

COMPREHENSIVE AYURVEDIC MANAGEMENT OF HEREDITARY SPASTIC PARAPLEGIA WITH ATAXIA: A CASE REPORT**Dr. Afrin M.*¹, Dr. Fareeda Begum Shaikh², Dr. Janaki Y. S.³**

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ABSTRACT

Hereditary Spastic Paraplegia (HSP) is a rare, progressive inherited neurodegenerative disorder characterised by weakness and stiffness of the lower limbs. The complicated form may present with additional neurological manifestations, including cerebellar ataxia, tremors, seizures, and speech disturbances. The present case describes the clinical improvement observed following an individualised Ayurvedic treatment approach in a patient with HSP with ataxia. A 39-year-old male presented with gradually progressive weakness and stiffness of both lower limbs, difficulty in walking, imbalance, frequent falls, tremors, and unclear speech. He had a history of generalised tonic-clonic seizures and was receiving conventional treatment. Brain MRI at NIMHANS revealed mild diffuse cerebral and cerebellar atrophy, and he was diagnosed with HSP with ataxia. Based on Ayurvedic principles, the condition was managed as a

Vata-dominant neurological disorder with Madhoodaka Pana, Sarvanga Udvartana with Kolakullathadi Churna, Agni Lepa, Matra Basti with Eranda Taila, Mukha Pratisarana with Vacha Churna and Madhu, Sarvanga Utsadana, Shastika Shali Pinda Sweda, Pratimarsha Nasya & Mustadi Rajayapana Basti followed by oral medications including Astavarga Kashayam, Yograja guggulu, Rasa Raja Rasa, and Ashwagandha Churna Outcome assessment

using the Scale for the Assessment and Rating of Ataxia (SARA) showed post-treatment scores of 8. Improvement was observed in lower-limb stiffness, gait, balance, coordination, tremors, and activities of daily living. This case highlights the potential role of an integrated Ayurvedic and conventional approach in symptomatic management of HSP with ataxia and improvement of functional independence and quality of life.

KEYWORDS: Hereditary Spastic Paraplegia (HSP), Ataxia, Madhoodhaka pana, Mustadi Rajayapana basti, Agni Lepa.

INTRODUCTION

Hereditary Spastic Paraplegia (HSP)^[1] is a heterogeneous group of rare, progressive inherited neurodegenerative disorders characterised predominantly by progressive weakness and spasticity of the bilateral lower limbs. The prevalence ranges from 0.1 to 9.6 subjects per 100,000 reported around the globe. HSP is categorised based on inheritance, the phenotypic characters, and the mode of molecular pathophysiology, with frequent degeneration in the axon of the lateral region of the cervical and thoracic spinal cord, comprising the corticospinal routes. There are more than 80 genetic types of HSP. It is broadly classified clinically into pure and complicated forms, with the latter presenting neurological or non-neurological manifestations such as Seizures, Dementia, Muscle atrophy, Ataxia,^[2] Cognitive impairment or Intellectual Disability, Peripheral neuropathy, extrapyramidal disturbance, Dupuytren's disease, Varicose veins, dementia, deafness, Dysarthria (slurred speech), Problems with swallowing, or breathing.

Ataxia,^[2] defined as impaired coordination of voluntary muscle movements due to cerebellar dysfunction, is a characteristic feature of the complicated form of HSP; Several genes linked to HSP can present with ataxia.

- For example: SPG7 (Paraplegin mutation) – commonly causes spasticity with cerebellar ataxia.
- SPG11, SPG15 – may show spasticity, ataxia, cognitive impairment.
- SPG5A (CYP7B1 mutation) – sometimes associated with mild cerebellar signs.

There is no definitive curative treatment in contemporary medicine. It has not yet been possible to name all the diseases. Here, an attempt is made to understand the Anukta vyadhi with a detailed protocol of examination, diagnosis & management that has been planned effectively. Based on the clinical presentation, treatment was initially planned according to

the principles of Vata Roga, considering the possibility of Avarana, followed by Brimhana Chikitsa as part of an individualised therapeutic approach. The Ayurvedic management is primarily aimed at symptomatic relief, improving functional capacity and quality of life, and slowing disease progression.

Case Report: A 39-year-old male diagnosed with Hereditary Spastic Paraplegia with cerebellar ataxia presented to the Kayachikitsa Outpatient Department, Taranath Government Ayurvedic Medical College, Ballari, with complaints of weakness of B/L lower limbs since 16 years, Spasticity in B/L lower limbs, impaired balance, uncoordinated gait, slurred speech, and tremors of both upper limbs & tongue for the past 9 years.

History of present illness

The patient was apparently healthy until the age of 22 years, when he developed an insidious onset of symmetrical weakness in both lower limbs. The weakness gradually progressed over the years and was associated with increasing stiffness, resulting in difficulty in walking. Subsequently, he developed incoordination while walking, with a wide-based gait and frequent falls, and gradually became dependent on support for ambulation.

In 2012, during the course of the illness, he experienced a generalised Tonic-Clonic seizure while working in the field. He consulted a physician and was started on anticonvulsant therapy (Levetiracetam 500mg), following which no significant recurrence was reported.

In 2019, he noticed tremors which involved both upper limbs, particularly during voluntary activities such as reaching for objects and performing routine tasks. He also noticed tremors of the tongue during movement. The tremors were aggravated by physical activity and relieved by rest, sitting, and sleep.

As the illness progressed, he noticed that his speech became unclear, with interruptions in the middle of sentences while speaking, as well as anxiety and fear. These symptoms further interfered with his activities of daily living and significantly reduced his functional independence. There was no history of bladder or bowel involvement.

The patient sought treatment at various hospitals but did not experience satisfactory improvement. He was subsequently evaluated at the National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru. Magnetic resonance imaging (MRI) of the brain performed on 18 February 2023 revealed mild diffuse cerebral and cerebellar atrophy. Based

on the clinical features and neuroimaging findings, he was diagnosed with Hereditary Spastic Paraplegia with Ataxia. He was prescribed Clobazam 5 mg, Syndopa Plus, and Migragesic, along with advice regarding activities of daily living (ADL) modification, fall prevention strategies, hand function exercises, upper-limb range-of-motion exercises, and upper-limb coordination exercises. However, as he did not obtain satisfactory symptomatic relief, he subsequently presented to TGAMC, Ballari, for Ayurvedic management.

Past History

History of a single episode of generalised tonic-clonic seizure in 2012, following which he was started on anticonvulsant medication.

Drug history

Clobazam 5 mg, Syndopa Plus, Clonazepam (Petril 0.5 mg), Migrafix-Plus, Carbamazepine 200 mg, Duloxetine 200 mg and Levetiracetam 500mg,

Family History

The patient was born to a non-consanguineous marriage. His younger brother had developed similar symptoms of progressive weakness and stiffness of both lower limbs. No other family members were reported to have a similar neurological illness.

Personal History

Ahara - Mixed

Mala Pravrutti - regular- once or twice per day.

Mutra pravrutti - 6-7 times/day and 1/night

Nidra – Sound sleep

Vyasana – Occasional Ethanol intake

Occupation- Farmer

General examination

Built – Over weight

Height – 5feet and 6 inches

Weight – 80kg

BMI- 28.6 Kg/ m² (overweight)

Pallor Absent

Icterus - Absent

Clubbing Absent

Cyanosis - Absent

Lymphadenopathy - Absent

Oedema – Absent

Ashtasthana Pareeksha

Nadi - Vata-Pittanubandha, 72 bpm

Mala– Once a day with normal consistency

Mutra – Prakruta, 6-7 times/day and 1/night

Jihwa - Swetha Lipta and kampa

Shabda– Aspastha Vak

Drik - Prakruta

Sparsha - Anushna Sheeta

Akriti – Sthoulya, Vishama gati (Ataxic Gait), Intention tremors

Dashavidha Pareeksha

Prakruti – Kapha-Pitta

Vikriti - Dosha – Vata (Sarva vata- mainly- Prana, udana and Vyana)

Pitta(Sadhka)

Kapha(Tarpaka & Sleshaka)

Dushya – Rasa, Mamsa, Medha, Asthi, and Majja

Sara - Madhyama

Samhanana - Pravara

Pramana - Pravara

Sathmya – Madhyama

Satwa- Avara

Aharashakti - Madhyama

Vyayamashakti - Avara

Vaya - Madhyama

Systemic examination

CVS: S1,S2 heard, no murmur

RS: B/L symmetrical, normal vesicular breath sounds heard, no added sounds.

GIT

Inspection: umbilicus inverted and central.

Palpation: Soft, No tenderness, No organomegaly

Auscultation: Bowel sounds heard.

CNS

Higher mental function

Level of Consciousness: Fully Conscious

Orientation – Oriented to person, place and time

Speech: Dysarthria.

Behaviour, Mood & Emotions : Anxious, Fear & Worry

Delusion: Absent

Hallucination: Visual/ Auditory / Tactile/ Olfactory –Absent

Memory – Recent, Immediate and Past –Intact

Handedness – Right Handed

Cranial nerves examination

Hypoglossal Nerve: Protrusion of tongue –Possible

Tongue movements– Possible with Tremors

Sensory examination: Touch, Pain, Temperature, Pressure- Intact

Motor System Examination

Table no. 1: showing Motor System Examination.

	Upper Limbs			Lower Limbs		
		Right	Left		Right	Left
Bulk	Mid Arm Circumference	33 cm	31 cm	Mid Thigh Circumference	58 cm	58cm
	Mid Forearm Circumference	32 cm	31 cm	Mid Calf Circumference	36cn	36cm
Power		5	5		4/5	4/5
Tone		Normotone	Normotone		Hypertone	Hypertone
Reflexes	Biceps	Normal	Normal		-	-
	Triceps	Normal	Normal		-	-
		-	-	Knee	Exaggerated	Exaggerated
		-	-	Ankle	Normal	Normal
Gait	Ataxic-wide base stance, unsteady & staggering walk					

Involuntary Movements	Presence of Action /Intention tremors
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Modified Ashworth scale

Grade 1+(1)

Scale for the Assessment & Rating of Ataxia (SARA)

- 1) Gait-4
- 2) Stance-1
- 3) Sitting-0
- 4) Speech-3
- 5) Finger chase-0
- 6) Nose finger test-2
- 7) Finger alternating hand movements-0
- 8) Heel-shin slide- 1

Total- 11

Investigations

An MRI brain scan on 18/02/2023 revealed Mild Diffuse Cerebral & Cerebellar Atrophy

National Institute of Mental Health & Neuro Sciences,
Bangalore – 560029
(Institute of National Importance)

Department of Neurological Rehabilitation
Occupational Therapy
Reference Card

OT No. 258/23 PH : 080-26995584
080-26995285

Name [REDACTED]

Age 35 Gender M Ward OPD

Hospital No. N887331 BPL/APL

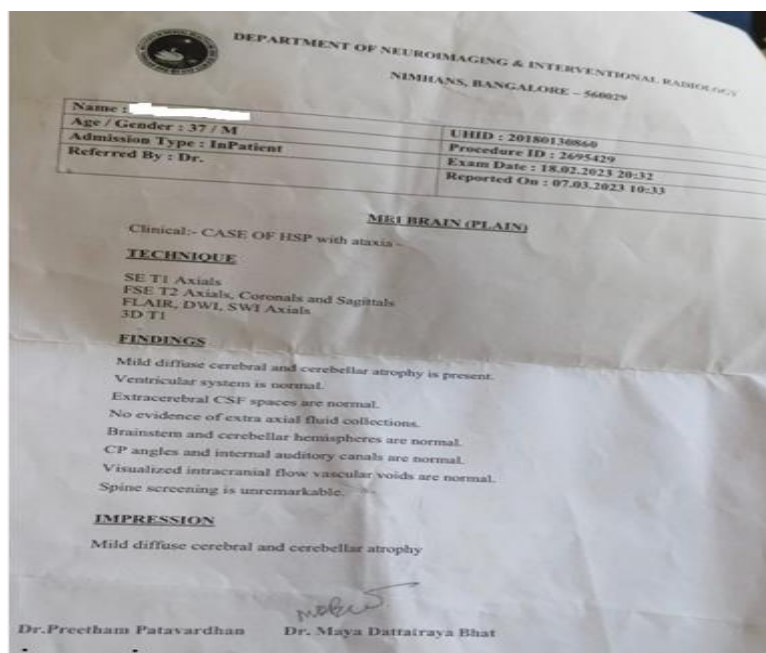
Diagnosis HSP w ataxia

Date of Onset _____ Date of Surgery _____

Date of Referral 21/01/22 Therapy Time _____

Review	Date	Sign

B. S. Srinivas
Occupational Therapist



Intervention

Table no. 2: showing intervention.

	Date	PROCEDURE	DRUGS WITH DOSES	DURATION
1st Sitting				
1	1/5/25-5/5/25	Madhoodaka Pana	Madhoodaka Pana- 100 ml Madhu + 200 ml of shruta sheeta jala in divided doses	5 days
2	6/5/25-12/5/25	Sarvanga Udwartana	Kottamchukkadi churna ³	7 days
3	6/5/25-12/5/25	Lepa	Agni lepa [Anubhuta yoga]	7 days
4	6/5/25-12/5/25	Asya Pratisarana	Vacha ⁴ Churna (1-2 gm) + honey	7 days
5	13/5/25	Koshta Shodhana	Avipattikara Churna ⁵ - 24gm	1 day
6	14/5/25-21/5/25	Matra basti	Ghandharvahastadi taila 70 ml	8 days
7	25/5/25-9/6/25	Shamana Aushadhi	Astavarga kashayam ⁶ 20 ml BD Yograj guggulu ⁷ 1 BD	15 days
2nd Sitting				
8	15/6/25-24/6/25	Sarvanga Utsadana	Kottamchukkadi Churna & Sahacharadi Taila ⁸	10 days
9	15/6/25-24/6/25	Shastika Shali Pinda Sweda		10 days
10	6/5/25-12/5/25	Asya Pratisarana	Vacha Churna (1-2 gm) + honey	7 days
11	15/6/25-22/6/25	Mustadi Raja Yapana Basti with anuvasana basti- Sahacharadi taila		8 days
12	25/6/25-	Pratimarsha Nasya	Ksheera bala ⁹ 101	15 days

	9/7/25			
13	25/6/25- 9/7/25	Rasayana	Rasa raja rasa ¹⁰ 1 BD Ashwagandha churna ¹¹ 2gm with ksheera BD.	15 days

DISCUSSION

Therapeutic intervention

Treatment plan

The Ruksha, Chala & Sukshma guna of vata is increased in majja dhatu and also there is kapha avarana to vata dosha.

So both avarana followed by dhatu kshaya samprapti is going on.

Treatment plan should be initially avarana chikitsa, later dhatu kshaya chikitsa.

Madhoodaka

Ama and kapha accumulation in the srotas can exacerbate vata imbalance by blocking nourishment to subsequent dhatus. Madhoodaka, vishada guna and ruksha guna & sukshma guna penetrates deep into tissues to digest ama, while its lekhana property scrape away these blockages.

Udvartanam

Kottamchukkadi Churna- vatavyadhi prashamanam & sthamba vinashanam

Agnilepa- It is Pradeha type of lepa of 1/4th angula thickness (nearly 0.5 cm).

Applied against the direction of the hair follicle and removed after drying.

Action

Agnilepa comes under the Niragni type of Upanaha Sweda. It contains Lashuna, Maricha, Lavanga, Sarshapa, Tulasi, Arka, Karanja, Haridra, Saindhava Lavana.

As the name Agni Lepa indicates, drugs having ushna Veerya Pradhana, possessing ruksha, teekshna, ushna guna, Katu Rasa pradhana and having Shothahara, Amapachana, Stambhahara, Vedanasthapaka and supti hara.

Matra Basti

Matra Basti with Eranda Taila- Taila is Vata-hara and na cha Shleshma-varadhanam. This has Srotoshodhana action may help clear obstruction in the channels and facilitate proper movement of Vata. It may support the functional integrity of Majja and neuromuscular

functions. The Medhya property may aid in improving coordination and higher neurological functions, while Balakara action may support muscle strength and functional capacity.

Mukha Pratisarana

Vacha, being Pramati, Medhya and Vak-Svara-pradhana and possessing Lekhana action, may have contributed to the improvement of unclear/scanning speech observed in the present case. Vacha, owing to its Laghu, Tikṣṇa and Sara Guṇa and Uṣṇa Virya, exhibits Vata-Kapha-hara activity and is traditionally associated with the promotion of Vak-pravṛtti and enhancement of higher neurological functions. Its Lekhana property may help in reducing Kapha-associated obstruction and facilitate the proper movement of Vata, thereby supporting the functional coordination of the speech apparatus. The Pramati and Medhya properties may further contribute to improved cognitive processing, attention and integration of sensory and motor functions involved in speech. Thus, in the present case, Vacha may have supported better coordination between the initiation and motor execution of speech, thereby contributing to the.

Astavarga kashayam –It is vata-Kapha hara, Avarananga karma

Yogaraja Guggulu- it was selected considering its classical properties of Agni Dīpana, Balya and Vatashamana, along with its indication in Vata disorders involving Sandhi and Majja. Its Dīpana and Pacana actions may help in addressing impaired Agni and associated Ama, while its Balya and Vata-pacifying properties may support neuromuscular strength and functional mobility.

Sarvanga Utsadana- Kottamchukkadi churna & Sahacharadi Taila- Sthambahara & Kampahara.

Shastika Shalli Pinda sweda

The probable mode of action of Shastika Shalli Pinda Sweda in the present case may be understood through the combined effects of Snehana Svedana and Brīmhaṇa & Balya effects thereby supporting lower limb strength and functional capacity.

Application of the warm Shastika Shalli preparation over the lower limbs may promote local vasodilatation and enhance peripheral circulation while the warmth facilitates the transfer of thermal energy to the underlying tissues.

Mustadi Rajayapna basti

In the present case, Mustadi Raja Yapana Basti was selected considering the Vata predominance, chronicity and progressive neuromuscular dysfunction. Its Yapana and Balya properties may help sustain neuromuscular strength and functional capacity, while its Rasayana effect may provide supportive benefit in maintaining residual neurological function. Thus, rather than aiming at mere augmentation of muscle bulk, the therapeutic rationale was to pacify Vata, support neuromuscular function and preserve functional independence by improving strength, mobility and activities of daily living.

Pratimarsha Nasya - Ksheera Bala 101

Administered through Nasya, owing to its Vatashamaka, Brimhana and Balya properties, may act through the siras and support Majja Dhatu, thereby promoting neurological function and alleviating Vata-predominant manifestations associated with cerebellar involvement.

Ashwaganda churna –It is balya, rasayani & anilam hanti. contribute to improvement in muscle strength, making it a potential adjunct in the symptomatic management & also promotes regeneration of nerve cells.

Rasa raja rasa–Being a Shrestha Dravya for Sarva Vata Vikara and Balaprada, was selected considering the Vata-predominant neurological manifestations of the patient. Since Majja is closely associated with neurological functions in Ayurvedic interpretation, its action may support Majja-related functions and neuromuscular coordination.

ASSESSMENT- SARA SCALE

Table no. 3: showing Assessment SARA scale.

CRITERIA	BEFORE TREATMENT	AFTER TREATMENT
Gait	Grade 4	Grade 3
Stance	Grade 1	Grade 1
Sitting	Grade 0	Grade 0
Speech disturbance	Grade 3	Grade 2
Finger chase	Grade 0	Grade 0
Nose finger test	Grade 2	Grade 1
Fast alternating hand movements	Grade 0	Grade 0
Heel shin	Grade 1	Grade 1
Score	11/40	8/40

Modified Ashworth scale

Grade 1+(1)- Before treatment

Grade – 1 After Treatment

CONCLUSION

Hereditary Spastic Paraplegia with ataxia is a rare, chronic, progressive neurodegenerative disorder with limited disease-modifying treatment options. This case demonstrates that an individualised Ayurvedic treatment approach, incorporating internal medications and Panchakarma procedures alongside ongoing conventional (allopathic) management, contribute to symptomatic relief, improvement in gait, balance, and coordination, reduction in spasticity, enhanced functional independence, and an improved quality of life. Although the underlying genetic disorder cannot be reversed, this case underscores the importance of a multidisciplinary approach integrating conventional and Ayurvedic management to optimise functional outcomes and comprehensively address the patient's clinical manifestations.

Furthermore, this case highlights the significance of applying the fundamental principles of Ayurveda in understanding and managing disorders that are not explicitly described in the classical texts. As stated in the Ayurvedic classics, "Pratyakṣam hi alpam, analpam hi apratyakṣam," implying that what is directly described is limited, whereas what remains undescribed is vast. Thus, adherence to the fundamental principles of Shastra enables clinicians to interpret and manage such previously undescribed disorders within the Ayurvedic framework.

DECLARATIONS

Patient consent

The authors certify that they have obtained appropriate patient consent for the publication of the patient's clinical details and images in the journal. The patient understands that their name and initials will not be published and that reasonable efforts will be made to protect their identity; however, complete anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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