Case Report

Stage-wise Management of *Pakshaghata* (Ischemic Stroke with Left Hemiplegia) Through *Ayurveda* - A Case Report

ABSTRACT

In the context of *Ayurveda*, the condition *Pakshaghata* counters with hemiplegia and its variety of characteristic symptoms. The causes, pathogenesis and its management are well elucidated in *Ayurveda*. The following is a case report of an elderly male patient with *Pakshaghata* (Ischemic stroke with left hemiplegia) that was effectively treated on two different stages for nearly 56 days. His condition was divided into two stages, a) *Margavaranajanya* (~obstruction and adherence of other *Doshas* by the aggravated *Dosha*) stage, and b) *Vatanulomana* (~controlling of vitiated *Vata dosha*, bringing back to its normalcy) stage. The drugs that had the properties of *Agnideepana* (~neutralizers of the impaired metabolic fire), *Amapachana* (~metabolizers of undigested toxins), *Srotoshodana* (~evacuators of obstructed channels) and *Vatanulomana* were found effective in the first stage. As *Vata Dosha* (~one of bodily humors), is considered as the master controller of nervous system, and in order to bring it back to normal from the vitiated state, a set of drugs that had the property of *Vatanulomana*, *Balya* (~strength promoters) and *Rasayana* (~rejuvenators) were induced in the second stage. There was a significant improvement in his degree of disability as per Scandinavian stroke score, Barthel Index score and Modified Rankin Scale; it measured 51, 65 and 3 respectively after the intervention (from 16, 0 and 5 prior to intervention). Through this study, it can be planned that, the treatment protocol of *Pakshaghata* can be judged by the acute and chronic phase of the condition based on its association with *Vata dosha*. The wise selection of the appropriate drugs and therapies in the present case secured the optimistic outcome of the intervention. Although his concluding magnetic resonance imaging of brain notified "no" modifications, at the time of discharge he was privileged with refurbished gait; sensory and motor deficits with increased quality of life, which prompted us to document it.

Key words: *Ayurveda,* hemiplegia, ischemic stroke, *pakshaghata,* paralysis

Introduction

In the Ayurveda background, the condition *Pakshaghata* matches with the hemiplegia and its range of symptomatic representation.[1]Acharya Charaka mentions *Pakshaghata* under *Nanatmajavata Vikara* (~diseases caused only by the vitiation of *Vatadosha*).[2]Acharya Sushruta describes it as one of the *Asta Mahagada* (~eight grave diseases).[3] Conferring to *Ayurveda* viewpoint, *Pakshaghata* occurs mainly due to vitiation of *Vatadosha* alone or in association with *Pitta* or *Kaphadosha*.[4] Acharya Vagbhata empirically elaborates

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its *Samprapti* (~pathogenesis) and proposes that the vitiated *Vatadosha* affects one half of the body causing dryness of *Sira* (~veins) and *Snayu* (~tendons), resulting in *Pakshaghata*.[5] In addition, its pathogenesis can include, *Margaavarna* (~obstruction of channels), *Dhatukshaya* (~depletion of tissues), and *Vama* or *Dakshinachesta-nivritti* (~deficit of motor functions in any side of the body).[6] With these, the cardinal features of *Pakshaghata* can include *chesta-hani* (~deficits in sensory and motor functions), *Hasta padasankocha* (~decreased muscular tone or rigidity of limbs), *Ruja* (~pain), *Vakstambha* (~dysarthria or aphasia), *Sandhi-bandhavimoksha* (~weakness of joints), and *Sira-snayuvishosha* (~spasticity of veins and tendons).[7] Although the above descriptions state, the analogous basics between the Ayurvedic and modern concept of Pakshaghata, the need of detail considerate of the ancient concepts with present empirical perceptive is still lacking and the present article may fulfill the need.

Following is a case report of an elderly male patient with *Pakshaghata* (ischemic stroke with left hemiplegia). The treatment schedule was adopted at stage wise, as per the classical description.[8] At the time of discharge, the patient and his sensory and motor deficits were restored.

Case Report

Patient information

A 65-year-old male patient was brought to our hospital on November 12, 2020, with the history of sudden onset of weakness of the left upper and lower limb and its gradual loss of movement. Since 15 days, he was diagnosed with hypertension, Type 2 diabetes, and was on its regular medications. He had one episode of vomiting, slurred speech, and headache 5 days back followed with convulsion and facial twitching toward the right side. On examining, he was conscious (bit drowsy), oriented, cooperative, dehydrated, and bit agitated. His vitals were stable. His central nervous systemic examination marked left hemiplegia with severe sensory deficits. The tone and muscular bulk in the left upper and lower limb was decreased and rigid. With the power of 1–2, reflexes were nil at the left upper limb and extensor plantar reflexes were present at the left lower limb. He was admitted on the same day and was sent for magnetic resonance imaging (MRI) brain. It confirmed, the "large subacute infarct with hemorrhagic transformation at the right frontotemporoparietal region of middle cerebral artery territory involving the basal ganglia and around 3.2 cm × 4.5 cm sized parenchymal hemotoma at the right frontal lobe." Carotid Doppler study revealed the "atherosclerotic soft plaques of about 50% lodged at the right proximal inferior carotid artery." His 2D echo noticed "Left ventricular diastolic dysfunction with ejection fraction of 58% and early CorPulmonale." We diagnosed him with *Pakshaghata* (~ischemic stroke with left hemiplegia). By the request of family members, the patient was referred to a neurological center of a corporate city for advance medical management. Due to the COVID-19 pandemic situation, the patient was referred back from there with the advice of rehabilitation and conservative management for 15 days (till November 26, 2020). The conservative treatment [Table 1] was administered under the supervision of an allopathic physician. Along with their advices, the first stage of *Ayurvedic* treatments was started from the 6th day (November 17, 2020).

Diagnostic assessment

The degree of his disability was assessed with Scandinavian stroke score,[9] Barthel Index score,[10] and Modified Rankin scale.[11] It measured 16 (severe stroke), 0 (total dependence), and 5 (severe disability) out of its total index of 58, 79, and 6, respectively.

Therapeutic intervention

The treatment schedule in the present case was divided into two stages. These two stages were opted for acute and chronic phase of his illness, respectively. Table 2 represents those stages of treatment schedule with details.

Timeline, outcome, and follow-up during the course of treatment

Table 3 represents the subjective and objective remarks observed during the course of whole treatment. On the basis of assessments of Scandinavian Stroke Scale, Barthel Index scale, Modified Rankin Scale, and magnetic resonance imaging of the brain between before the treatment (on 0th day–November 17, 2021) and after the treatment (on 56th day– January 15, 2021), the observations and results were noted and they are plotted in the Tables 4-7, respectively. At present, patient is on 6 months regular follow-up and is neurologically getting better.

Discussion

From an *Ayurveda* perspective, stroke or hemiplegia is recognized as *Pakshaghata* attributed to an aberration of mainly *Vatadosha*. The diverse treatments advocated in *Ayurveda* for this disease is to primarily harmonize the

Table 1: Conservative treatment

Medicines	Duration
Injection Levetiracetam 1 g	IV 1-0-1 for 5 days
Injection Mannitol 20%	IV 1-0-1 for 5 days
Tablet Epiliv 500 mg	1-0-1
Tablet Ecosprin 75 mg	0-1-0
Tablet Atorvas 20 mg	0-0-1

Table 2: Stages of treatment schedule

Time period	Treatment	Prescription
	First stage of treatment schedule for acute phase	
November 17, 2020-November 29, 2020 (8 days)	Conservative treatment	As advised (lasted on November 26, 2020)
	Manjistadi Kashaya	10 ml-10 ml-10 ml BF with warm water
	Tablet Amavatari Rasa	2-2-2 BF
	Tablet Bhruhat vata chintamani rasa (plain)	2-0-2 BF
	Tablet Ekangaveera Rasa 125 mg	0-2-0 BF
	Capsule Stresscom 300 mg	0-0-2 HS
	Tablet Acidinol 230 mg	1-0-1 BF
	Tablet Anuloma DS 1200 mg	0-0-1 AF
	Ksheerabala 101 drops	*Pratimarsha Nasya* 2 drops BD into two nostrils
	*Agnilepa**	External application on left upper and lower limb
	Physiotherapy	-
	Second stage of treatment schedule for chronic phase	
November 30, 2020 - December 15, 2020 (16 days)	Sarvangaabhyanga + Sashtikashalipindasweda	With Ksheerabalataila
	Dashamooladi yoga basti†	As per schedule‡
	Capsule Ksheerabala 101	Rasayana dosage§
	Mixture of Ashwagandha*Churna* 10 g + Limiron granules 5 g	0-0-1 AF with 1 cup of milk
December 16, 2020 - December 30, 2020 (15 days)	*Sarvangaabhyanga* + Patrapindasweda	With Ksheerabala*taila*
	Tablet Rasarajeshwara rasa 280 mg	1-0-0 AF
December 31, 2020 - January 03, 2021 (4 days)	*Sarvangautsadana* + Bashpasweda	With Ksheerabala*taila*
January 03, 2021 - January 05, 2021 (3 days)	Rest	-
January 06, 2021 - January 11, 2021 (6 days)	*Sarvangautsadana* + Patrapindasweda	With Ksheerabala*taila*
January 12, 2021 - January 15, 2021 (4 days)	*Sarvangaabhyanga* + Bashpasweda	With Ksheerabala*taila*

**Agnilepa* - Topically applied special paste made up of parts of *Moringa oleifera; Ocimum basilicum; Syzygium aromaticum; Allium sativum; Piper nigrum, Curcuma longa, Ricinus communis* and *Brassica juncea*, †*Anuvasanabasti* with Kalyanakaghritha (30 ml) and Dhanwantaratailа (30 ml); *Niruhabasti* with Honey (50 g); Rock salt (10 g); Kalyanakaghritha (50 ml); Dhanwantaratailа (50 ml); Dashamoolakashaya (200 ml); Shatapushpakalka (25 g), ‡Alternative 8 Anuvasana and 8 NiruhaBasti, §Multiple of 4 capsules given every morning on empty stomach - (4 capsules each for starting 4 days; 8 capsules each for next 4 days; 12 capsules each for next 4 days; 16 capsules each for next 4 days; 20 capsules each for next 4 days and in decreasing order i.e., 16 capsules each for next 4 days; 12 capsules each for next 4 days; 8 capsules each for next 4 days; 4 capsules each for next 4 days). BF: Before food, HS: At bed time, AF: After food, BD: Twice a day

aberrant physiology.[9] The disease *Pakshaghata* is explained and well explored by all the *Bruhatrayee*'s (~great trios of *Ayurveda*-Charaka, Sushrutha and Vagbhata). Due to vitiation of *Vatadosha*, *Sthanasamshraya* (~localization of vitiated *Dosha* leading to pathogenesis) of *Vata dosha* takes place in the *Khavaigunya* (~weak or malfunctioning part of the body). This process leads to the formation of the *Lakshana* (~symptoms) expressed by *Sthanadusti* (~vitiation of the entire system). The treatment is mainly to control the aggravated *dosha*, based on the *Dosha-doshya* (~combination of vitiated *dosha*s with weak and prone tissues), *Vriddi-kshaya* (~increased or decreased *Dosha*), *Sama-nirama* (~association or dissociation of *Ama* with *Vatadosha*), and *Avarana-lakshana* (~symptoms occurred due to enveloping *Dosha* on other) of the *Dosha*.[10]

Stages of treatment followed and their probable mode of action

The treatment protocol of *Pakshaghata* followed here is based on its associated *Dosha* status. In acute phase, it was considered as *Vata-kaphaja*or *Vata-pittaja*; and in chronic phase, it was considered as pure *Vata* condition.[11] In the present case, both phases were given equal importance and the acute phase was treated first as the first stage and the latter as second. Table 8 represents the treatment principle[8] followed in two stages and two phases.

First stage: In the present case, the aggravated *Vata dosha* had *Margavaranajanya* (~adherence with the aggravation of the other) *Medhasdhatu, Pitta,* and *Kapha dosha*. This adherence is said to obstruct the *Rasa* and *Rakta Dhatu*, which play a vital role in the metabolism and circulation. In contemporary verse, this process can be called as "Infarction" at channels like blood vessels. To bring them back to normalcy, *Agnideepana* (~neutralizers of the impaired metabolic fire) and *Amapachana* (~metabolizers of undigested toxins) were selected as the first line of treatment. The oral medications (Amavatari Rasa, Acidinol, Anuloma DS, Manjistadikashaya, Tab. Bhruhat vata chintamani rasa (plain), Ekangaveera Rasa, and Stresscom), *Nasya* with Ksheerabalataila and *Agnilepa* (~special compound of paste made for external application),

Table 3: Observations during the course of treatment

Stages	Sub stages	Observations
First stage		By the end of 8th day (November 29, 2020), his sensory upgrading were observed. *Agnilepa* was stopped and his treatment was shifted to second stage
Second stage		By 24th day (December 15, 2020) movements of left limb digitals and gait were improving. Now, the other set of treatment were induced
	A	After 43 days of treatment, on December 30, 2020 his hemiplegia had reduced into hemiparesis and he had started to walk without support. Power of his limbs was gradually increasing. On January 03, 2021 he had retrosternal chest pain for which physician's opinion was consulted and after noting their opinion, patient was given rest for 3 days. All the treatment were withheld till January 05, 2021. For next 6 days, *Swedana* set of treatments were opted (up to January 11, 2021). The next 4 days were used with *Snehana* type of treatment (up to January 14, 2021)
	B	Gradually by January 15, 2021 (56th day), his Gait had enhanced and was walking slow, balanced without support Hypotoned muscles of left upper and lower limb had regained to normal tone Power of both the limbs were 4/5 All the reflexes were active

Throughout the above-mentioned different stages of treatment, the oral medications and physiotherapy were continued as per schedule. The other objective data like repeated MRI of brain remained "unchanged." MRI: Magnetic resonance imaging

Table 4: Assessment of intervention with Scandinavian stroke score

Scandinavian score	Range of score	Before treatment (0th day)	After treatment (56th day)
Consciousness	2-6	4	6
Eye movement	0-4	3	4
Arm motor power (right)	0-6	1	5
Hand motor power (right)	0-6	0	5
Leg motor power (right)	0-6	0	5
Orientation	0-6	4	6
Speech	0-10	4	8
Facial palsy	0-2	0	2
Gait	0-12	0	10
Total	0-25 (severe) 26-42 (moderate) 43-58 (mild)	16	51

had the properties of *Deepana* (~appetizers), *Pachana* (~digestives) and *Srotoshodhana* (~evacuators of obstructed channels). These classes of drugs might have helped in the correction of *Agnidusti* (~digestive and metabolic functioning of aggravated *Medhas* and *Pitta dosha*). The probable mode of action of these drugs and their treatment also resided in digestion of the *Ama* (~scraping out of the undigested *Medhas, Kapha dosha*).[12] The *Agnideepana* followed with *Amapachana* here might have acted on bringing back the infuriated *Medhas, Pitta,* and *Kapha dosha* giving way to *Vatanulomana* (~controlling of vitiated *Vata dosha*).[13]

Second stage: Once his aggravated *Dosha*s were bought to normal, a set of *Snehana* (~oleation therapy), *Basti Karma* (~medicated enema therapy), *Swedana* (~sudation therapy), *Mruduvirechana* (~elimination therapy), and *Nasya* (~administration of drugs through nasal cavity) were induced, to bring *Balya* (~strength) to affected *Vata dosha*. *Vata dosha* is considered as controller of the whole nervous system. The drugs (Ksheerabala, Ashwagandha, Limiron granules, and Rasarajeswara Rasa) that had the drugs of *Brihmana* (~strength promoters), *Langana* (~eliminators of excess toxins), and *Rasayana* (~rejuvenators) properties were selected for the treatment. The selection of suitable drugs and stipulated sets of treatment [Table 2] might have helped in lubricating, reduced stiffness and dryness, improved tone, power, and health of muscles. The probable mode of action at this stage of treatment may have acted on the affected Vata dosha and on dearth nerve cells that were rejuvenated at the end.

Conclusion

In the present case study, on the basis of observation, result and discussion, the following conclusions were drawn.

The need of detail considerate of the *Ayurveda* concepts of *Pakshaghata* with present empirical perceptive is still lacking and the present study may fulfill such need. From the present study, it was understood that in *Pakshaghata*, the treatment plan should be divided on the basis of *Dosha* involvement. The intervention should be identifying and targeting the vitiated *Dosha* and its involvement on the chronicity of the disease. In *Margavaranajanya* stage, the drugs that has the properties of *Agnideepana, Amapachana, Srotoshodana,* and *Vatanulomana* are found effective. After the clearance of *Margavaranajanya* stage, a set of drugs that has the property of *Balya, Rasayana,* and *Vatanulomana* can be induced, to bring back the physiological action of *Vata dosha*. The wise selection of the appropriate drugs [Supplementary Table 1] and therapies [Table 2] that has the above properties assures the optimistic outcome of the intervention on *Pakshaghata*. In the present case report, such intervention brought a significant improvement in his degree of disability as per Scandinavian stroke score, Barthel Index score, and Modified Rankin Scale; it measured 51, 65, and 3, respectively, after the intervention. Although his concluding MRI brain notified "no" modifications, at the time of discharge, he was privileged with refurbished gait; sensory and motor deficits with increased quality of life.

Table 5: Assessment of intervention with Barthel Index Scale

Barthel score	Range of score	Before treatment (0th day)	After treatment (56th day)
Feeding	0-10	0	5
Bathing	0-5	0	5
Grooming	0-5	0	0
Dressing	0-10	0	5
Bowels	0-10	0	10
Bladder	0-10	0	5
Toilet use	0-10	0	5
Transfers (bed to chair and back)	0-15	0	10
Mobility (on level surface)	0-15	0	10
Stairs	0-10	0	10
Total	100	0	65
	<20 - Total dependence 20-39 - Very dependent 40-59 - Partially dependent 60-79 - Minimally dependent 80-100 - Able to live independently		

Table 6: Assessment of intervention with Modified Rankin scale

Patients domain	Score	Before treatment (0th day)	After treatment (56th day)
No symptoms	0	-	-
No significant disability despite symptoms, able to carry out all usual duties and activity	1	-	-
Slight disability, unable to carry out all previous activity, but able to look after own affairs without assistance	2	-	-
Moderate disability, requiring some help, but able to walk without assistance	3	-	3
Moderate severe disability, unable to walk and attend to bodily needs without assistance	4	-	-
Severe disability, bedridden, incontinent, requiring constant nursing care, attention	5	5	-
Dead	6	-	-

Table 7: Assessment of MRI brain imaging before and after the intervention

Before treatment (0th day)	After treatment (56th day)
November 12, 2020	January 15, 2021
Large subacute infarct with hemorrhagic transformation at right fronto-temporo-parietal region of MCA territory involving the basal ganglia and around 3.2 cm×4.5 cm sized parenchymal hematoma at the right frontal lobe	Large subacute infarct with hemorrhagic transformation at the right frontotemporoparietal region of MCA territory involving the basal ganglia and around 3.2 cm×4.5 cm sized parenchymal hematoma at the right frontal lobe

MCA: Middle cerebral artery

Table 8: Representation of the treatment principle *Vis a Vis* two stages and two phases

Stages	Phases	Treatment principle
First stage	Acute phase	Conservative Rx + *Amapachana* + *Agnideepana* + *Vatanulomana*
Second stage	Chronic phase	*Balya* + *Rasayana* + *Vatanulomana through Snehana, Swedana, Basti karma, Nasya, Mruduvirechana*

Declaration of patient consent

The authors certify that they have obtained patient consent form, where the patient/caregiver has given his/her consent for reporting the case along with the images and other clinical information in the journal. The patient/caregiver understands that his/her name and initials will not be published and due efforts will be made to conceal his/her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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Supplementary Table 1: Details of medicines used in the study

Name of medicines	Manufacturer
Amavatari rasa	Shree Dhootapapeshwar Standards
Capsule Stresscom	Dabur India ltd
Ksheerabala drops (101)	Nagarjuna Herbal concentrates ltd
Manjistadi*kashaya*	Nagarjuna Herbal concentrates ltd
Tablet Acidinol	BAN labs
Tablet Anuloma DS	BPRL, SagarPharma
Tablet BVC Plain	Swadeshi Pharmaceuticals
Tablet Ekangaveera rasa	Shree Dhootapapeshwar Standards
Capsule Ksheerabala	Swadeshi Pharmaceuticals
Kalyanaka*ghritha*	Nagarjuna Herbal concentrates ltd
Dhanwantara*taila*	Nagarjuna Herbal concentrates ltd
Dashamoola*kashayachurna*	ShriDharmasthalaManjunatheshwara Pharmacy
Shatapushpa	SDP remedies and research centre
Ashwagandha*churna*	SDP remedies and research centre
Limiron granules	SG PhytoPharmapvt ltd
Tablet Rasarajeshwara rasa	Shree Dhootapapeshwar Standards
Ksheerabala*taila*	Nagarjuna Herbal concentrates ltd