WJPMR, 2026, 12(2), 288-294 Case Report Impact Factor: 6.842

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

ISSN (O): 2455-3301
ISSN (P): 3051-2557
Coden USA: WJPMBB

AN INSIGHT INTO THE EVALUATION OF CORRECTION OF MICRONUTRIENTS BY *VIRECHANOTTARA LASHUNA RASAYANA* IN THE MANAGEMENT OF *AVARANAJANYA PAKSHAGHATHA* W.R.T C.V.A. A CASE REPORT

Dr. Kedarnath J.*[1], Dr. Madhava Diggavi[2], Dr. Ramaling S. Hugar[3]

[1]Final Year PG Scholar, Department of Post Graduate Studies in Kayachikitsa, TGAMC & H, Ballari, Karnataka.
[2]Professor, Department of Post Graduate Studies in Kayachikitsa, TGAMC & H, Ballari, Karnataka.
[3]Assistant Professor, Department of Post Graduate Studies in Kayachikitsa, TGAMC &H, Ballari, Karnataka.

***Corresponding Author: Dr. Kedarnath J.**

Final Year PG Scholar, Department of Post Graduate Studies in Kayachikitsa, TGAMC & H, Ballari, Karnataka.

DOI: https://doi.org/10.5281/zenodo.18430741

How to cite this Article: Dr. Kedarnath J.*[1], Dr. Madhava Diggavi[2], Dr. Ramaling S. Hugar[3] (2026). AN INSIGHT INTO THE EVALUATION OF CORRECTION OF MICRONUTRIENTS BY VIRECHANOTTARA LASHUNA RASAYANA IN THE MANAGEMENT OF AVARANAJANYA PAKSHAGHATHA W.R.T C.V.A. A CASE REPORT. World Journal of Pharmaceutical and Medical Research, 12(2), 288–294.

Article Received on 21/12/2025 **Article Revised on 12/01/2026** **Article Published on 01/02/2026**

ABSTRACT

Pakshaghata is a *Vataja Nanatmaja Vikara* described in classics and is categorized under *Madhyama Rogamarga*. It can be correlated with stroke in modern medicine, which is an acute neurological condition caused by vascular pathology resulting in excerebral infarction or hemorrhage. Stroke is a major global health problem leading to high mortality and long-term disability. Although modern management includes anticoagulants, antiplatelets, thrombolytics, statins, and antihypertensive drugs, their prolonged use may result in adverse effects such as bleeding disorders, hypotension, arrhythmias, hepatotoxicity, renal damage, and hypersensitivity reactions. Hence, there is a need for safer and effective alternative approaches. The present study aims to evaluate the efficacy of *Virechanottara Lashuna Rasayana* in the management of *Avaranajanya Pakshaghata*. A 60-year-old male patient presented to the OPD of the Department of *Kayachikitsa*, Pandith Taranath Government Ayurvedic Medical College and Research Centre, Ballari, with complaints of *Balakshaya*, *Karmahani* of the right upper and lower limbs, *Vak krichrata*, *Sparshaghnatva*, bladder and bowel incontinence, and cognitive impairment. Based on clinical assessment, the condition was diagnosed as *Pakshaghata*. The patient was treated with *Virechana* followed by administration of *Lashuna Rasayana* along with supportive therapies such as *Shirotalam*. Assessment was done using subjective and objective parameters. Post-treatment results showed marked improvement in motor functions, sensory perception, bladder and bowel control, and cognitive abilities. The patient, who was initially wheelchair-bound, became able to stand without support. Objective parameters such as vitamin B12, zinc, and copper levels also showed improvement. Thus, *Virechanottara Lashuna Rasayana* along with *Shirotalam* was found to be effective in the management of *Pakshaghata* and may be considered a beneficial therapeutic modality in stroke rehabilitation.

KEYWORDS: *Pakshaghata*, *Virechana*, *Lashuna Rasayana*, *Shirotalam*, Stroke.

INTRODUCTION

A clipped-winged bird is unable to fly freely according to its will; similarly, a person afflicted with *Pakshaghata*[1,2,3] exhibits partial or complete loss of voluntary movements. These motor impairments may involve gross or fine movements and significantly affect the quality of life. *Pakshaghata* is one among the eighty *Nanatmaja Vata Vyadhis* described in classics and is considered a major *Vatika* disorder affecting locomotor and neurological functions. *Aharaja nidhana*[6] like *ruksha usna teekshna* and *viharaja nidana*[7] such as *avyayama*, *adhvagamana abhighata* contributes in forming samprapti of *Pakshaghata.*

The term *Paksha* denotes flank, side, half of the body, or *Shareerardham*, indicating involvement of one lateral half of the body. The word *Aghata* conveys meanings such as *Vadha* (destruction) and *Hanana* (impairment or loss), collectively signifying functional damage or loss of movement on one side of the body. Thus, *Pakshaghata*

represents a condition characterized by unilateral motor and sensory deficits due to derangement of *Vata Dosha*, often associated with *Kapha* or *Pitta* as *Anubandha Doshas*.

Clinically, *Pakshaghata* closely resembles stroke in modern medicine, which is a leading cause of long-term disability worldwide. Stroke commonly affects the elderly population, with the majority of cases occurring in individuals aged 65 years and above; however, nearly 10% of stroke cases are reported in individuals younger than 45 years.[4,5] Major risk factors include hypertension, heart diseases, diabetes mellitus, smoking, use of oral contraceptives, history of Transient ischemic attack, increased red blood cell count, and elevated blood cholesterol and lipid levels.

While managing *Pakshaghata*, assessment and correction of micronutrient status plays a crucial role, as Micronutrients form the biochemical foundation for development, maintenance, and proper functioning of the central nervous system. Deficiencies or imbalances in micronutrients such as vitamin B12, zinc, and copper can adversely affect neuronal conduction, myelination, synaptic transmission, and neuroplasticity, there by influencing recovery in post-stroke conditions.

In the present study, an attempt has been made to evaluate the functional improvement in a patient of *Pakshaghata* treated with *Virechanottara Lashuna Rasayana*, along with assessment of significant changes in selected bio-chemical markers. The study aims to explore the role of classical *Shodhana* and *Rasayana* therapy in restoring neurological function and improving quality of life, there by integrating classical principles with objective biomedical evaluation.

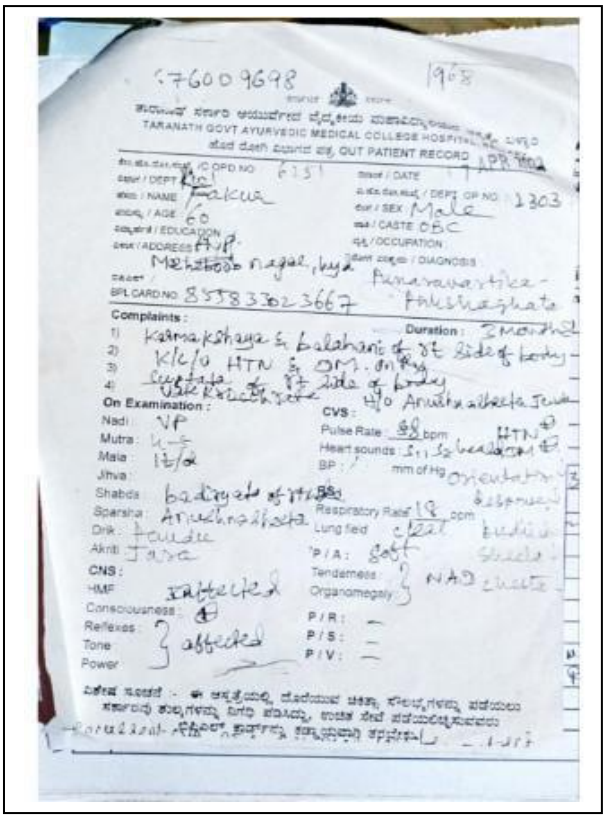
MATERIALS AND METHODS

Study Design

The present study was designed as a prospective interventional randomized controlled open-label study. The primary purpose of the study was management and evaluation of therapeutic efficacy. The total duration of treatment was 45 days, with a follow-up period of 15 days after the first visit.

CASE REPORT

A 60-year-old male patient attending the OPD of the Department of *Kayachikitsa* presented with complaints of *Balakshaya* and *Karmahani* of the right upper and lower limbs, *Vak krichrata*, *Sparshagnatva*, *Anushnasheeta jwara*, bladder and bowel incontinence, and loss of orientation with respect to time and place. Based on classical presentation, the condition was diagnosed as *Pakshaghata*.



CLINICAL EXAMINATION

A detailed general and neurological examination was carried out at baseline. The patient was conscious but not oriented to time and place. Higher mental functions were impaired, with evident cognitive dysfunction and loss of orientation. Speech examination revealed *Vak krichrata*, characterized by difficulty in articulation and reduced clarity of speech. Autonomic involvement was noted in the form of bladder and bowel incontinence.

Motor system examination revealed hypotonia in the affected limbs. Muscle power was assessed using the Medical Research Council (MRC) grading system. The right upper limb and right lower limb showed complete loss of voluntary movements with muscle power graded as 0/5. The contralateral limbs showed comparatively preserved motor function.

Deep tendon reflexes were exaggerated on the affected side, indicating upper motor neuron involvement. Biceps, triceps, supinator, and knee jerk reflexes were graded as 4+. Plantar reflex elicited an extensor response, with a positive Babinski sign graded as 4+.

Sensory examination revealed *Sparshaghnatva* on the affected side, indicating loss of tactile sensation. Coordination and gait assessment could not be performed as the patient was wheelchair-bound at the time of presentation.

INVESTIGATIONS

Baseline laboratory investigations were carried out to assess the patient's systemic and neurological status.

Biochemical parameters such as vitamin B12, zinc, and copper levels were evaluated before and after treatment to assess micronutrient status and therapeutic response.

INTERVENTION

The treatment protocol included *Shodhana* followed by *Shamana* therapy. Initially, *Shirotalam*[8] with *Karchooradi churna*[9] was administered for 7 days. This was followed by *Deepana Pachana* with *Agnitundi vati*[10] for 7days, *Snehapana*[11] with *Kalyanaka Ghrita*[12], given in increasing doses of 50 ml on the first day and 75 ml for the next three days, followed by an adequate *Vishramakala*.

Subsequently, *Sarvadaihika Abhyanga* was performed using *Brihat Saindhavadi taila*[13] for 45 minutes, followed by *Patra Pinda Sweda* for 10 minutes daily for 3 days. Thereafter, *Virechana*[14] *karma* was administered using *Nimbamrutadi Eranda taila*[15] (50 ml) along with 100 ml of *Ushna ksheera* as *Sahapana*. One cup of hot water was administered every 30 minutes during the procedure. A total of 12 *Vegas* were observed. This was followed by *Samsarjana krama* for 5 days. Later *kala basti* was administered for 15 days i.e, *bhrihathyadi Kashaya sidda niruha basti* and *Anuvasana basti* with *Panchatikthaka guggulu ghṛita.*

Post-*Shodhana*, *Lashuna Rasayana*[16] was administered orally in the form of *Lashuna* with *Navaneetha* (20 g) early morning on an empty stomach for 15 days. Additionally, *Brihatvatachintamani Rasa*[17] was administered in a dose of 1 tablet thrice daily with *Madhu* after food for 15 days. *Brahmi Ghrita*[18] was given in a dose of 20 ml twice daily on an empty stomach before food for the same duration.

SI no.	Date	Type of treatment	Drugs	Dose	Anupana	Duration
1.	18/4/23 to 24/4/23	*Deepana-pachana*	*Agnitundi vati*	1 BD	*Ushna jal*	7days
2.	18/4/23 to 24/4/23	*Shirotalam*	*Karchooradichurna*	-	-	7days
3.	25/4/23 to 28/4/23	*Snehapana*	*Kalyanaka Ghrita*	50ml on 1st day and 75 ml for next 3 days	Ushna jala as *sahapana*	4 days
4.	29/4/23 to 1/5/23	*Sarvanga abhyanga f/ b baspa sveda*	*Brihatsaindhavadi taila*	-	-	3days
5.	2/5/23	*Virechana karma*	*Nimbamrutadi Eranda taila*	-	*Ushna ksheera* as *Sahapana*.	1day
6.	3/5/23 to 7/5/23	*Samsarjana karma*	-	-	-	5days
7.	8/5/23 to 22/5/23	*Niruha basti*	*bhrihathyadi Kashaya*	500ml	-	6days
8.		*Anuvasana basti*	*Panchatitktahaka guggulu gritam*	80ml		9days
9.	23/5/23 to 6/6/23	*Rasayana yoga*	*Lashuna rasayan*	20gms	*Navaneeta*	15days
10.	23/5/23 to 6/6/23	*Rasayana yoga*	*Brihatvatachintamani Rasa*	1tid	*Madhu*	15days
11.	23/5/23 to 6/6/23	*Rasayana yoga*	*Brahmi Ghrita*	20ml	*Ushna jala*	15 days

Assessment Criteria

Assessment of treatment outcome was carried out using both subjective and objective parameters. Subjective parameters included improvement in motor function, sensory perception, speech, bladder and bowel control, and cognitive orientation. Objective assessment included neurological examination findings and changes in biochemical markers such as vitamin B12, zinc, and copper levels before and after treatment.

RESULTS

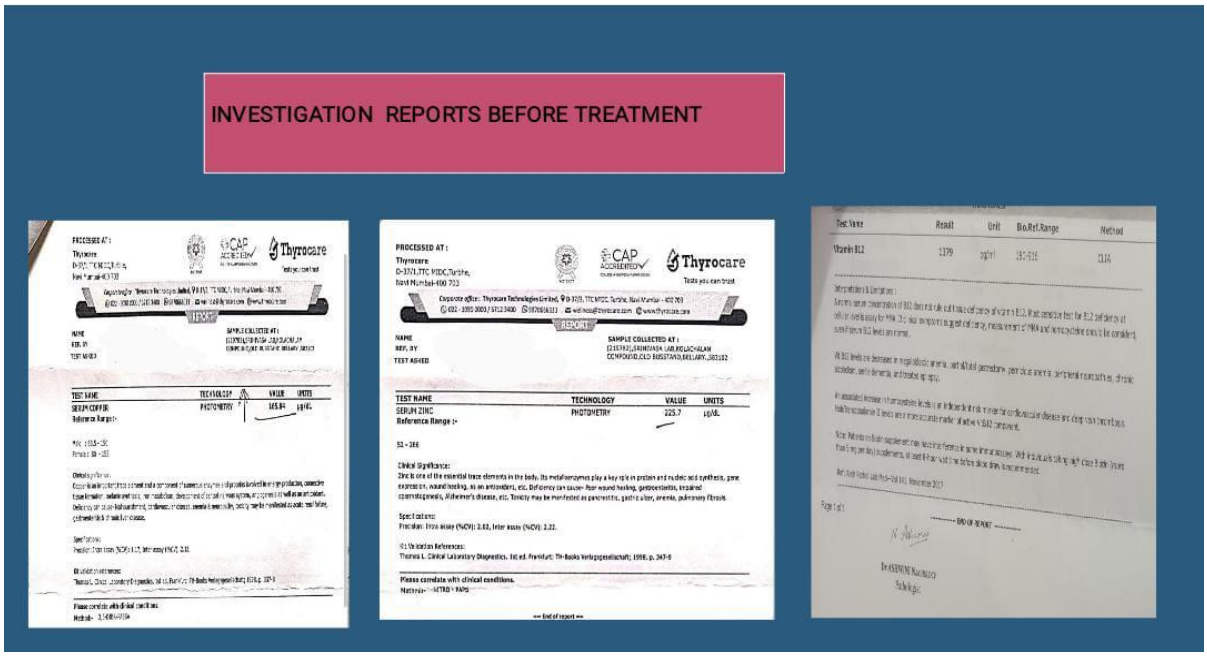
Table 1: Objective Parameters.

Table 1 shows changes in biochemical parameters before and after treatment. Post-treatment assessment revealed improvement in micronutrient levels, with vitamin B12, zinc, and copper values moving towards physiological limits, indicating correction of micronutrient imbalance in *Pakshaghata*.

Table 2: Subjective Parameters.

Table 2 depicts clinical improvement in subjective parameters. After treatment, the patient showed marked improvement in motor function(power improved from 0/5 to 4/5), sensory perception (*Sparsha*), bladder and bowel control, cognitive orientation, and complete relief from *Anushna sheeta jwara*.

Overall, both objective and subjective parameters showed 80% improvement following *Virechanottara Lashuna Rasayana* therapy in the management of *Pakshaghata*.



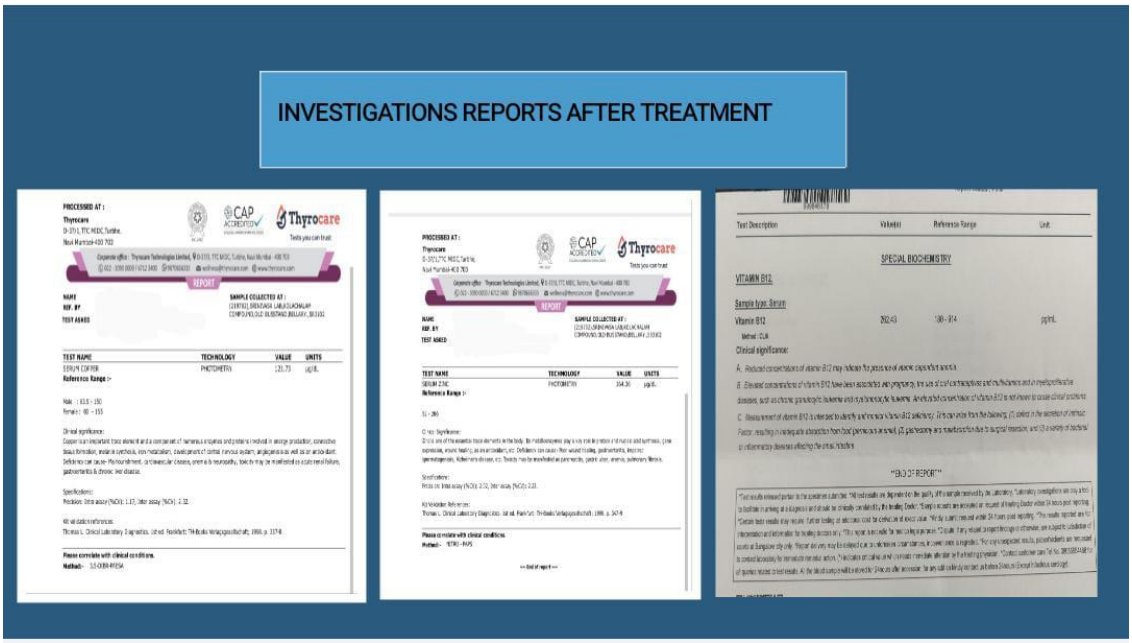


Table No. 1.

OBJECTIVE PARAMETERS	BEFORE TREATMENT	AFTER TREATMENT
VIT B12	1379	262.43
ZINC	225	164.36
COPPER	165.84	121.73

BEFORE TREATMENT	AFTER TREATMENT
Patient came on a wheel chair	Patient was able to stand without support
Sparsha is lost	*Sparsha* is achieved
Bladder and bowel incontinence	Bladder and bowel continence is achieved
Unable to identify family members	Able to identify family members
Anushna sheeta Jwara was present	*Anushna sheeta jwara* was relieved

DISCUSSION

The present study adopted a classical approach, emphasizing *Shodhana* followed by Rasaya*na,* in accordance with the pathophysiology of *Pakshaghata,* which involves *Vata* pradhana with *Kapha avarana.* The systematic protocol aimed to first remove the morbid *Doshas* and then restore normal physiological functions, providing a conducive environment for neuromuscular and cognitive recovery.

Shirotalam using *Karchooradi churna* was administered initially to pacify vitiated *Vata* and *Kapha* at the level of vertex of the skull. This therapy is known for its calming effect on the central nervous system, which helps improve cognitive functions, speech, and coordination. The local application of herbal paste over the scalp facilitates penetration of active constituents through the skin and promotes *Vata anulomana,* there by reducing stiffness, tremors, and neuromuscular disturbances associated with *Pakshaghata.*

Following *Shirotalam, Snehapana* with *Kalyanaka Ghrita* was employed. *Snehapana* softens morbid *Doshas,* facilitates their mobilization from peripheral tissues to the gastro-intestinal tract, and nourishes *Majja dhatu,* there by supporting neurological recovery. The *ghrita* base enhances penetration into subtle channels and provides nourishment to the nervous system. Adequate *Vishramakala* ensured proper digestion and assimilation of *Sneha,* which is critical for effective subsequent *Shodhana* therapy.

After *snehapana, Sarvadehika Abhyanga* with *Brihat Saindhavadi taila* was performed to alleviate *Vata* through its *Snigdha* and *Ushna* properties. *Abhyanga* improves circulation, reduces muscle rigidity, and enhances neuromuscular coordination. This was complemented by *Patra Pinda Sweda,* which relieves stiffness, improves muscle tone, and facilitates free movement of *Vata* by reducing Kapha-avarana. Together, these therapies restored flexibility, enhanced muscular function, and prepared the body for detoxification through *Virechana*.

Virechana karma was carried out using *Nimbamrutadi Eranda taila* with *Ushna Ksheera* as *Sahapana. Virechana* effectively expels *Pitta* and *Kapha Doshas,* indirectly normalizing *Vata,* while administration of warm milk and hot water ensured adequate *Vegas* and complete purification. Observation of 12 *Vegas* indicated proper *Shuddhi.* Post-procedure, *Samsarjana krama* was followed for five days to restore digestive strength and stabilize metabolic functions, which is essential to maintain the benefits of *Shodhana* and support recovery.

Brihatyadi Kashaya siddha Niruhabasti

Bṛihatyadi Kaṣhaya Siddha Niruha Basti, by virtue of its *Vatahara, Balya* and *Srotoshodhana* properties, effectively normalizes *Apana Vata,* strengthens pelvic sphincter musculature and restores neuromuscular co-ordination, there by playing a significant therapeutic role in the management of bladder and bowel incontinence.

Effect on Micronutrients in breaking stroke pathophysiology

Stroke pathophysiology involves a complex cascade of excitotoxicity, oxidative stress, neuroinflammation, blood–brain barrier disruption, and impaired cerebral autoregulation. Emerging evidence indicates that imbalance of trace elements and vitamin dysregulation significantly influence the severity and progression of ischemic brain injury. In this context, zinc, copper, and vitamin B12 play crucial roles in modulating neuronal damage and recovery mechanisms following stroke.

Zinc is an essential trace element involved in enzymatic activity, intracellular signaling, and neurotransmitter modulation. Under ischemic conditions, disruption of ionic homeostasis results in excessive synaptic release and intracellular accumulation of zinc within neurons, particularly in glutamatergic pathways. Elevated zinc levels potentiate NMDA receptor–mediated calcium influx, mitochondrial dysfunction, and activation of pro-inflammatory signaling cascades, thereby aggravating excitotoxic neuronal injury. Zinc-induced microglial activation further amplifies post-ischemic neuro-inflammation. However, physiological zinc levels exert neuroprotective effects by modulating NMDA receptor activity and limiting excessive glutamate release. Therefore, restoration of zinc homeostasis is essential in breaking excitotoxic and inflammatory pathways in stroke pathology.

Copper, a redox-active trace element, contributes to stroke pathophysiology when present in excessive concentrations. Elevated copper levels catalyze the generation of reactive oxygen species, leading to oxidative damage of lipids, proteins, and nucleic acids.

Copper-mediated activation of matrix metallo-proteinases, particularly MMP-2 and MMP-9, results in disruption of the blood–brain barrier, increased vascular permeability, cerebral edema, and secondary neuroinflammation. Additionally, excessive copper enhances glutamate-mediated excitotoxicity and intracellular calcium overload, both of which are hallmark mechanisms of ischemic neuronal death. Thus, dysregulated copper metabolism plays a significant role in amplifying oxidative, inflammatory, and vascular components of stroke pathology.

Vitamin B12 is essential for erythropoiesis, DNA synthesis, and homocysteine metabolism. However, excessive or dysregulated vitamin B12 levels may predispose individuals to ischemic stroke. Elevated vitamin B12 can stimulate excessive erythropoiesis, leading to increased blood viscosity and a higher risk of thrombus formation. Moreover, imbalance in vitamin B12 metabolism may impair homocysteine clearance, resulting in endothelial dysfunction, enhanced platelet aggregation, and increased thrombotic tendency. Abnormal vitamin B12 levels may also disrupt cerebral autoregulation, further increasing susceptibility to ischemic injury. Hence, maintenance of vitamin B12 homeostasis is critical for vascular integrity and neuronal protection.

From an classical perspective, stroke, described as *Pakshaghata*, is primarily caused by aggravated *Vata dosha*, often associated with *Avarana* and *Dhatu kshaya*, particularly involving *Majja dhatu* and *Rakta dhatu*. In this context, *Lashuna Rasayana* plays a significant role in interrupting stroke pathophysiology. Due to its *Snigdha*, *Ushna*, and *Teekshna guna*, *Lashuna* acts as a potent *Vata shamaka*, facilitates *Avarana bhedana*, and promotes *Dhatu poshana*. Its *Rasayana* property supports neuronal regeneration, neuromuscular coordination, and functional recovery.

Phytochemically, *Lashuna* contains sulfur-containing compounds such as allicin and diallyl sulfides, which exhibit antioxidant, anti-inflammatory, and metal-chelating activities. These compounds contribute to normalization of serum zinc and copper levels, thereby reducing oxidative stress, limiting excitotoxic neuronal injury, preserving blood–brain barrier integrity, and attenuating neuroinflammation. *Lashuna* also supports regulation of vitamin B12 metabolism and homocysteine balance, thereby improving vascular stability and cerebral microcirculation. Through these mechanisms, *Lashuna Rasayana* integrates trace-element modulation with *Vata shamana* and *Rasayana* effects.

Bṛihatvatachintamaṇi Rasa is chiefly indicated in neurological disorders where *Vata doṣha* predominance affects *Majja dhatu* and *Manovaha srotas*, leading to impaired cognition, motor dysfunction, and neurodegenerative changes such as *Pakṣhaghata*. Since *Vata* governs *pravṛtti* or neurological activity, its vitiation disrupts normal brain functions. *Suvarṇa Bhasma*, renowned for its *Medhya* and *Rasayana* properties, enhances memory, intellect, and learning, while modern evidence supports its antioxidant action and role in neuronal regeneration. *Abhraka Bhasma*, owing to its *Yogavahi* nature, improves bioavailability of the formulation and supports mitochondrial function essential for neuronal energy metabolism. *Rajata Bhasma* contributes to stabilization of mental functions and exerts a neuro-calming effect, whereas *Loha Bhasma* aids cerebral oxygenation and enzymatic processes vital for brain metabolism. *Mukta* and *Pravala Bhasma*, being rich in calcium, help maintain neuronal membrane stability and efficient synaptic transmission. *Rasa Sindura*, when properly prepared, acts as a potent *Rasayana*, facilitating cellular repair and synergistically enhancing the actions of other ingredients. As oxidative stress is a key pathogenic factor in neurological disorders, the collective antioxidant potential of this formulation protects neurons from free radical damage, preserves cellular integrity of various brain regions, and explains its efficacy as a nervine tonic and nootropic agent. Thus, *Bṛihatvatachintamaṇi Rasa* acts at the levels of *Doṣha*, *Dhatu*, and *Srotas*, providing both symptomatic relief and disease-modifying effects.

Brahmi Ghrita, containing *Medhya Rasayana* herbs such as *Brahmi*, *Guduchi*, and *Shankhapushpi*, improves memory, cognition, and higher mental functions, with the *ghrita* base facilitating transport across the blood–brain barrier.

Overall, the integrative application of *Shodhana*, *Abhyanga-Sweda*, *Virechana***,** and *Rasayana* therapies led to removal of *Avarana*, restoration of normal *Vata gati*, and significant improvement in neuromuscular co-ordination, cognitive functions, and speech. This structured therapeutic approach demonstrates the efficacy of classical interventions in managing *Pakshaghata*, supporting functional recovery through a combination of detoxification, nourishment, and neuroprotective therapies.

CONCLUSION

The present study highlights the therapeutic potential of *Lashuna Rasayana* in combination with *Brihatvatachintamani Rasa* and *Brahmi Ghrita* in the management of *Avaranajanya Pakshaghata***.** This integrative approach not only facilitated the restoration of normal *Vata gati* and neuromuscular functions but also demonstrated a beneficial effect on micronutrient regulation, particularly Copper, Zinc, and Vitamin B12**,** helping prevent the toxicities associated with their excess while optimizing physiological levels.

The findings underscore the importance of a holistic and meticulous approach in classical practice**,** where a skilled *Vaidya* does not merely rely on patient-reported symptoms but evaluates all possible physiological parameters, addressing even subtle deficiencies to restore

the patient to *Swastha Avastha***.** Each clinical reading, biochemical parameter, and treatment response holds intrinsic significance, forming an integrated understanding of the patient's condition. Nothing in the therapeutic process is incidental; every intervention contributes to the overall restoration of health.

This study reinforces the concept that precision in diagnosis, personalized therapy, and the synergistic use of *Shodhana*, *Shamana*, and *Rasayana* modalities are crucial for achieving effective and sustainable outcomes in neurological disorders such as *Pakshaghata*. It also emphasizes the role of classical interventions in not only symptom management but also in the correction of underlying metabolic and micronutrient imbalances, paving the way for comprehensive patient care.

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