness, *gatau skhalitam bhrsham* which is seen as Ataxic gait caused due to loss of muscle control in the arm and legs was the chief complaint of the patient. On the other hand, the *lakshanas* of *kaphavrruta udana* include *gurugatratvam,* the heaviness of the body due to the *avruta kapha, vakswara graha* which can be seen as speech abnormality in the present case.

As it is *Kaphavruta vyana*, the *avaraka* has to be treated first. as mentioned by *Acharya Vagbhata - Ruksham vimardanam* and *sweda langhana pachanam* as the firstline of treatment for *kapha*. Then the *avruta vata chikitsa* has to be considered - *rukshaiy cha aalepa sekadyai kuryat kevala vatanut* the therapies like *Dhanyamlam* which is considered to be a *mridu langhana* and also Glucoside called hesperidin present in *Dhanyamla* has the ability to prevent in capillary bleeding and reduces inflammation and *udwartanam* which is *kaphahara* by itself were done in the 1st and 2nd sitting.

Mode of action of Udwartanam & Utsadanam :

Udhwartana (powder massage) administered with *Kolakulatthadi*

churna to remove *Kapha avarana* (impedance to movement of *vata* by *kapha*). It also helps in bringing stability to the body The patient reported reduction in heaviness of lower limbs after the treatment. In the 3rd visit, as *vata vriddhi* was observed *Utsadanam* was carried out with *Kolakulathadi churnam* and *Dhanwantharam tailam*, which reduces *vata* when mixed with *amla* or *ushna Dravya*. Followed by *Dashamoola Kashayadhara* which produces *Srotovishodhana*. *Dashamoolam*, which is *vatakapha hara* in nature.

Mode of action of abhyanga:

Abhyanga is *vatahara*, *shramahara*, produces *Pushti* to the *dhatus* and nourishes it. *Dhanwantharam tailam* is *vatahara*, used widely in *asthi – marma vikaras*. It has certain biomolecules like dodecanoic acid, 1,2,3-propanetriyl ester, which has been proven to reduce pain. Since, *Ashwagandha, shatavari, ksheera, yastimadhu, bala* etc are present in *Dhanwantaram tailam*, it acts as *Brihmana* also. When it is mixed with *Mahamasha tailam* which is *Brihmana* by itself, the potency of both the *tailams* produced better result by slight increase in the muscle bulk of the patient.

Mode of action of SSPS:

Shashtika Shali (rice) is Snigdha, Balavardhana and Deha darddyakrita. Bala and Godugdha is Snigdha, Balya, Rasayana and Vatahara. The warmth supplied by Pottali (bolus) of Shashtik shali dipped in Balamoola kwath with Godugdha may enhance the blood circulation, decrease muscular stiffness, increase tendon extensibility and give relief from pain. Bala prevents from emaciation through local absorption into muscular tissue. Thus, effect of both Abhyanga and Shashtik shali pinda sweda helps in reducing spasticity, facilitating the movement of the joints and preventing from advancement of disabilities and contractures.

Mode Of Action Of Vasti:

Vasti drugs directly act on Purishadharakala so we can take its direct action on Asthidharakala also as 'ya Purishdhara Kala sa eva Asthidhara Kala'. According to Susrutha the 9th anuvasana vasti only reaches the majja dhatu and does the poshana. So, body needs 9 anuvasana vastis to reach majja, hence Kalavasti is the best option. Bala tailam which is best for all types of vatavyadhi's Madhu along with rukshaguna and ushnaviryahas Yogavahitva and Sukshma margaanusaritva property. Saindhava lavana due to its Sukshma property reaches the minute channels and due to teekshna property breaks down the morbid malas and clears the channels. Guggulutikta ghrita which is tikta rasa pradhana, is more ideal in asthimajjagata rogas, also the sloka says – vidhamati prabalam sameeram, which indicates this ghrita is best in vitiated vata rogas. Erandamooladikwatha which is used in more quantity has the property of Deepana and Lekhana required in this condition as mentioned by Vagbhata – teekshnam niruhash cha.

Mode of action of Vidaryadi Kashaya:

Since there was stiffness which was developed due to sheeta guna of vata, indicated vata vriddhi . Vidaryadi kashayam is Brihmana, Vatapittahara and indicated in Shosha angamarda produces nourishment to the dhatus and reduces the stiffness.

Mode Of Action Of Shilajatu

Shilajatu is a rasayana.

Mode Of Action Of Shiva Gutika

Shivagutika is a Rasayana, administered orally for a long duration is said to be very effective in combating the multiple system involvement of the disease. Shivagutika as enhancing the vyadhikshamatva property (Immunity) as superior to other formulations . According to the panchabhautika theory, the ingredients of it has Akashiya, Tejo and Apya guna predominance which enhances the satva, which is a karma of pitta and also the parthiva drugs present in nourishes the body and medha. Hence it is considered as a Medhya Rasayana as well.

Mode of action of Balaristam and Ashwagandharista

Usually, Asavas and Aristas are Dipana, Tikshna, pittavardhaka in nature. It increases the jataragni and increases the absorption in the gut.

CONCLUSION:

Friedreich's ataxia is a complex genetic disorder that impacts the life of the individuals. The present case has been treated on the principle of *Kaphavruta vata.* The first line of treatment should be *Rukshana* followed by *Brihmana*. Then the *kevala vata chikitsa* protocol has to followed. Physiotherapy can also be incorporated with the ayurvedic interventions. Even though there is no permanent cure for it, after the 3 sittings of treatment significant improvement has been noted.

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