Evaluation Of Motor Function in Ayurvedic Management of Pakshaghata (Paraplegia): A Single Case Study

Dr J. A. N. Sandamali[1], Dr. H.K.B.M.S. Karunaratne[2]
[1]*MD schooler, Post Graduate Institute of Indigenous Medicine, University of Colombo, Sri Lanka*
[2]*Senior Lecturer Grade 1, Department of Chikitsa, Gampaha Wickramarachchi University of Indigenous Medicine, Yakkala, Sri Lanka*

***Abstract*—Paralysis results from an interruption in neural pathways that leads to impaired or absent voluntary muscle movement. In Ayurvedic literature, this condition is understood as Pakshāghāta, a severe manifestation of Vāta imbalance affecting sensory–motor coordination. The present case study evaluates the outcome of a comprehensive Ayurvedic treatment strategy in a 65-year-old female presenting with right-sided monoplegia. Over a 30-day period, the patient received a combination of internal herbal medicines and external Panchakarma-based interventions, including Snehana, Swedana, and Basti. Motor performance and functional status were assessed systematically using standardized neurological scoring systems. Marked improvements were noted throughout the treatment duration, particularly in limb strength, range of motion, and trunk stability. Progressive enhancement in motor scores suggested better neuromuscular integration and reduction in symptoms such as stiffness and heaviness. The therapeutic plan appeared to support circulation, muscle nourishment, and restoration of Vāta equilibrium, contributing to improved functional mobility by the end of the intervention. This case highlights the potential value of integrated Ayurvedic management in promoting motor recovery in Pakshāghāta-related paralysis. Larger, controlled studies are required to further validate the effectiveness and reproducibility of these treatment outcomes.**

***Index Terms*—Pakshāghāta, Ardhanghagata, Paraplegia**

I. INTRODUCTION

Paralysis refers to the loss or marked reduction of voluntary muscle activity resulting from disruption of motor pathways connecting the central nervous system to peripheral musculature. It may present as complete or partial impairment of motor or sensory functions in a specific region of the body. Based on the distribution of deficits, paralysis is categorized into monoplegia, hemiplegia, paraplegia and quadriplegia, with monoplegia specifically describing paralysis confined to a single limb. The etiological factors associated with paralysis are commonly divided into modifiable and non-modifiable groups. Non-modifiable risks include age, sex, ethnicity, race, hereditary stroke tendency, migraine history, and fibromuscular dysplasia. Modifiable contributors consist of hypertension, diabetes mellitus, cardiac disorders, dyslipidemia, carotid artery disease, obesity, and behavioral elements such as alcohol overuse, smoking, illicit drug use, and inadequate physical activity. [5] [6].

In the Ayurvedic framework, paralysis is identified as Pakshaghata or Pakshavadha, classified under Vata Vyadhi and listed among the eight major disorders (Ashta Mahagada). Classical texts outline a broad spectrum of causative factors (Nidanas), which are grouped into categories such as Aaharaja (diet-related), Viharaja (lifestyle-related), Aagantuja (traumatic), Manasika (psychological), Kalaja (seasonal and diurnal influences), Nidanarthakara (secondary to other diseases), and Vaidyakrita (iatrogenic). Dietary factors implicated include insufficient food intake, consumption of excessively light or fasting regimens, skipping meals, improper food timing, eating before full digestion of prior meals, heavy or bowel-binding foods, dried meat, dried vegetables, and food intake during indigestion. Lifestyle-related causes outlined in the classics encompass behaviors such as excessive physical exertion, long-distance walking, strenuous exercise, over-reading, inadequate sleep, sleeping or sitting in uncomfortable postures, suppression of natural urges, day-sleeping, carrying heavy weights, swimming,

running for prolonged periods, and overuse of vehicles or animals for transportation. [5].

Trauma-related factors (Aagantuja Nidana) include direct injuries, falls from heights, impacts from heavy objects, accidents involving animals or vehicles, and injuries to vital Marma points. Psychological triggers (Manasika Nidana) such as stress, grief, anger, fear, excessive desire, and irregular control of natural urges are also described as precipitating factors. Seasonal and time-related influences (Kalaja Nidana) include exposure to cold winds, end of seasonal cycles such as summer and winter, and specific times such as early morning, post-afternoon, or post-prandial periods. Conditions that arise secondary to other diseases, such as tissue depletion, chronic illness-induced emaciation, metabolic toxins (Ama), muscle wasting, and obstruction in physiological pathways, are grouped under Nidanarthakara causes. Additionally, iatrogenic causes (Vaidyakrita) include improper therapeutic interventions, excessive purificatory procedures, and over-administration of treatments leading to imbalance in bodily humors. [1] [2] [3].

In Ayurveda, Vata Dosha holds a central position in maintaining neurological integrity, as it governs all forms of movement and communication within the body. It is responsible for the transmission of nerve impulses, sensory and motor coordination, and the overall functioning of the nervous system. When Vata becomes disturbed or depleted, these regulatory mechanisms are compromised, leading to a wide spectrum of neurological disturbances. Such imbalance may manifest as disorders of the central or peripheral nervous system, impaired mental and cognitive functions, emotional instability, and various motor dysfunctions ranging from tremors to paralysis [7].

II. MATERIALA AND METHODOS

The single case study was conducted as a primary observational investigation over a period of 30 days. This case report focused on a 65-year-old female patient presenting with weakness and numbness in the left upper limb, consistent with monoplegia. All clinical examinations and investigations were performed, and Motor function assessments were carried out weekly using established clinical criteria to monitor the effects of the treatment. Data was systematically recorded in secure personal files to maintain confidentiality, and informed consent was obtained from both the patient and the hospital authorities. Weekly medical history and physical examinations were conducted using both Ayurvedic and modern clinical evaluation methods. Additionally, relevant information was obtained from authoritative Ayurvedic texts and from peer-reviewed journals accessed via Google Scholar, PubMed, ResearchGate, and ScienceDirect.

Case Report

1.Personal data
Age: 65 years old
Address: Kaduwela
Gender: Female
Religion: Buddhist
Marital Status: Married
Occupation: House wife

2. Chief Complaint: Weakness of both right upper limb and lower limb associated with numbness.

3. Other Complaint: Disturbed sleep after this weakness.

4. History of Chief Complaint: According to the patient suddenly occur
this condition before 1 months.

5. Past Illness:

- Hypertension: detected
- Diabetes Mellitus: not detected
- Ischemic Heart Diseases: not detected
- Hyperlipidemia: detected
- Epilepsy: not detected
- Head Injury: not detected
- Malignancy: not detected

6. Treatment History: She has taken allopathic treatments for this condition from government hospital, then after 1 months, she has admitted to National Ayurvedic Teaching Hospital Borella, Sri Lanka.

7.Family History: No family member has this condition.

8.Personal History:

- Diet: Normal diet, Prominent spicy foods
- Sleep: Disturbed sleep.
- Exercise: No special.
- Desha: Sadharana desha
- Habit and addiction: No special.

9.Examinations:
1.Ashta vida pariksha
Nadi – Gathi: 70 bpm
Yathi:Samantara
Akrithi:Purna
Sanhathi:Khatina
Muthra: day- 4/ night - 1
Mala: day- 1/ night – 0, constipated
Jiwha: Symmetrical and non-coated
Shabda: heart – normal
lungs – normal
Sparsha: Ralu, Ushna
Druk: normal vision
Akriti: symmetrical

2.Vital Examination
Temperature - 35 /C
Pulse – 70 bpm
Respiratory rate - 18 / min
Blood Pressure - 130/80 mmHg
Height - 150 cm
Weight - 55 kg

3. General / On examinations (OE)
Physical appearance – normal
Mental state – slightly depressed
Nourishment – normal
Abnormal smells – absent
Height – 150cm
Weight – 55kg
Skin – normal
Limbs – R UL & LL function loss
Lymph nodes – normal

4. Motor system examination according to Motricity Index
Table 01 described Motor system examination according to Motricity Index on admission.

Table 01: Motor system examination according to Motricity Index on admission.

Date		
Side Tested		
ARM To be conducted in sitting position		TEST 1 (Pinch grip) 0 = No movement 11 = Beginnings of prehension 19 =Grip cube but unable to hold against weak pull. 22=Grip cube, held against gravity but not against weak pull. 26=Grip cube against pull but weaker than other/normal side. 33=Normal pinch grip. TESTS 2-6 0=No movement 9=Palpable contraction in muscle but no movement. 14=Movement seen but not full range/not against gravity. 19=Full range against gravity, not against resistance. 25=Movements against resistance but weaker than other side. 33=Normal power
1. Pinch grip 2.5cm cube between thumb and forefinger	19	
2. Elbow flexion From 90º, voluntary contraction/ movement.	14	
3. Shoulder abduction From against chest	14	
LEG To be conducted in sitting position		
4. Ankle dorsiflexion From plantar flexed position	14	
5. Knee extension From 90º, voluntary contraction/ movement.	14	
6. Hip flexion. Usually from 90º	14	
ARM SCORE (1+2+3)	47	
LEG SCORE (4+5+6)	42	
SIDE SCORE (Arm + Leg)/2	44.5	
Trunk Control Test on the bed		
7. Rolling to weak side	0	TRUNK CONTROL TEST 0=Unable to do on own. 12=Able to do but only with non-muscular help (pulling on bedclothes, using arms to steady self when sitting, pulling up on monkey pole etc.) 25=Normal
8. Rolling to strong side	25	
9. Sitting up from lying down	0	
10. Balance in sitting position On side of bed	12	
TRUNK SCOREC (7+8+9+10)	37	

Treatment Protocol

The Ayurvedic management of paralysis (Pakshāghāta) primarily focuses on pacifying aggravated Vāta doṣa, which is responsible for impaired motor and sensory functions. Treatment includes external therapies such as Abhyanga with medicated oils and various forms of Swedana to improve circulation, reduce stiffness, and enhance neuromuscular activity. Panchakarma procedures, especially Basti therapy, play a central role in restoring nerve function and promoting motor recovery. Internal medications like Aśvagandhā, Bala, Guggulu preparations, and medicated ghṛtas are administered to strengthen muscles and support neuroregeneration. Dietary regulation, physiotherapy, and supportive lifestyle modifications are integrated to optimize functional improvement and long-term rehabilitation.

Treatment Protocol

Table 02 described treatment protocols within 30 days.

Table 2: Treatment protocol within 30 days.

Internal Drugs		
Duration	Drugs	Dosage
Kashaya (Decoction)		
6 days	Denibaadi kashaya	½ pata BD
7 days	Danadanayana shunti kashaya	½ pata BD
7 days	Danthimooladi kashaya	½ pata BD
10 days	Mashabaladi kashaya	½ pata BD
Vati (Pill)		
7 days	Seetharama vati	2 BD
14 days	Yogaraja vati	
7 days	Chandraprabha vati	2 BD
7 days	Vatagajendrasinghe vati	2 BD
Kalka		
14 days	Chandra kalka + Mahadalu anupanaya	2.5g + 15ml BD
Churna (Fine Powder)		
7 days	Datree churnaya	5g Nocte
14 days	Triphala churnaya	5g BD
21 days	Ashvagandha choornaya	5g BD

Table 03 described external treatment protocol within 30 days.

Table 03: External treatment protocol within 30 days.

Duration	Treatment
30 days	Nirgundi thaila 1oz apply for head
14 days	Vata viduranga thaila 1oz apply for UL, LL & nadi sweda
14 days	Kaluduru tippili lehaya mixed with bee honey applied on tongue.
7 days	Matra vasti – Narayana oil 60ml

III. OBSERVATIONS AND RESULTS

Within 30 days of total treatment protocol examination done weekly and motor examinations are listed at the following table.

Analysis of Motor system examination according to Motricity Index

Following table 06 describes Motor system examination according to Motricity Index by weekly.

Table 04: Motor system examination according to Motricity Index by weekly.

Duration	1st week	2nd week	3rd week	4th week
1. Pinch grip 2.5cm cube between thumb and forefinger	19	22	22	26
2. Elbow flexion From 90º, voluntary contraction/ movement.	14	19	25	25
3. Shoulder abduction From against chest	14	19	25	25
4. Ankle dorsiflexion From plantar flexed position	14	25	25	33
5. Knee extension From 90º, voluntary contraction/ movement.	14	25	25	33
6. Hip flexion. Usually from 90º	14	25	25	25
ARM Score (1+2+3)	47	60	72	76
LEG Score (4+5+6)	42	75	75	91
Side Score (Arm + Leg)/2	44.5	67.5	73.5	83.5
7. Rolling to weak side	0	12	25	25
8. Rolling to strong side	25	25	25	25
9. Sitting up from lying down	0	12	12	25

10. Balance in sitting position On side of bed	25	25	25	25
Trunk Scorec (7+8+9+10)	50	74	87	100

Test 1 (Pinch grip)
0 = No movement
11 = Beginnings of prehension
19 =Grip cube but unable to hold against weak pull.
22=Grip cube, held against gravity but not against weak pull.
26=Grip cube against pull but weaker than other/normal side.
33=Normal pinch grip.

Test 2-6
0=No movement
9=Palpable contraction in muscle but no movement.
14=Movement seen but not full range/not against gravity.
19=Full range against gravity, not against resistance.
25=Movements against resistance but weaker than other side.
33=Normal power

IV. TRUNK CONTROL TEST

0=Unable to do on own.
12=Able to do but only with non-muscular help (pulling on bedclothes, using arms to steady self when sitting, pulling up on monkey pole etc.)
25=Normal

The present case demonstrated a progressive improvement in motor function of the affected upper limb following a structured Ayurvedic treatment protocol. Pakshaghata is a Vata-dominant condition in which deranged Vata impairs normal movement, neuromuscular coordination, and sensory integration. Ayurvedic principles indicate that successful management requires both Vata-shamana and Vata-anulomana therapies, combined with strengthening and Rasayana measures for neural recovery.

In this case, early administration of Abhyanga and Swedana helped reduce rigidity and improved tissue compliance, making the limb more responsive to movement. These therapies reduce Rukshata and Stambha, which are major impediments to muscle activity in Vata Vyadhi. The transition into Basti Chikitsa, particularly the Niruha–Anuvasana sequence, played a key role in motor recovery. Basti is described as the most effective therapy for neurological disorders because it acts directly on the colon, the primary site of Vata, thereby restoring its normal function. Improvements documented during this period, such as increased limb mobility, better joint response, and improved voluntary movements, reflect the systemic influence of Basti on neuromuscular coordination.

Strengthening procedures in the third week provided nutritional support to muscles and enhanced local circulation. These therapies improve muscle tone, reduce sensory numbness, and promote nerve conduction. Internally administered Rasayana medicines served as neuro-restorative agents, supporting Dhatupushti and aiding long-term functional recovery. They may have contributed to the observed improvements in grip strength, fine motor control, and overall muscle power.

By the final week, consistent enhancement in motor power scores, increased range of motion, and improvement in daily activity performance suggest that the combined effect of Panchakarma therapies and specific neurological exercises promoted motor adaptation and neuroplasticity. The treatment approach aligns with classical Ayurvedic principles and modern rehabilitation concepts, showing that integrated therapeutic measures can significantly support functional recovery in paralysis.

Overall, the positive trend in motor improvement indicates that a multidisciplinary Ayurvedic regimen can effectively address the neuromuscular deficits of Pakshaghata and may serve as a supportive therapeutic option for paralysis management.

Snehana (oleation therapy) plays a fundamental role in the management of Pakshaghata, particularly when performed as Sarvanga Snehana using Vata-shamaka taila. This external oleation helps nourish the body tissues, reduce dryness, and strengthen weakened musculature of both upper and lower limbs. Abhyanga, a structured therapeutic oil massage, is especially valuable as it promotes muscle tone, improves circulation, and supports the pacification of aggravated Vata Dosha, which is considered the primary pathophysiological factor in paralysis [5].

Following oleation, Swedana (sudation therapy) especially Sarvanga Swedana with Dashamoola Kwatha—is administered to relieve stiffness, heaviness, coldness, and pain commonly present in Pakshaghata. The warm fomentation softens contracted muscles, enhances flexibility, reduces spasticity, and facilitates smoother movement of joints and tendons. When Snehana and Swedana are used in combination, they create a synergistic effect that effectively addresses deep-seated Vata imbalance and supports functional recovery in paralysis [5].

V. CONCLUSION

According to analyzed data, study show that this treatment protocol has provided better improvement subjected to Pakshagata (Ekangaghata/ Monoplegia). Within 26 days of treatment, 19 types of preparation of drugs were used as internal and external application including Kashaya (decoctions), vatee (Pill), kalka (Paste), churna (Powder), and taila (Oil). Externally carried out the 5 types of treatment procedures including Shirsha abhyanga using Triphala thaila, Hastha abhyanga using Vata viduranga thaila, Kaluduru tippili lehaya mixed with bee honey applied on tongue, Bebila kshira Kashaya vashpa sweda for face and finally, application of Gaslabu diyalabu pattuwa. Associated with these treatment procedures physiotherapy to be continuous respectively. After this treatment, motor and sensory function has been improved significantly and it is clinically predictable through this case study.

REFERENCE

[1] Buddhadasa, R., Ed., Susruta Samhita (Sinhala Translation), 2nd ed. Battaramulla, Sri Lanka: Education Publication Department, 2007.

[2] Buddhadasa, R., Ed., Ashtangha Hradaya Samhitha (Sinhala Translation), 2nd ed. Battaramulla, Sri Lanka: Education Publication Department, 2007.

[3] N. Dubey, R. Pandey, and A. C. Kar, “Critical analysis of etiology of Pakshaghata (stroke),” Journal of Ayurveda & Holistic Medicine, vol. 3, no. 3, pp. 37–40, 2015.

[4] J. N. Kornegay, “Monoparesis (monoplegia) and cranial mononeuropathy,” Peripheral/Cranial Nerve and Nerve Root Diseases, vol. 3, no. 3, pp. 356–362, 1991.

[5] Kumarasinghe, A., Ed., Charaka Samhitha (Sinhala Translation), 1st ed. Battaramulla, Sri Lanka: Education Publication Department, 1991.

[6] N. M. Menon, A. M. Adiga, and C. V. Rajashekhar, “Ayurvedic management of Pakshaghata with special reference to hemiplegia in terms of CVA of thrombotic origin—A single case report,” World Journal of Pharmaceutical and Life Sciences, vol. 8, no. 8, pp. 187–198, 2022.

[7] R. K. Shakula et al., “The Ayurvedic management of spastic paralysis w.s.r. Pakshaghata: A case report,” Journal of Ayurveda and Integrated Medical Sciences, vol. 9, no. 8, pp. 211–221.