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Case Report
Management of ALS

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Ayurvedic approach in the management of ALS (MND) - A Case Study

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Amyotrophic Lateral Sclerosis (ALS) is progressive motor neuron disease (MND) in which nuclei of upper & motor neurons in spinal cord, cranial nerve & motor cortex are involved. ALS also known as Lou Gehrig's Disease. The illness is relentlessly progressive in nature, leading to death by respiratory paralysis. There is an incidence of 1-3 per100000 & a prevalence of 3-5 per 100000. It exhibits muscle weakness, Fasciculation, Dysphagia, etc. leads to the complications as involvement of pyramidal signs. This disease affects normal rhythm of life ultimately results in the limitations of day-to-day routine. In this case study 50 years old male patient had symptoms of weakness in Lower extremities, Dysphagia, unable to stand without support, slurred speech. He diagnosed with Amyotrophic Lateral Sclerosis in 2022 at SSKM Hospital, Kolkata, West Bengal. He took treatment in various hospitals of Kolkata but he didn't get any relief. Then he came to our institute in the hope of proper management. The term ALS is not mentioned in our Samhita however we can clinically correlate the sign & symptoms of this disease with Avritta (~Occlusion) Pakshaghat (~Paralysis). After 3 months of treatment, patient was assessed clinically & with the help of ALSFRS -R Score. Before treatment it was 10 which was increased to 30, showing significant improvement also noticed in his various activities.

Keywords: Motor neuron disease, Pakshaghat, ALS, Avritta Vata

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Introduction

ALS is the most common progressive motor neuron disease. It is prime example of a neurodegenerative disease and is arguably the most devasting of the neurodegenerative disorder.**[1]** Most of the cases are sporadic but 10% cases are familial.**[2]** The prevalence of the disease is 4-5 per 100,000 population and in year 2016 alone it is estimated that 34,325 deaths occurred due to MND globally. **[3]** Motor neurons affected by degeneration typically shrink and accumulate lipofuscin, a pigmented substance that naturally builds up in cells as a part of the aging process. As the nerve supply to muscles deteriorates (a process known as denervation), the affected muscles gradually waste away. This muscle wasting, identifiable through clinical examination and muscle biopsies, is referred to as amyotrophy. In the lateral columns of the spinal cord, the loss of nerve fibres triggers the formation of fibrillary gliosis - a process where supporting glial cells multiply and form scar-like tissue. This scarring increases the firmness of the spinal cord, a condition known as lateral sclerosis. **[4]** There is only symptomatic treatment for this disease in modern science. No management protocol was given to prevent complication associated with the prognosis of this disease.

Pakshaghat, classified as a *Vatapradhan Vyadhi* in *Ayurveda,***[5]** refers to a condition where the human body becomes partially or completely paralyzed.**[6]** This disorder is closely linked to the functioning of *Pran Vayu* and *Vyan Vayu*, two vital subtypes of *Vata Dosha*. *Pran Vayu*, located in the *Shirpradesh* (~head region), governs vital life functions,**[7]** while *Vyan Vayu*, which moves throughout the entire body (*Kritsnadehachar*), controls all forms of physical movement.**[8]**

In cases of *Pranavritta Vyan*, where *Vyan Vayu* is obstructed or impaired, the observed symptoms share similarities with certain types of Motor Neuron Disease (MND). These symptoms include *Hata Paksha* (~paraparesis or paralysis), *Cheshta Nivritti* (~restricted voluntary movements), *Vakstambha* (~slurred speech), *Indriya Hani* (~loss of sensory and motor functions),**[9]** *Bala Nash* (~generalized weakness and reduced muscle strength), and *Smriti Nash* (~memory impairment).**[10]** Such symptoms closely resemble the multifocal onset of Amyotrophic Lateral Sclerosis (ALS).

Given these similarities, the *Chikitsa Sutra* (~treatment protocol) traditionally used for *Pakshaghat* & *Pranavritta Vyan* is applied in the Ayurvedic management of ALS.

Case Report

A 50 years old male patient came to the Kayachikitsa OPD on (20/02/24) with Bilateral upper limb weakness, Unable to walk without support, Slurred speech, Dysphagia, Difficulty in hearing (Right ear). The Patient was suffering from these complaints for last 2yrs. The patient had no past medical history reported, family history was not significant. He had no any addiction. Patient's occupation was Tailor and used to play football regularly in his college days. Bowel habit, appetite, other daily activities are normal.

Initially, the patient began complaining as lower limb weakness for nearly 4 months, which slowly progressed and worse day by day, leads to upper limb weakness, Dysphagia, Slurred speech, Hearing difficulty. Patient was taken to the hospital then various investigations were carried out. Nerve conduction study (09/09/22) shows abnormal Conduction in B/L Median & Rt Ulnar nerve with fragmented finding present. Study showing Amyotrophic Lateral Sclerosis [Image:1]. MRI brain (26/09/22) showed normal study. MRI Cervical spine (26/09/22) showed features of cervical spondylosis in the form of osteophytes and desiccated discs [Image:2]. In ABR (Auditory Brainstem Response) test (23/08/23) mild degree of hearing loss i.e. peak V could be traced up to dB nHL [Image:3]. Patient was on Tab. Riluzole 100mg. with physiotherapy &other supportive treatment in various hospitals but did not find any improvement.

Examination finding

On 20/02/2024, the patient was admitted to the Kayachikitsa Male Ward at IPGAE&R, Kolkata. The patient arrived at the In-Patient Department (IPD) with the assistance of relatives due to a spastic gait. He was unable to speak clearly, and the angle of his mouth was slightly deviated toward the right side. Additionally, he had difficulty understanding some commands due to hearing impairment and was unable to hold objects. A thorough systemic examination was conducted. In the respiratory system, the chest was clear on auscultation; however, patient experienced difficulty breathing.

In the cardiovascular system (CVS) examination, S1 and S2 heart sounds were audible and normal. Examination of the gastrointestinal (GI) system revealed abdominal distension due to gas. In Central nervous system (CNS) examination patient was conscious and well-oriented, except for his hearing difficulties.

During the cranial nerve examination, Cranial Nerves I (Olfactory), II (Optic), III (Oculomotor), IV (Trochlear), and VI (Abducens) were found to be normal. The Trigeminal Nerve (V) was affected, suggesting motor and/or sensory dysfunction. The Facial Nerve (VII) showed a right-sided deviation of the mouth. The Vestibulocochlear Nerve (VIII) was also impaired, causing hearing loss in the right ear. Further abnormalities were observed in the Glossopharyngeal (IX), Vagus (X), Accessory (XI), and Hypoglossal (XII) nerves, indicating multi-cranial nerve involvement. Overall, the patient presented with significant neurological and systemic symptoms, including motor dysfunction, cranial nerve deficits.

Reflexes

Table 1: DTR before treatment

Deep Reflexes[11]	0	1	2	3	4	5
Bicep Reflex				+		
Triceps Reflex				+		
Brachioradialis Reflex					+	
Quadricep Reflex					+	
Achillis Reflex				+		

Table 2: Superficial reflexes before treatment

Superficial Reflexes[11]	Findings
Corneal Reflex (Blink reflex)	Abnormal Blinking present
Abdominal Reflex	Absent
Cremaster reflex	Absent
Plantar reflex	Normal

Ashtavidha Pariksha

1. Nadi: VK
2. Mutra: Prakrit, 5-6times/day
3. Mala: Malabaddhata
4. Jivha: Ishat Saam with *Jadyata*
5. Shabda: Aspashta
6. Sparsha: Ishat Ushna
7. Drik: Prakrit
8. Akriti: Madhyam

On the basis of previous investigations, sign and symptoms, examination findings together confirmed that the diagnosis was Amyotrophic lateral sclerosis.

Therapeutic interventions

Treatment protocol mentioned in *Pakshaghat* & *Avritta Vata Chikitsa* was used in this case study. As per *Rogi Bala* (~Patient condition), *Vyadhi Bala* (~Disease condition) & *Ritu* (~season) *Mrudu Shodhan* (~Mild Purgation) was done followed by different *Panchakarma* with *Shaman Aushadhi* was given to patient. Followed by *Shodhan* & *Shaman Chikitsa* proper diet regimen given to patient includes light, warm & nutritious diet. Khichadi, soup of various vegies & meat, ghee, milk, fruits.

Table 3: Treatment Protocol

Date	Treatment	Used ingredients	Mode of action
23/02/24 to 01/03/24	Deepan-Pachan	1. Panchakola Churna: 3gm BDAC with lukewarm water 2. Musta + Shunthi phant: each 3gm in 50ml water.	Agnidipan and Aampachan
02/03/24 to 09/03/24	1. Aabhyantar Snehapana 2. Agnidipan	1. Bramhi Ghrit: [D1-30ml, D2-50ml, D3-70ml, D4-90, D5-110ml, D6-130ml, D7-150ml] 2. Trikatu Churna: 3gm. ODAC In morning	Nourish and strengthen the nervous system
10/03/24 to 12/03/24	Bahya Snehan Swedan	Snehan with Bala Taila & Box Swedan.	Improve circulation & nerve conductivity. Reduce spasticity, and relax muscles.
12/03/24	Virechana Karma	1. Trivritta Avaleha: 80gm 2. Triphala Kwath: 100ml	Total Vega: 19 Mild purgation can be considered to remove excess Vata from the system.
12/03/24 to 18/03/24	Samsarjan Krama[12]	Refer table no.: 4	
19/03/24 to 02/04/24	Niruha Basti (Kala Basti)	1. Anuvasan Basti with Balaguduchyadi Taila [Total 9]: (19th, 20th, 22nd, 24th, 26th, 28th,30th,1st, 2nd,) 2. Aasthapana Basti with Mustadi Yapan Basti [Total 6]: (21st,23rd,25th, 27th,29th,31st)	Pacify aggravated Vata and regulate bowel movements.

Date	Treatment	Used ingredients	Mode of action
03/04/24 to 14/04/24	Shirodhara & Shashtik Shali Pinda Sweda	Bala Ashwagandha Siddha Kshira	Strengthen muscles & reduce neurological deficits.
15/04/24 to 26/04/24	Paadabhyanga & Bruhan Nasya	Balaguduchyadi Taila 4 drops - for 3days (15/04-17/04/24) 8 drops - for 3days (18/04-20/04/24) 12drops - for 3days (21/04-23/04/24)	Enhance nerve function and address speech and hearing issues.
27/04/24 to 15/05/24	Shaman Chikitsa	1. Tab. Bruhatvatchintamani Ras: 250mg BDAC with honey 2. Syp. Balarishta: 30ml BDPC with lukewarm water 3. Tab. Bramhi Vati: 500mg BDPC 4. Pathyadi Churna: 5gm ODHS with LWW 5. Nasya 8 drops with Balagudyadi Taila	

Table 4: Samsarjan Krama

Day	Lunch	Dinner
1st day (12/03/24)	------	Laja
2nd day (13/03/24)	Mudya peya	Mudga Peya
3rd day (14/03/24)	Mudga Vilepi	Mudga Vilepi
4th day (15/03/24)	Alavan Mudga Yush	Lavanyukta Mudga Yush
5th day (16/03/24)	Alavan Mamsarasa	Lavan Yukta Mamsarsa
6th day (17/03/24)	Khichadi (Alavan)	Khichadi (Lavan Yukta)
7th day (18/03/24)	Veg full diet	Non veg full diet

Figure 1: Mustadi Yapan Basti

Figure 2: Shashtik Shali Pinda

Figure 3: Shashtik Shali Pinda Swedan

Figure 4: Nasya

Assessment Criteria

For the assessment of disease condition The Amyotrophic Lateral Sclerosis functional rating scale (ALSFRS)**[13]** was used. All 12 features of these rating scale monitored weakly & progress was noted on monthly basis.

Table 5: ALS FRS: Assessment Criteria

SN	Measures	Finding	Points
1.	Speech	Normal	4
		Detectable speech disturbance	3
		Intelligible with repeating	2
		Speech combined with nonvocal communication	1
		Loss of useful speech	0
2.	Salivation	Normal	4
		Slight but definite excess of saliva in mouth; may have nighttime drooling	3
		Moderately excessive saliva; may have minimal drooling	2
		Marked excess of saliva with some drooling	1
		Marked drooling; require constant tissue	0
3.	Swallowing	Normal	4
		Early eating problems; occasional choking	3
		Dietary consistency changes	2
		Needs supplemental tube feeding	1
		Exclusively parenteral or eternal feeding, NPO	0
4.	Handwriting	Normal	4
		Slow or sloppy; all words are legible	3
		Not all words are legible	2
		Able to grasp pen but unable to write	1
		Unable to grip pen	0
5.	Cutting food & handling utensils	No gastronomy/normal	4
		No gastronomy; somewhat slow and clumsy but no help required	3
		No gastronomy; somewhat slow & clumsy & slow; some help needed	2
		No gastronomy; food must be cut by someone but can still feed slowly	1
		No gastronomy; needs to be bed	0
		With gastronomy; normal	4
		With gastronomy; clumsy but able to perform with manipulations independently	3
		With gastronomy; some help needed with closures and fasteners	2
		With gastronomy; provides minimal assistance to caregiver	1
		With gastronomy; unable to perform any aspect of task	0
6.	Dressing & hygiene	Normal	4
		Independent and complete self-care with effort or decreased efficiency	3
		Intermittent assistance or substitute methods	2
		Needs attendant for self-care	1
		Total dependant	0
7.	Turning in bed & adjusting bed clothes	Normal	4
		Somewhat slow & clumsy but no help needed	3
		Can turn alone or adjust sheets but with great difficulty	2
		Can initiate but not turn or adjust sheets alone	1
		Helpless	0
8.	Walking	Normal	4
		Early ambulance difficulties	3
		Walks with assistance	2
		Non ambulatory functional movement only	1
		No purposeful leg movement	0
9.	Climbing stairs	Normal	4
		Slow	3
		Mild unsteadiness or fatigue	2
		Need assistance	1
		Cannot do	0
10.	Breathing	Normal	4
		Shortness of breath with minimal exertion (walking, talking, etc.)	3
		Shortness of breath at rest	2
		Intermittent (e.g. nocturnal) ventilatory assistance required	1
		Ventilatory dependent	0

Follow-up and outcomes:

The Patient was admitted in hospital so he was under observation. As therapy schedule was working patients' assessment done weekly. Patient was doing well with help of treatment plan. After 2 months of discharge patient was not in contact for assessment of further progress & patient condition.

Table 6: Assessment outcomes

SN	Measures	BT	Midpoint	AT
1.	Speech	2	2	3
2.	Salivation	2	3	4
3.	Swallowing	2	2	3
4.	Handwriting	0	1	2
5.	Cutting food & handling utensils	1+0	2+1	3+2
6.	Dressing & personal hygiene	0	1	2
7.	Adjusting bed clothes	0	1	2
8.	Walking	1	2	3
9.	Climbing stairs	0	1	2
10.	Breathing	2	3	4
	Total	10	19	30

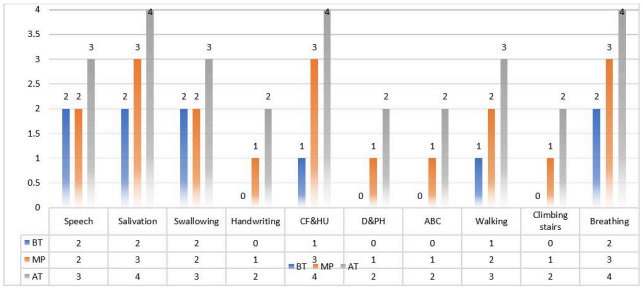
Improvement in Reflexes

Table 7: DTR after treatment

Reflexes	0	1	2	3	4	5
Bicep Reflex			+			
Brachioradialis Reflex			+			
Triceps reflex			+			
Quadriceps Reflex				+		
Achillis Reflex				+		

Table 8: Superficial reflexes after treatment

Superficial Reflexes	Findings
Corneal Reflex (Blink reflex)	Normal
Abdominal Reflex	Contraction of muscle
Cremaster reflex	Contraction of muscle
Plantar reflex	Normal



Discussion

ALS can be corelated with *Vatavyadhi* and *Pran Arita Vyan* due to its similar sign and symptoms and, primarily caused by an aggravated *Vata Dosha*.

Vata Dosha governs movement, nerve impulses, and communication between the body and mind. An imbalance in *Vata* leads to dryness, emaciation, loss of function, and neuromuscular dysfunction. Ayurvedic treatment aims to pacify *Vata*, nourish depleted tissues, and restore balance to the body's fundamental energies *(Doshas).*

In ALS, the degeneration of motor neurons mirrors the dysfunction seen in *Pranavritta Vyana*, where nerve signalling and muscular movement are disrupted. Ayurvedic therapies target restoring *Vyana Vayu's* harmony by promoting optimal nerve conduction, circulation, and muscular strength. Management focuses on improving the flow of *Prana* and *Vyana Vayu* to reduce stagnation and restore proper neuromuscular function. Principal treatment protocol for *Avritta vata* with *Pakshaghat* are followed here for the management of ALS. In this case we followed *Snehan & Swedan* followed by *Shodhan* (~Purgation), *Basti* (~Medicated Enema), *Nitya Virechana* (~Daily mild purgation). *Nasya* (~Nasal instillation), *Shirodhara.* For *Aabhyantar Snehapana Bramhi Ghrit*[14] was used, containing *Bramhi* (*Bacopa monnieri*), *Trikatu, Trivritta* (*Operculina terpethum*), *Shankhapushi* (*Clitorea ternatea*) & other herbs probably helps to enhance intellectual power & memory. It is also useful to minimize aggressive behaviour, improvement in mental peace.

Bahya Snehan (~External olation) with *Bala Tail* & *Swedan* (~sudation) helps to improve muscle tone, reduces spasticity of muscle. *Mustadiyapan Basti*[15] contains *Musta* (~*Cyprus rotundus*), *Bala* (~*Sida cordifolia*), *Gokshura* (~*Tribulus terrestris*), *Manjishtha* (~*Rubia cordifolia*) other 25 herbs having rejuvenating power, helps to improve digestion, strengthen body, restrict muscle deterioration.

Shirodhara[16] with *Bala Ashwagandha Kshir* having ability to regulate the autonomic nervous system, enhance blood circulation to the brain, and reduce oxidative stress. It helps in calming the mind, improving neuroplasticity, and balancing *Vata Dosha*. *Shirodhara* stimulates the hypothalamus, regulating hormonal responses and promoting deep relaxation, which can alleviate stress and improve the quality of sleep in ALS patients. *Shastikshali Pinda Swedan*[17] promotes deep tissue nourishment, strengthens muscles, and improves neuromuscular coordination.

In this case, it helps to alleviate muscle stiffness, weakness, and degeneration. It also enhances blood flow, supports cellular repair, and reduces *Vata Dosha*, thereby improved motor function and overall muscle health. *Nasya*[16] works by directly stimulating the olfactory and trigeminal nerves, which have connections to the brain. This therapy enhances cerebral circulation, improves oxygenation, and helps to strengthen the nervous system. In this case *Nasya* may provide neuroprotective effects, reduce inflammation, and support cognitive and helps in motor functions.

Brihat Vata Chintamani Ras[18] is a classical Ayurvedic formulation includes *Suvarna, Rajat, Abhrak, Loha, Mukta, Praval* which are known for its rejuvenating and neuroprotective properties. This compound, which contains purified minerals and herbs, helps in strengthening the nervous system, improving motor coordination, and enhancing nerve conductivity, it may support neuronal function and slow the progression of muscular atrophy.

Pathya Apathya plays major role in the management of *Vatavyadhi*. Emphasis on a *Vata*-pacifying diet which includes warm, unctuous (oily), easily digestible, and nourishing foods. Inclusion of healthy fats like ghee and sesame oil, which provide lubrication and support neuromuscular integrity. Consumption of nutrient-rich soups, stews, and cooked grains to nourish weakened tissues. Avoiding *Vata* aggravating foods, such as dry, cold, raw, processed, and excessively light items. Herbal infusions with digestive spices (ginger, cumin, fennel) were helps to enhance absorption and metabolic function.

Conclusion

Ayurvedic management of ALS is a holistic approach focused on balancing *Vata Dosha*, nourishing nervous system, and enhancing patient's quality of life. *Vatavyadhi* is *Yapya* in nature, though not a complete cure, Ayurvedic therapies may offer supportive care by addressing muscle degeneration, nerve function, and overall well-being. Understanding correlation between *Pranavritta Vyana* and ALS allows Ayurvedic practitioners to provide targeted therapies that enhance nerve function and circulation. Further scientific studies and clinical trials are necessary to validate efficacy and safety of Ayurvedic interventions in ALS care.

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