

Role of Ayurveda in the management of Cerebellar Ataxia as Sarvangavata - A Case Report

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Background: Cerebellar Ataxia is a heterogenous group of autosomal disorder characterized by uncoordinated muscle movements with loss of balance mainly due to lesions in cerebellum. Cerebellar ataxia can be inherited or acquired. Inherited Cerebellar Ataxia may be present at birth or manifest later as autosomal dominant or recessive. There is no definitive cure for the disease. With limited options available in other system of medicine, Ayurveda line of treatment may be helpful in managing the condition.

Case report: A female patient aged 25 years known case of Autosomal Recessive Cerebellar Ataxia visited Kayachikitsa Outpatient Department, Sushruta Ayurvedic Medical College and Hospital, Bengaluru with complaints of difficulty in standing, walking, weakness in both lower limbs since 10 years. After assessment of patient, considered as Matsulunga Kshayajanya Sarvangavata. Vatavyadhi (~diseases caused due to vitiated Vata) line of Chikitsa was adopted such as Sarvanga Abhyanga (~full body massage with medicated oil), Sweda (~sudation with medicated liquid), Kala Basti (~course of 16 therapeutic enemas) and Shamanoushadhis (~palliative medicines).

Results: Patient got significant improvement in her strength and gait improved. Change in SARA Scale was also observed.

Conclusion: This case study shows that Autosomal Recessive (AR) Ataxia can be managed through Ayurveda line of treatment in the way of improving the strength and quality of their living.

Keywords: Cerebellar Ataxia, Matsulunga Kshaya, Vatavyadhi

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Introduction

The word Ataxia is derived from Greek word "A-Taxia", 'A'-lack/absence and 'Taxia'- coordination, which means lack of order or coordination. Ataxia is a neurological sign that manifests as lack of coordination in the movement of different muscles in the body.

Cerebellar Ataxia[1] is an uncoordinated muscle movements with loss of balance mainly due to lesions in the cerebellum.

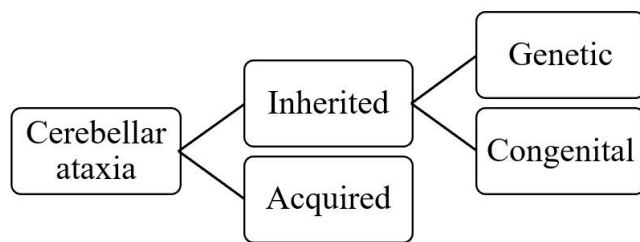


Figure 1:

Causes can be Inherited and acquired explained in Fig 1. Inherited forms may present at birth or manifests later. It may be Autosomal recessive or Autosomal dominant. Acquired causes includes Infection- bacterial or viral, Tumors, Trauma, Stroke, Auto immunity, Toxins like mercury, thallium, toluene, Drug induced - Lithium, Phenytoin, Calcineurin inhibitors, Thyroid disorders includes - Hypothyroidism and Hypoparathyroidism, Nutritional causes- Vitamin B12 and E deficiency, Alcohol intoxication. Symptoms of Cerebellar Ataxia includes Ataxic gait, Nystagmus, Dysmetria, Dysdiadochokinesia, involuntary-rhythmic tremors, positive Rebound phenomenon, Hypotonia, Dysarthria. There is no proven therapy for SCA. Aims of management often includes to identify treatable disease entities, to reduce hypotonicity-dysmetria-dysdiadochokinesia, to improve muscle strength and increase ROM, to prevent secondary complications.

Case Report

A 25 year aged female patient came with the complaints of weakness in both lower limbs and difficulty in walking since 10 years.

History of Present illness

Patient was apparently asymptomatic before 15 years. She was having left eye squint since birth, but was fine with her vision initially,

Underwent Squint eye surgery which was organized by her school with the support of NGO. Squint eye was not resolved after surgery also, she used to get pain and occasional blurring of vision and whenever she focuses on one object or while focusing on board. After finishing her high school (10th std) she started to notice weakness of her left leg occasionally and she neglected and didn't informed anyone about that. Within the duration of 2 years she gradually started to notice same kind of weakness in her right leg initially she neglected but later led to difficulty in walking and was seeking for others help to walk. Later as the weakness increased, she visited nearby hospital and was prescribed with some medications, but she was not taking any of those. From there she was referred to Nimhan's Hospital in 2019. At first visit, she was advised for some relevant investigations and to revisit with the reports (was not prescribed with any medicines). Again, they revisited with the reports, then she was diagnosed as "AR Ataxia". She was prescribed with medications for 2 months but found no improvements, so she discontinued the treatment on her own. Later she took physiotherapy and acupuncture for 7 days during January 2024 found mild improvement. Later she visited Ayurvedic clinic in her hometown and took treatment for 15 days but found no improvements. Again, the complaints aggravated, hence she visited SAMC & H and got admitted for further management.

Past history

- K/C/O Primary optic neuropathy
- H/O Typhoid before 3 years.

Treatment history

- H/O squint eye surgery - left eye before 15 years.

Family history

- H/O similar complaints in 2 of her relatives from her paternal side

Personal history

- Ahara - Mixed type
- Mala Pravrutti - irregular-2 times/day
- Mutra pravrutti - 4-5 times/day and 1/night
- Nidra - sound
- Abhyasa - NS
- Vyasana - NS

Clinical findings

- Built - moderately built
- Nourishment - moderately nourished
- Wt - 53kg, Ht - 129cm, BMI - 31.8
- Pallor - Absent
- Icterus - Absent
- Clubbing - Absent
- Cyanosis - Absent
- Lymphadenopathy - Absent
- Edema - Absent

Ashtavidha Pareeksha

- *Nadi* (~pulse) - *Vata-Pittanubandha*
- *Mala* (~bowel habits) - Irregular
- *Mutra* (~urination) - *Prakruta*
- *Jihwa* (~tongue) - *Alipta*
- *Shabda* (~voice) - *Prakruta*
- *Drik* (~vision) - blurred vision, Nystagmus+
- *Sparsha* (~touch) - *Anushna Sheeta*
- *Akriti* (~ body built) - *Madhyama*

Dashavidha Pareeksha

- *Prakruti* - *Vata Pittanubandha*
- *Vikriti* - *Vata Kapahaja*
- *Sara* - *Madhyama*
- *Samhanana* - *Madhyama*
- *Pramana* - *Madhyama*
- *Sathmya* - *Katu Rasa Pradahana Sarvarasa*
- *Satwa* - *Madhyama*
- *Aharashakti* - *Madhyama*
- *Vyayamashakti* - *Avara*
- *Vaya* - *Bala*

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 - Intact
- Conscious and well oriented to time, place, person.
- Cranial nerves examination:
- CN-3,4,6 - Squint of left eye+
- B/L Nystagmus +
- Sensory examination - Touch, Pain, Pressure - Intact

Table 1: Motor system examination.

	UL			LL		
	Right		Left	Right		Left
Bulk	Mid arm circm.	27.5 cm	27.5 cm	Mid thigh circm.	52cm	54 cm
	Mid fore arm circm.	18.5 cm	18.5 cm	Mid calf circm.	27cm	29 cm
Power	5/5		4/5	5/5		4/5
Tone	Normotone		Normotone	Normotone		Normotone
Reflexes	Biceps	++	++	Knee	+	+
	Triceps	++	++	Ankle	+	+
Co-ordination test	<ul style="list-style-type: none">Finger - nose testFinger - finger testHeel shin testDysdiadochokinesia-Tandem walkingRomberg's test		<ul style="list-style-type: none">Co-ordination presentCo-ordination present but slowno co-ordination in left legnormal in hands but tapping feet on floor was slowunable to dopositive			
SARA Scale	16/40					

Gait: Ataxic gait

Investigations:

Genetic testing - Autosomal Recessive Cerebellar Ataxia.

Materials and Methods

Source of data:

Patient suffering with Cerebellar Ataxia is selected from IPD of Sushruta Ayurvedic medical college and Hospital Bangalore.

Study design: A Single Case Study

Differential diagnosis:

Table 2: Vyavachedaka Nidana

Disease	Inclusion Criteria	Exclusion Criteria
Ardita	Vaksangha,	Mukha Vakraata, Netra-Bhru Sthabdhatta
Ardhanaga Vata	Vaksangha, Durbalata in Bahu, Janu and Pada.	Mukha Vakraata, Netra-Bhru Sthabdhatta and involvement of half side of the body
Pranavruta Vata	Karma Kshaya, Balakshaya.	Smritinasha
Matsulunga Kshaya Janya Sarvanga Vata	Vaksangha, Durbalata, Karma and Balakshaya	

Table 3: Differential diagnosis

Disease	Inclusion Criteria	Exclusion Criteria
Hashimoto's encephalopathy	Neurological deficits, ataxia,	Varying levels of antithyroid antibodies.
Gluten ataxia	Loss of balance and uncoordinated movements	Auto immune response to gluten, Slurred speech
Chronic alcohol abuse	Ataxia, dysarthria	Cause
Ataxia telangiectasia	Ataxia, ocular apraxia	Telangiectasia on skin, chorea
Chronic Vit-E deficiency	Dysarthria, ataxia	Absence of reflexes in LL
Cerebellar Ataxia	Ataxia, Dysarthria, Ptosis, Slurred speech	

Diagnosis:

- Autosomal Recessive Cerebellar Ataxia
- Matsulunga Kshaya Janya Sarvanga Vata*

Timeline and therapeutic intervention:

Therapeutic intervention including oral medications is detailed in Fig. 2 and Table 4.

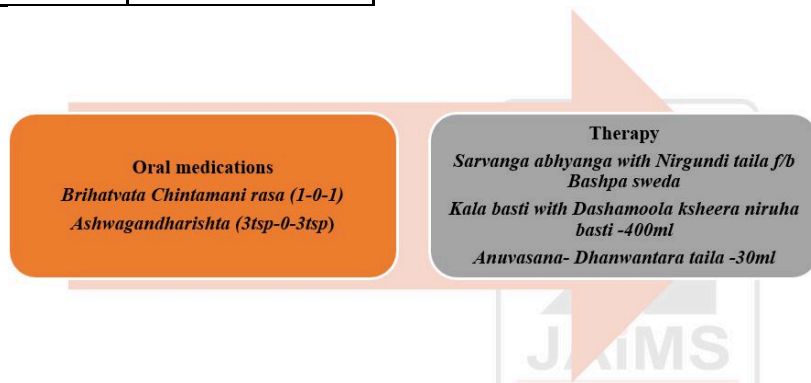


Figure 2:

Table 4:

Date	Therapy	Intervention	Observation
18/06/2024	Shamanoushadhis	Brihatvata Chintamani Rasa (1-0-1) Ashwagandharishta (3tsp-0-3tsp)	All symptoms still persist
19/06/2024 to 20/06/2024	<ul style="list-style-type: none"> Shamanoushadhis Sarvanga Abhyanga f/b Bashpa Sweda 	Brihatvata Chintamani Rasa (1-0-1) Ashwagandharishta (3tsp-0-3tsp) <ul style="list-style-type: none"> Abhyanga with Nirgundi Taila 	All symptoms still persist Pt. feels better after Abhyanga
21/06/2024	<ul style="list-style-type: none"> Shamanoushadhis Kala Basti 	<ul style="list-style-type: none"> Brihatvata Chintamani Rasa (1-0-1) Ashwagandharishta (3tsp-0-3tsp) Anuvasana - Dhanwantara Taila - 30ml @ 9.30 am 	Anuvasana Dravya Pratyagamana Kala - 12.40 pm
22/06/2024	<ul style="list-style-type: none"> Shamanoushadhis Kala Basti 	<ul style="list-style-type: none"> Brihatvata Chintamani Rasa (1-0-1) Ashwagandharishta (3tsp-0-3tsp) Niruha - Dashamoola Ksheera Basti - 400ml @9.30am Anuvasana - Dhanwantara Taila - 30ml @ 3.50 pm 	c/o mild abdominal pain Niruha Pratyagamana Kala- 9.50am (Passed motion 9 times after Niruha) Anuvasana Pratyagamana Kala - 5.10pm

Date	Therapy	Intervention	Observation
23/06/2024	<ul style="list-style-type: none"> Shamanoushadhis Kala Basti 	<ul style="list-style-type: none"> Brihatvata Chintamani Rasa (1-0-1) Ashwagandharishta (3tsp-0-3tsp) Niruha-Dashamoola Ksheera Basti - 400ml @9.00am Anuvasana - Dhanwantara Taila - 30ml @ 3.40 pm 	c/o weakness Niruha Pratyagamana Kala- 9.10am (Passed motion 8 times after Niruha) Anuvasana Pratyagamana Kala - 5.00pm
24/06/2024	<ul style="list-style-type: none"> Shamanoushadhis Kala Basti 	<ul style="list-style-type: none"> Brihat Vata Chintamani Rasa (1-0-1) Ashwagandharishta (3tsp-0-3tsp) Niruha - Dashamoola Ksheera Basti - 400ml @8.50am Anuvasana - Dhanwantara Taila - 30ml @ 1.40 pm 	Niruha Pratyagamana Kala - 8.55am (Passed motion 4 times after Niruha) Anuvasana Pratyagamana Kala - 4.45pm
25/06/2024	<ul style="list-style-type: none"> Shamanoushadhis Kala Basti 	<ul style="list-style-type: none"> Brihat Vata Chintamani Rasa (1-0-1) Ashwagandharishta (3tsp-0-3tsp) Niruha-Dashamoola Ksheera Basti - 400ml @9.23am Anuvasana - Dhanwantara taila - 30ml @ 2.10 pm 	c/o mild weakness Niruha Pratyagamana Kala - 9.24am (Passed motion 5 times after Niruha) Anuvasana Pratyagamana Kala - 7.40pm
26/06/2024	<ul style="list-style-type: none"> Shamanoushadhis Kala Basti 	<ul style="list-style-type: none"> Brihat Vata Chintamani Rasa (1-0-1) Ashwagandharishta (3tsp-0-3tsp) Niruha-Dashamoola Ksheera Basti - 400ml @ 9.00 am Anuvasana - Dhanwantara Taila - 30ml @ 2.00 pm 	Niruha Pratyagamana Kala -9.03 am (Passed motion 5 times after Niruha) Anuvasana Pratyagamana Kala - 4.00 pm

Outcome:

After *Sarvanga Abhyanga* and *Sweda* patient felt better and replenished. Improvements were assessed based on clinical features and SARA score[2] before and after treatment. After the course of *Basti* patient was able to walk for short distance without support and leaning. No adverse events occurred during the treatment course.

Discharge advice:

- *Brihat Vata Chintamani Rasa*[3] (1-0-1)
- *Ashwagandharishta*[4] (3tsp-0-3tsp)
- *Aja Mamsa Rasayana*[5] (1tsp-0-0) with 1 glass of warm milk

Table 6: Scoring pattern SARA Scale before and after treatment.

SN	Examination	Score (before treatment)	Score (after treatment)
1.	Gait	4	3
2.	Stance	5	4
3.	Sitting	1	1
4.	Speech disturbance	0	0
5.	Finger chase	1	1
6.	Nose finger test	0	0
7.	Fast alternating hand movement	1	1
8.	Heel-shin slide	3	3

Assessment

Improvement of the patient was assessed using SARA Scale before beginning and after completion of the treatment. Marked improvement was observed as shown in Table 6:

Discussion

Cerebellar Ataxia is a neuro degenerative condition characterized by uncoordinated muscle movements & progressive loss of balance. There are so many *Anukta Vyadhis* as told by Acharya Charaka, there is no need to name each & every disease one should understand pathology & plan treatment accordingly. Based on presentation of disease, AR cerebellar ataxia can be considered as *Matsulunga Kshaya Janya Vata Vyadhi*. Treatment modalities were planned based on *Dosha Dhātu & Srotas* involved.

Ashwagandharishta is a fermented formulation which contains ingredients like *Ashwagandha*, *Manjishta*, *Haritaki*, *Haridra*, *Yashtimadhu*, *Rasna*, *Vidari*, *Arjuna Twak*, *Musta*, *Trivrut*, *Sariva Dwaya*, *Chandana Dwaya*, *Vacha*, *Trikatu*, *Chitraka*. *Ashwagandharishta* is *Balya*, *Rasayana*, *Vayasthapana*, *Hrudya*, *Deepana*, *Pachana*, *Anulomana* etc. It is mainly indicated in neurological and mental disorders. Studies on the formulation revealed that it contains powerful anti-oxidants and flavonoids and has been considered as Adaptogen.

It is a potent brain tonic and stimulator and declines oxidative stress thereby enhancing memory, reasoning and cognitive behaviour. This polyherbal formulation also improves the immune system and shielding body against the infections.

Brihat Vata Chintamani Rasa is a herbomineral preparation contains *Bhasma* of *Swarna*, *Roupya*, *Abhraka*, *Loha*, *Pravala*, *Mouktika* and *Rasa Sindhura*. Formulation is mainly *Rasayana* (~rejuvenative therapy), *Vatarogahara*, *Balya*, *Ayurvedhaka* etc., *Bhasma* in the form of nano particles is easier to pass Blood brain barrier, Gold nanoparticles have an effect on upregulation of anti-apoptotic proteins and down apoptotic proteins. Silver nanoparticles help in reduction of inflammatory response. Magnetic nanoparticles act as reactive oxygen species inducers and scavengers in brain cells. Calcium nanoparticles regulate the calcium channel and presynaptic plasticity in nerve cells. *Rasa Sindhura* suppresses the neurodegeneration by assisting in protein clearance.

Sarvanga Abhyanga with *Nirgundi Taila* followed by *Bashpa Sweda Niruha* with *Dashamoola Ksheera Niruha - Basti* is the main line of *Chikitsa* for *Vatavyadhi*. By giving *Basti* there will be both procedural effect and drug effect.

Since Gastro intestinal tract has its own nervous system called Enteric nervous system. *Basti* given through rectal route stimulate the nervous system and drug absorption depends on the physicochemical properties of the formulation. In rectum drugs may pass cell membranes by passive diffusion, facilitated passive diffusion and active transport. *Dashamoola* are the best *Vatahara Dravya*. In order to achieve both *Sroto Shodhana* (~cleansing of the channels) and *Brimhana* (~bulk promoting) action, *Dasamoola Ksheera Niruha Basti* was given.

Dhanwantaram Taila has multifaceted therapeutic application. *Dhanwantaram Taila* mainly indicated in all kinds *Vatavyadhi*. Majority of the ingredients are *Vatahara*, *Balya*, *Srotoshodhana*, *Brimhana* and *Rasayana* property.

Aja Mamsa Rasayana has been explained in *Sahasrayoga Parishishta Prakarana*, has indication in *Vatavyadhi*. Majority of the ingredients this formulation contains are *Vatarogahara*, *Balya*, *Rasayana*. Since *Ajamamsa* is nutrient dense and richest source of Thiamine, vitamin B6 and B12,

Phosphorous, iron and copper. Promotes muscle growth also. It is prepared using *Tila Taila* as base which acts as *Vatahara* and also increases the flexibility of muscles.

Conclusion

As it is not possible to name each and every disease ,as some diseases were not explained in our *Samhitas*, but our *Samhitakara* has explained the methodology of diagnosis and treatment of such *Anukta Vyadhi*. *Anukta Vyadhi* can be diagnosed based on proper textual knowledge and proper examination. Cerebellar ataxia can be considered as *Vyadhi* related to *Mastulunga*. Based on the cause of the disease, *Chikitsa* should be planned. Since no specific drug in allopathy that has been scientifically documented to improve cerebellar functions. We can attempt to manage the condition and to improve the quality of living of the patient.

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