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# Observational review on integrated approach in Post Stroke Management - A Case Series Report

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## ABSTRACT

**Background:** The common cause of hemiplegia is stroke which is of two types: hemorrhagic and infarct. However; there may be other causes like tumor, a space occupying lesion, thrombus or an embolus etc. **Aims and Objectives:** Integrated therapy approach which is *Panchakarma*, physiotherapy, acupuncture, occupational therapy in the management for stroke, is planned to facilitate the movement of *Vata Dosha*, by the obstruction of which the symptoms are manifested. **Materials and Methods:** 5 cases of Cerebrovascular Accidents presenting with stroke reported in Yenepoya Ayurveda College and Hospital are taken in the study, wherein an explorative observational study design was framed on basis of objective and subjective parameters of motor and sensory functions of the brain to observe the before and after effects of treatment. **Discussion:** The line of treatment is to bring back the motor and sensory functions of the brain. The treatment protocol included *Panchakarma* procedures like *Snehana (Abhyanga)* *Swedana*, *Basti*, physiotherapy, accupunture, occupation therapy and diet. Internal medicines boost the blood supply and natural antioxidants increase the oxygenation to the brain, rejuvenates the brain cells, and decrease cell death. There was a marked improvement in motor function soon after starting the *Bhahya Abhyanga* and *Swedana* procedures with *Basti* and the modalities of Physiotherapy and occupational therapy helped in fast recovery to facilitate and improve motor control and hand functions in affected upper limb, to maximize the person's ability to undertake his or her own personal self-care tasks and domestic tasks.

**Key words:** *Pakshaghata*, *Integrated Approach*, *Panchakarma*, *Physiotherapy*, *Occupational Therapy*.

## INTRODUCTION

Considering the etymology, the term *Pakshaghata* 'Paksha' i.e. either side of the body and 'Aghata' denotes a blow or a severe destruction caused which is due to the impairment of sensory and motor system and its controller i.e. the brain it can be compared with hemiplegia (paralysis of half body) where "Hemi" means 'half' and "Plegia" means 'loss of function' in Greek. The common cause of hemiplegia is stroke

which is of two types: hemorrhagic and infarct. However; there may be other causes like tumor, a space occupying lesion, thrombus or an embolus etc

## CASES PRESENTATION

### Case no. 1

Female aged 57 complained of loss of strength Right upper and lower limb since 15 days. There was no history of fall or any accidental injury. Presenting complains were acute in onset with altered consciousness. An emergency management for stroke was carried in nearest hospital.

### Case no. 2

Female aged 62 complained of loss of strength Left upper and lower limb since 20 days associated with slurred speech. There was no history of fall or any accidental injury. Presenting complains were acute in onset with altered consciousness. An emergency management for stroke was carried in nearest hospital.

### Case no. 3

Male aged 55 complained of loss of strength Left upper and lower limb since 22 days associated with dribbling

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saliva and slurred speech. There was no history of fall or any accidental injury. Presenting complains were acute in onset with altered consciousness. An emergency management for stroke was carried in nearest hospital.

**Case no. 4**

Male aged 62 complained of loss of strength Right upper and lower limb since 20 days. There was no history of fall or any accidental injury. Presenting complains were acute in onset with altered consciousness. An emergency management for stroke was carried in nearest hospital.

**Case no. 5**

Female aged 59 complained of loss of strength Right upper and lower limb since 30 days. There was no history of fall or any accidental injury. Presenting complains were acute in onset with altered consciousness. An emergency management for stroke was carried in nearest hospital.

**Table 1: Patient medical history and clinical presentation.**

Patient	Age	Gender	Medical History	Stroke presentation	Lab results - Cbc
Patient 1	57	F	Smoker HTN AF ISH BA	Hemiparesis RT hemihypesthesia RT UMN facial	HB 15.9 g/dl, WBC 13.6; Lymph. 1.06, Neutrophil 9.27
Patient 2	62	F	HTN DM	Hemiparesis LT hemihypesthesia LT UMN facial Partial gaze Dysarthria	HB 14 g/dl, WBC 8.2, Lymph. 1 neutrophil 5
Patient 3	55	M	HTN DM	LT hemiparesis LT hemihypesthesia Ataxia Dysarthria	HB 15.1 g/dl, WBC 6.5, Lymph. 1

					neutrophil 4.96,
Patient 4	62	M	HTN	Hemiparesis RT hemihypesthesia RT UMN facial	HB 15.5 g/dl, WBC 8.5, Lymph. 3.17, neutrophil 4.52,
Patient 5	59	F	HTN	hemiparesis RT hemihypesthesia RT UMN facial Dysarthria Inattention	HB 10.5 g/dl, WBC 8.2, Lymph 1.07, neutrophil 5.37,

**Intervention**

**Table 2: Intervention Plan of Care**

Medicine	Dosage	Procedure	Duration
Cap Vatapy <sup>[1]</sup>	1-1-1	Rookshana with Sarvanga Dashamoola Kashaya Dhara/ Dhanyamla Dhara	1st 3 days
Gandarvahastadi Kashaya	15ml- 0-15ml	Abhyanga with Ksheere Bala Taila	Next 7 days
		Choorna Pinda Sweda (Kolakulathadi Choorna)	Along with Abhyanga for 7 days
		Physiotherapy	From day 1
		Occupational therapy	After 7 days
		Acupuncture	After 10 days

**OBSERVATION**

**Table 3: Before Treatment and After Treatment score of Barthel index<sup>[2]</sup>**

SN	Domain name	Range of score	BT	AT (after 45 days)
1.	Feeding	0 = unable 5 = needs help in cutting, spreading butter, etc. or	0 (5)	5 (5)

		requires modified dait 10 = independent		
2.	Bathing	0 = dependent 5 = independent (or in shower)	0 (5)	0
3.	Grooming	0 = needs to help with personal care 5 = independent face /hair/teeth/shaving (implements provided)	0 (5)	0 (1) 5 (4)
4.	Dressing	0 = dependent 5 = needs help but can do about half unaided 10 = independent (including buttons, zips, laces etc.)	0 (5)	0 (0) 5 (5)
5.	Bowel	0 = incontinent (or needs to be given enemas) 5 = occasional accident 10 = continent	0 (4) 5 (1)	10 (5)
6.	Bladder	0 = incontinent or catheterized and unable to manage alone 5 = occasional accident 10 = continent	0 (1) 5 (4)	10 (5)
7.	Toilet use	0 = dependent 5 = needs some help, but can do something alone 10 = independent (on and off, dressing, wiping)	0 (5)	10 (5)
8.	Transfers (bed to chair and back)	0 = unable, no sitting balance 5 = major help (of one or two people, physical) can sit 10 = minor help (verbal or physical) 15 = independent	0 (1) 5 (4)	5 (2) 10 (3)

9.	Mobility (on level surface)	0 = immobile or <50 yards 5 = wheelchair independent, including corners, >50 yards 10 = walks with help of one person (verbal or physical) >50 yards 15 = independent (but may use any aid; for example, stick) > 50 yards	0 (0) 5 (5)	10 (4) 5 (1)
10.	Stairs	0 = unable 5 = needs help (verbal, physical, carrying aid) 10- independent	0 (4) 5 (1)	5 (5)

In bracket - Numbers of patients

**Table 4: Comparison of Total Score before and after treatment**

SN	Total score	
	BT	AT (60 days)
Patient 1	15/100	55 /100
Patient 2	15/100	75/100
Patient 3	25/100	65/100
Patient 4	15/100	75/100
Patient 5	25/100	75/100

**DISCUSSION**

*Rookshana*<sup>[3]</sup> with *Sarvanga Dhanyamla Dhara*

*Rookshna*

*Rookshna* is a variety of *Apatarpana* procedure mentioned under *Shadvidhopakrama*. *Rookshana* is one of the important protocols embraced in *Apatarpana Chikitsa*, which can be implemented as *Vishesha Poorvakarma* to *Shodhana* as well as *Pradhana Karma*. *Rookshna* is adopted in both preventive and promotive aspect.

In *Samsrushtajanya Vata Vyadhi*, there will be *Vata-Kapha Prakopa*, hence initially to reduce *Kapha, Ruksha Sweda and Vata-Kaphahara Chikitsa* must be followed. In the condition like *Avaranajanya Vata Vyadhi* there will be *Kapha Avarana* to *Vata Dosha*, hence *Vyatyasa Chikitsa* like *Ruksha* and *Snigdha Chikitsa* alternatively in the form of *Udhwartana* or *Dhanyamla Seka and Abhyanga* can be done.

When *Ama* combines along with vitiated *Vata* results in rigidity in the joints. *Rookshana* causes *Pachana* of *Aama Dosha*. In newly originated disease *Ruksha Sweda* is helpful, since it helps in liquefaction of *Aama* and relieving the stiffness. *Deepana* and *Pachana Dravyas* are given to tackle vitiated *Aama*. When *Aama* is corrected by *Aama Pachana*, in the next stage *Snehana Karmas* can be carried out to treat the *Vata*.

*Rukshana* in *Panchakarma*: it's of two ways *Abhyantara Rukshana* achieved by *Panchakarma* procedure like *Vamana, Virechana, Basti, Nasya and Bhaya Rukshana* can be done with the help of *Upakramas* like *Udvarthana, Valuka Sweda, Churna Pinda Sweda, Isteka Sweda, Dhanyamla Dhara*, and some of *Lepas*.

#### **Dhanyamla (Chikitsa Manjari, Vaata Vyadhi)**

**Table 5: Ingredients of Dhanyamla**

SN	Ingredients
1.	<i>Tandula</i>
2.	<i>Pruthuka</i>
3.	<i>Laja</i>
4.	<i>Kulattha</i>
5.	<i>Kangubeeja</i>
6.	<i>Kodrava</i>
7.	<i>Nagara</i>
8.	<i>Nimbuka</i>
9.	<i>Deepyaka</i>

10.	<i>Kudava</i>
11.	<i>Jala</i>

#### **Probable mode of action of Dhanyamla Dhara<sup>[3]</sup>**

- *Amla Rasa* - According to *Ayurveda* kindles the *Agni* and acts as *Deepana* and gets rid of *Ama* (endotoxins formed due to errors of metabolism) and acts as *Pachana*. Since many diseases are manifested because of bad metabolism, *Dhanyamla Dhara* de-roots these diseases from base. Thus, *Dhanyamla Dhara* forms the first line of treatment in many systemic disorders having their origin from weak digestion or errors of metabolism.
- Apart from this, *Amla Rasa* is *Hridya, Rochana, Laghu* and *Snigdha*. The digestive power of *Agni* or core fire in the body will get enhanced due to the impact of *Laghu* and *Teekshna Guna's* of *Dhanyamla*.
- Due to its *Ushna Guna* and *Ushna Veerya*, *Dhanyamla* destroys the vitiated *Vata* or *Kapha* or *Vata-Kapha*. The same properties make *Dhanyamla* antagonistic to *Ama* and *Meda*.
- With the help of these properties *Dhanyamla* removes the blocks in the cells and channels of transportation and nutrition. The cells will start getting proper nutrition and building elements, which in turn enhances the strength and immunity of the body. *Dhanyamla* is thus highly effective in *Ama* disorders, *Vata* disorders, *Kapha* disorders and *Vata-Kaphaja* Disorders.
- Owing to its properties of *Vatanulomana, Shula Prashamana, Nadi Uttejaka, Vedana Sthapana*, *Dhanyamla* effectively combats *Vata* and *Vata* disorders.

#### **Dashamoola Kashaya Dhara<sup>[4]</sup>**

**Table 6: Dashmoola Kashaya Ingredients**

<i>Bilva</i>	1 Part
<i>Agnimantha</i>	1 Part

<i>Shyonak</i>	1 Part
<i>Patala</i>	1 Part
<i>Gambhari</i>	1 Part
<i>Shalaparni</i>	1 Part
<i>Prishniparni</i>	1 Part
<i>Brihati</i>	1 Part
<i>Kantakari</i>	1 Part
<i>Gokshur</i>	1 Part

#### Probable mode of action on *Dashmoola Kashaya Dhara*

- Previous studies done on *Pakshagahata* had commendable results in post stroke patients. The Probable Mode of Action may be that as it increases metabolic rate. By *Swedana* process, our body temperature is increased and due to increase in body temperature, sympathetic activities are also increased. Because of increased Sympathetic activities hormones like Epinephrine, Norepinephrine, Cortisol, Thyroid Hormones are released which accelerate the metabolic rate and stimulate the process of lipolysis. As a result of increased metabolism there is increased demand for oxygen and increased output of waste products. It can be correlated with digestion of *Ama*.
- Vasodilatation: If the body temperature rises a negative feedback action becomes active to reach at normal temperature. Higher temperature of the blood stimulates thermo receptors that send nerve impulses to the preoptic area of the brain. Which in turn stimulate the heat losing center and inhibit the heat promoting center. Nerve impulses from the heat losing center cause dilation of blood vessels in the skin so the excess heat is lost.
- Stimulation of Sweat Glands: A high temperature of blood stimulates sweat glands of the skin via hypothermic activation of sympathetic nerves and by this procedure excessive sweat production takes place. With the increased Sweat production

more waste products are expelled Out of the body through the medium of sweat. Hence, it can be said that *Swedana* corrects *Swedavah-Sroto-Dushti*.

#### *Abhyanga with Ksheera Bala Taila*

##### *Ksheera Bala Taila*

*Ksheerabala Taila* is one of the most popular oil preparations in *Ayurveda* and recognized as a very effective remedy for neurological disorders such as facial paralysis, sciatica, hemiplegia, paraplegia, poliomyelitis and other such conditions. The similar preparation has been mentioned by almost all ancient *Ayurvedic* texts but with different names. *Charaka* mentioned as *Shatasahasra Paka Bala Taila*.<sup>[5]</sup> *Sushruta* mentioned as *Shata Paka Bala Taila*<sup>[6]</sup> and *Ashtanga Hridaya* mentioned as *Shata Paka-Sahasra Paka Bala Taila*.<sup>[7]</sup> The ingredients of this preparation are *Ksheera* (Cow's milk), *Bala* (*Sida cordifolia* Linn.) and *Tila Taila* (Sesame oil). *Ksheerabala Taila* is used for the purpose of *Anuvasana Basti*. *S. cordifolia* has been reported to possess analgesic, anti-inflammatory as well as hepato-protective activity.<sup>[8,9,10]</sup>

##### *Abhyanga mode of action*<sup>[5]</sup>

*Acharya Dalhana* has indicated that *Abhyanga* should be done for specified times, also a description of the penetration of *Sneha* at various levels are given in the table below. Thus, *Abhyanga* should be performed for at least 5 minutes in each position if the desired outcome is to affect deeper tissues like *Majja*.

Joint movements - both assisted and resisted movements are performed.

There is different technique of massage according to their movements.

- Touch-sensation - sensation which is carried through brain.
- Stroke - Touch with movement with one/both palms slowly.
- Friction - Grasp the part and move with little amount of pressure.
- Kneading - Alternative compression of the tissues by grasping them against the underlined body surfaces.

- Vibrations - Fine vibratory/shaking movements communicated to the body through the hands.
- Percussion - The movements/blows administered in various ways with varying degrees of force.
- Joint movements - both assisted and resisted movements are performed.

### Physiological Effects

The therapeutic value of massage lies in its numerous and combined physiological effects and technique dependent. Massage, be it manual or mechanical, imparts pressure and stimulates mechanically the various tissue approached at the time of application of a particular technique. It is the magnitude, duration, and the direction of force applied during a particular technique that determines the effects, produced by that technique on that body.

### Effects on the circulatory system

- On the venous and the lymphatic flow
  - Massage facilitates the forward movement of the venous blood and the lymph.
  - So reduces the chance of stagnation of the blood and the lymph in the tissue space. The Mechanical action of massage resembles with that of normal muscular contraction. The different techniques of massage alternately compress and release the soft tissue. This facilitates the venous and lymphatic flow.
  - Massage facilitates the drainage, and reduces the stagnation of fluids and speeds up the removal of waste products.

### B. On the arterial flow

Massage improves the blood supply of the area being massaged. A definite vasodilation along with an increase in the peripheral blood flow is usually observed after massage.

- Increases Venous and lymphatic flow.
- Increases Arterial blood flow to the muscle and skin.
- Increases Stagnation of fluid in tissue space.

### Choorna Pinda Sweda (Kolakulathadi Choorna)<sup>[6,7]</sup>

#### Procedure Rooksha Sweda

*Charaka* while explaining the effects of *Swedana* he says it is best in *Sankocha, Ayama, Shoola, Sthambha* etc. all the *Vikaras* of *Sarvanga* and *Ekanga*

Most of the ingredients of *Kolakulathadi Churna* are having *Laghu Ushna Snigdha Gunas* and *Kapha Vata Hara* properties. *Apabhuka* being a *Vataja Vyadhi* with *Kapha Avarana* gets regressed by the usage of this *Choorna* as *Rooksha Sweda Busha Choorna* the procedure of *Swedana* by using *Busha Choorna* is also a variety of *Ushma Sweda* and also it is cost effective. *Busha* having the property of *Lekhana* and pacifies the *Kapha*, by which *Vata* can be easily pacified. By the depletion of *Kapha* the channels get clarified resulting in lightness of body.

#### Gandarvahastadi Kashaya<sup>[8]</sup>

*Gandharva Hastadi Kashaya*: The *Kashayam* was prepared by following herbs in equal parts. *Gandharvahasta, Chirabilva, Hutasha, Vishwa, Pathya, Punarnava, Yavasa, Bhumitaala* • Duration: 21 days. • Dose: 20- 40 ml at bedtime. • Usage: For *Nitya Virechana* in both groups

#### Brief Note On Occupational Therapy<sup>[9]</sup>

The aim of occupational therapy is to help people to live their lives more independently. Occupational therapists can help, for instance, if you have limited use of your hand or arm due to a medical condition. They may recommend various exercises or activities, offer you advice, or suggest changing certain things in your everyday life. Occupational therapy can be useful for people of any age. The goal of occupational therapy is to improve the skills that are needed to live life as independently as possible. This includes being able to take care of yourself and to work, for example – as well as being able to leave your home and meet other people.

Occupational therapy can help you to cope with a (new) mental or physical limitation and manage better in everyday life. This can improve your quality of life and health. Family members can also get useful tips and advice from an occupational therapist.

Depending on the type of limitation and your personal circumstances, occupational therapy may include the following:

- Re-training of everyday skills (getting dressed, preparing food, managing the household)
- Learning and practicing skills for school, work or free time
- Movement and perception exercises
- Concentration and memory exercises
- Manual and creative exercises
- Help in structuring your daily routine
- Modification of your home or workplace
- Using medical aids such as a walker or prosthesis
- Advice and, if needed, guidance for family members

The treatment goals are planned together with the therapist as much as possible, and the progress is also monitored together. For occupational therapy to succeed, you need to actively participate and use the techniques that you have learned in everyday situations as often as possible.

#### Brief note on Physiotherapy<sup>[10]</sup>

Most survivors of a stroke are left with chronic disability. Rehabilitation efforts during the initial three to six months after stroke should aim to maximize patients' physical, communicative, and cognitive functioning. Continued improvement in the chronic phase of stroke can occur with regular, progressive skills practice of goal-directed tasks in the home. Many new rehabilitation strategies, built upon attempts to leverage technological developments to augment the effects of practice, are opening innovative avenues to amplify gains in performance at any time after stroke. The future of stroke rehabilitation remains one of promise and challenge in treating residual disabilities, especially for testing biological interventions for neural repair in the most profoundly affected individuals.

#### Brief Note On Acupuncture<sup>[11]</sup>

Acupuncture is the practice of penetrating the skin with thin, solid, metallic needles which are then activated through gentle and specific movements of

the practitioner's hands or with electrical stimulation. Acupuncture is part of the ancient practice of Traditional Chinese medicine.

Effect of acupuncture in Post stroke patients:

- 1) Promotion of cell proliferation in the CNS, limited to neurogenic areas and some ischemic tissues;
- 2) Regulation of cerebral blood flow via angiogenesis and modulation of vaso active mediators;
- 3) Anti-apoptosis via direct intervention in the intrinsic and extrinsic pathways or related pathways
- 4) Regulation of neurochemicals involved in crucial steps in the ischemic cascade as neurotransmitters, antioxidants, inflammatory-related substances, neurotrophic factors, and metabolic substrates; and finally,
- 5) By potentiation and recovery of hippocampal memory and learning processes

The five major mechanisms involved in the beneficial effects of acupuncture / EA therapy in ischemic stroke rehabilitation are illustrated in Scheme

These five mechanisms are supported by evidence from the literature review, as follows:

1. Promotion of neurogenesis and cell proliferation in the central nervous system (showing neurogenesis in the subventricular zone of the lateral ventricle (LV) and the dentate gyrus (DG) are as in the hippocampus, and cell proliferation in ischemic tissue);
2. Regulation of cerebral blood flow in the ischemic area (showing angiogenesis in the LV and DG, and vaso active modulation in ischemic tissue);
3. Anti-apoptosis in the ischemic area (through modulation of specific and non-specific apoptotic pathways);
4. Regulation of neurochemicals, such as:
  - (a) Neurotransmitters and receptors,
  - (b) Antioxidant enzymes,
  - (c) Inflammatory mediators,



- (d) Neurotrophic factors,  
(e) Anerobic metabolism

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