

IMPROVEMENT IN NATIONAL INSTITUTES OF HEALTH STROKE SCALE (NIHSS) AFTER ADDING YOGENDRA RASA IN STROKE PATIENT: A CASE REPORT

^{*1}Dr. Satyam, ²Dr. D.L. Shinde

¹*M.D. Kayachikitsa, College of Ayurveda, Bharati Vidyapeeth (Deemed To Be University), Pune- 411043, Maharashtra. Email: satyamkaushish28@gmail.com

²M.D., Ph.D., H.O.D. & Professor, Department of Kayachikitsa, College of Ayurveda, Bharati Vidyapeeth (Deemed To Be University), Pune- 411043, Maharashtra. Email: dshinde249@gmail.com

Corresponding author: Dr. D.L. Shinde

Department of Kayachikitsa, College of Ayurveda, Bharati Vidyapeeth (Deemed To Be University), Pune, Maharashtra
dshinde249@gmail.com

KEYWORDS:	ABSTRACT
Stroke, Pakshaghata, Yogendra Rasa, NIHSS, Case report	Stroke is the major cause of long-term disability in adults and the second leading cause of death worldwide. It usually presents with hemiparesis or hemiplegia which may be compared with Pakshaghata in Ayurveda. Different thrombolytic therapies are used to treat ischemic stroke, but they are with their many contraindications and complications of bleeding. A similar case which was contraindicated for thrombolysis due to recurrent episodes of stroke is studied and treated with Yogendra rasa, a Rasaushadhi mentioned in Ayurvedic classics. Such Ayurvedic medicines should be tried for integrated use with modern management for better outcomes. A 65-year-old male patient of recurrent stroke- diagnosed with acute ischemic stroke having predominant complaints of left side weakness and mild impaired level of consciousness- was admitted in the hospital. Addition of Yogendra Rasa to the conventional treatment significantly improved the motor power and level of consciousness. This was evident by an improvement in the National Institutes of Health Stroke Scale (NIHSS). Thus, Ayurvedic medicines may be added in treatment with integrated approach for better outcomes in patients of ischemic stroke.

INTRODUCTION

Stroke, or cerebrovascular accident, is defined as an abrupt onset of a neurologic deficit that is attributable to a focal vascular cause.¹ Stroke is the major cause of long – term disability in adults and the second leading cause of death worldwide. Thirty-day mortality rate of ischemic stroke has been estimated at around 15% in high income countries.² The estimated adjusted prevalence rate of stroke in India ranges from 84-262/100,000 in rural and 334-424/100,000 in urban areas. The incidence rate is 119-145/100,000, based on recent population-based studies. Of patient with first ever stroke, approximately 80% are likely ischemic.³ Different thrombolytic therapies are used to treat ischemic stroke, but they are with their many contraindications and complications like bleeding. This problem opens an opportunity for Ayurvedic physicians to use Ayurvedic medicines as an alternative or in integration with modern medicine for better outcomes.

According to NAMC Code AAB-52, Pakshaghata is hemiplegia/ hemiparesis which is a symptom of stroke.⁴ There are various treatment modalities mentioned in the ancient ayurvedic classics to address this priority problems. One such medicine mentioned in Bhaishajyaratnawali Vatavyadhiprakarana to be used in Pakshagahta is Yogendra rasa. A case of recurrent stroke with recent acute ischemic stroke episode having symptoms of left side hemiparesis was taken up for study and Yogendra Rasa was

administered along with the regular medicines. National Institutes of Health Stroke Scale (NIHSS) was used for the assessment of efficacy of medicine.

Patient information:

A 65-year-old male patient came to the Kayachikitsa OPD, Bharati Ayurved Hospital, Bharati Vidyapeeth (deemed to be) University, Pune with chief complaints of- 1) left side weakness, and 2) difficulty in walking- for the past 20 days. He was admitted in the Kayachikitsa IPD ward on 23/07/2022 for Ayurvedic management. He was a known case of diabetes mellitus type 2 and recurrent cerebro-vascular events. Patient was asymptomatic before 03/07/22 when he suddenly developed left side weakness since 2 am. He was admitted at an outside hospital where MSCT angiography of brain showed multiple acute non-hemorrhagic infarcts in the right MCA territory. Patient required ICU care initially and was discharged with a prescription for antiplatelet drugs and statins, as well as a Ryle's tube (RT) and Foley's catheter in situ. Details of the medical history are provided in the timeline provided below. On admission, detailed history of the patient was obtained. There was no known history of any major illnesses like DM TYPE 2, HTN, CVA in the family. There was no known drug allergy. Patient was taking following medications: Tab Metformin SR 1000 mg B.D., Tab T- Glip 20 mg O.D., Tab Ecosprin 75 H.S., Tab Clopitab 75 O.D., Tab Atorva 40 mg H.S., Inj Lantus 14U at 10 pm, Tab Apixaban 2.5 O.D.

Clinical findings:

General examination revealed he was moderately built and under nourished. There was no pallor, cyanosis, clubbing, icterus, oedema, lymphadenopathy. BP- 110/70 mmHg, Pulse-64/min, Temp- 98.4 F, SPO2- 98% on room air. Ryle's tube and Foley's catheter in situ. Systemic examination revealed normal respiratory sounds, normal heart sounds without murmurs, per abdomen examination revealed soft and non-tender abdomen. Central nervous system examination was performed which revealed that patient preferred to sleep and was arousable to minor stimulus. The Glasgow Coma Scale (GCS) scored 14/15, i.e. eye opening to verbal stimulus (E3), verbal response – oriented to time, person and place (V5) and motor response – obeys commands (M6). Pupils were bilaterally equal, reacting to light. There was neither facial deviation nor dysarthria/aphasia. Dysphagia was present. Motor power was normal (5/5) in right upper and lower limbs while 2/5 in the left upper limb and 1/5 in left lower limb. Muscle tone in left lower limb was increased. Deep tendon reflexes were normal while Babinski's sign was positive in the left foot and negative in the right foot. Sensory system examination revealed normal sensation to touch, pain and temperature. National Institutes of Health Stroke Scale (NIHSS) scored 7/42 (range: 0- 42, with higher scores indicating more severe stroke)

Ayurvedic examination was done using Ashtavidha pariksha and Dashavidha pariksha. **Ashtavidha Pariksha** revealed Nadi: Vatapitta pradhana sama kapha, Mala: Grathita (2 times/ day), Mutra: Peeta varna (Foley's catheter in situ), Jihva: Nirama, Shabda: No vakastambha, Sparsha: Anushna, Drika – 6/6 using glasses, Akriti: Madhyama. **Dashavidha pariksha** revealed Prakriti: Vatapittaja, Vikriti: Pitta anubadhi vata, Sara: Raktasara, Samhanana: Avara flabby tone of muscle and lax skin tone, Pramana: Samapramana normal anthropometric ratio, Satva: Hina, Satmaya: Well-accustomed to sadharan desha, ritu and Maharashtrian food, Aharashakti: Avara, Vyayama Shakti: Avara (bed bound), Vayaha: Vriddha (65yrs).

Samprapti of Pakshaghata in this patient has been pictorially depicted in figure no. 1

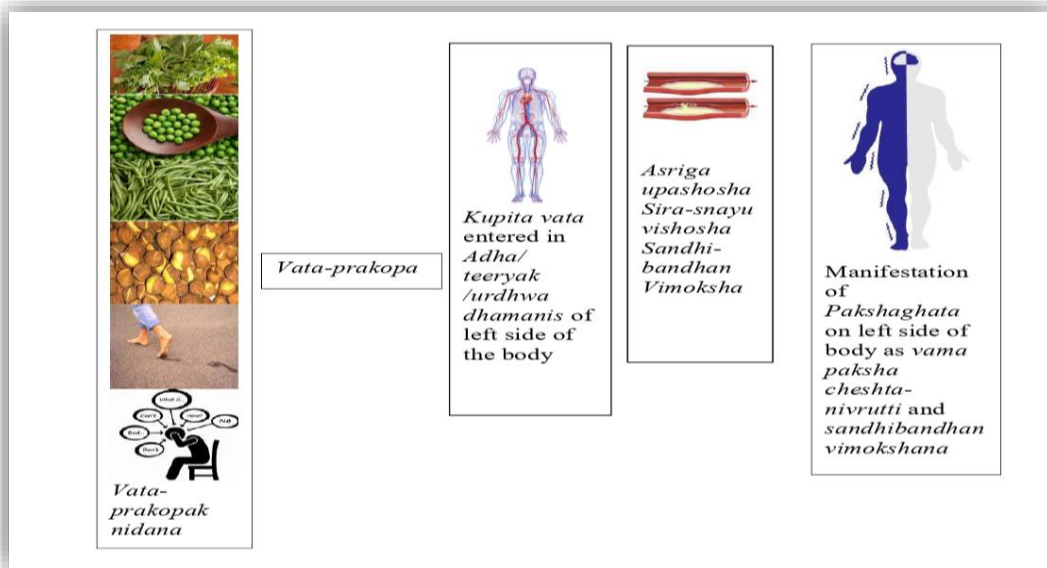


Figure No.1: Pictorial Representation Of Samprapti Of Pakshaghata

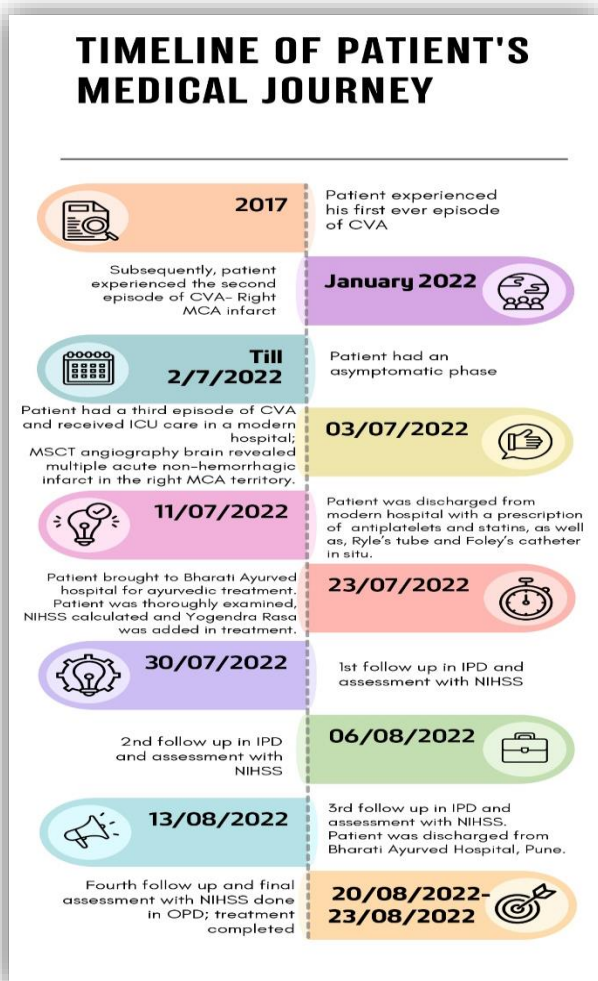


Figure No.2: Timeline Of Patient's Medical Journey

Diagnostic Assessment:

Stroke was diagnosed through history, clinical examination and radiological investigation. Other lab investigations were also done for additional information. MSCT angiography of brain showed multiple acute non-haemorrhagic infarcts in the right fronto-parietal lobes, corona radiata and posterior lentiform nucleus, likely embolic in nature. No haemorrhagic changes are seen. Mixed hypodense-calcified plaque involving right carotid bulb and origin of right ICA causing approximately 40-50% luminal compromise. Atherosclerotic changes in the bilateral vertebral arteries. 2D-echo showed Mild Concentric Left Ventricular Hypertrophy, Left Ventricular Ejection Fraction of 60% and degenerative aortic valve changes. Lab investigation revealed normal complete blood count, blood sugar level, Renal function tests. Chest x-ray was normal.

Therapeutic Intervention:

Medicine given	Yogendra Rasa (powder)
Dose	1 ratti (125 mg)
Timing	6:00 am and 6:00 pm
Route of administration	Oral
Anupana	Madhu (Honey)
Treatment period	30 days
Follow-up days	0,7 th ,14 th ,21 st ,28 th ,30 th day

Follow-up and Outcomes:

On each follow ups patient was assessed using National Institutes of Health Stroke Scale (NIHSS).

❖ NIHSS on consecutive follow ups:

S.NO.	SYMPTOMS	SCORE						
		Range	Day 0	Day 7	Day 14	Day 21	Day 28	Day 30
1.	Level of consciousness							
	1A: May be assessed casually while taking history	0-3	1	0	0	0	0	0
	1B: Ask month and age	0-2	0	0	0	0	0	0
	1C: 'Blink eyes' & 'squeeze hands'	0-2	0	0	0	0	0	0
2.	Horizontal extraocular movements	0-2	0	0	0	0	0	0
3.	Visual fields	0-3	0	0	0	0	0	0
4.	Facial palsy	0-3	0	0	0	0	0	0
5.	5A: Left arm motor drift	0-4	3	2	1	1	0	0
	5B:Right arm motor drift	0-4	0	0	0	0	0	0

6.	6a: Left leg motor drift	0-4	3	3	2	2	1	1
	6b: Right leg motor drift	0-4	0	0	0	0	0	0
7.	Limb Ataxia	0-2	0	0	0	0	0	0
8.	Sensation	0-2	0	0	0	0	0	0
9.	Language/aphasia	0-3	0	0	0	0	0	0
10..	Dysarthria	0-2	0	0	0	0	0	0
11.	Extinction/inattention	0-2	0	0	0	0	0	0
	Total score range	0-42	7	5	3	3	1	1

❖ **Percentage of improvement in NIHSS before and after treatment:**

	BT SCORE	AT SCORE	DIFFERENCE IN SCORE	% RELIEF
NIHSS	7	1	6	85.7%

At the end of treatment, patient's NIHSS score came to 1 from 7 which seems to have 85.7% improvement in the score.

Also, during the treatment process patient's RT and Foley's catheter was removed.

Motor power of left limb of patient was also improved. After treatment patient was able to walk with support who was bedridden before treatment.

DISCUSSION:

In this case report, a male patient having stroke with recurrent episodes of stroke was studied. Such patients are contraindicated for thrombolytic therapies. This opened an opportunity to see the integrated effect of ayurvedic medicine in stroke patients without discontinuing the basic modern treatment of the patient (which is ethically correct). Yogendra Rasa an ayurvedic medicine is added in the treatment along with his other medicines. After the completion of treatment, it was found there is significant improvement i.e. 85.7% in the NIHSS score which was used as assessment criteria for improvement in the condition of patient. Patient's GCS improved to 15/15 from 14/15 within one week. Additionally, significant improvement in the patient's general condition as well as daily life activities was observed after the treatment. Ryle's tube- used for feeding purpose in this patient earlier- was removed. His diet improved from semisolid to normal diet, with an increase in the amount as well. Foley's catheter was removed on 21st day after starting Yogendra Rasa. Patient was bedridden before the treatment. Conversely, his ability to walk with support improved post-treatment. These were the strengths of this case report. The limitation of this case report are- 1) delayed administration of Yogendra Rasa i.e. 20 days after the onset of symptoms, and not immediately after the onset; 2) Duration of drug administration was very less.

Despite the limitations, Yogendra Rasa showed significant improvement in patient's general condition. Action of Yogendra Rasa in stroke patient may be determined in accordance with the contents of Yogendra Rasa. The compound formulation Yogendra rasa contains Rasa-sindoor, Suvarna bhasma, Kanta loha bhasma, Abharaka bhasma, Mukta bhasma, Vanga bhasma and kumari swarasa is used as bhavna dravya⁵

Yogendra Rasa is a compound formed by the above 7 ingredients. Attributes of Yogendra Rasa can be found by the cumulative addition of the attributes of each of its ingredients. So, Yogendra Rasa will

have the following attributes: Rasa- Madhura, tikta, kashaya and ishata lavana; Vipaka –Madhura; Virya-Sheeta; Guna – guru, snigdha, sara; Karma – Tridosha shaman, Pancha vata niyaman, pitta nisaraka, dipana, brihana, lekha, budhi medha smritikaram, Vishanashak, Vrishya, hridya, netrya, rasayana, punsavanupyagi, kantikara, varnya, Dhamni swakriya prasarti, Nadikanamam jalam dridyati, visheshata karanani prakritim gamyati, vaga vishudhi.^{6,7,8,9,10,11,12}

On the basis of these attributes of Yogendra Rasa, probable mode of action of on Pakshaghata can be understood. Yogendra rasa has pancha vayu niyman karma due to which it pacifies Vata dosha. Pitta nisaraka action removed vitiated pitta through purgation i.e virechan, which is required as per Chikitsa sutra of Pakshaghata¹³. Dhamni swakriya prasarti- pacification of the vitiated Vata dosha makes the dhamanis to perform its proper function of blood circulation which is hampered by the upshoshana of rakta as seen in its samprapti. By its lekha guna, it dissolves the thrombus responsible for the ischemia. Rasayan and brihana karmas will treat the sira sanayu vishoshana and sandhi bandhana vimokshan which occurs during the samprapti of pakshaghat. Neuroprotective activity can be seen due to its medhya karma. “Nadikanam jaalam dridayati”, it makes the sangyavahanama and cheshtavahanama nadikanama jaalam i.e network of Ascending Reticular Activating System (responsible for the state of alertness and wakefulness) and motor nerve fiber strong (dridha) by enhancing the ability of action of impulse conduction (karma kshamata sampadan) and thereby improves the level of consciousness and motor power of the patient.

According to modern science, one of the reasons for ischemic stroke is thrombus. Thrombus is formed due to platelet aggregation. An animal trial has already been done on Zebrafish Model in the Suppression of Drug-Induced Cardiac Hypertrophy by using Yogendra rasa. Erythromycin (ERY) stimulation of the Zebra fish (*D. rerio*) led to a decrease in the platelet aggregation time as compared to the normal control fish which acts as a precursor to the development of thrombosis. Treatment of the ERY-stimulated *D. rerio* with different doses of Yogendra Rasa (0.6–18 µg/kg) significantly (p -value < 0.001) brought the platelet aggregation time back to normal as compared to the disease control fish. It is possible that Yogendra rasa exhibits similar effect in ischemic stroke patient.¹⁴

Improvement in the NIHSS and decrease in the dependency of patient on artificial supports for feeding and urination proved to be helpful decision of adding Yogendra Rasa in the treatment.

This case report is an example of integrated use of ayurvedic medicine with modern treatment which played important role in improving the health of patient. Furthermore, different ayurvedic therapeutic interventions should be used for clinical trials at large scale for more accurate result outcomes and better understanding of the mode of action of ayurvedic medicines.

Patient perspective

The patient was happy and satisfied with the treatment as he had no more dependence on others for daily activities like walking. He experienced independence from Ryle's tube and Foley's catheter.

Informed consent

Informed consent was taken from the patient for this study.

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Conflict of interest - None.

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