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Role of Ayurveda in rehabilitation of *Abhighataja Pakshavadha* - A Clinical Management

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ABSTRACT

Traumatic cerebral haemorrhage is an increasingly recognized complication of severe blunt head or neck trauma, more common with patient with motor vehicle accidents, which may lead to complete paralysis, paraplegia, hemiplegia or severe conditions end up with coma. In the present case history, a 43 year aged male patient was in coma stage after he met with RTA and he recovered back with right hemiplegia. So, he was brought for Rehabilitation through *Ayurvedic* lines of management. Hence for the same, assessments were done through CNS examinations and NIH scoring was adopted to compare the effect before and after the treatment. And specific treatment was planned which includes *Panchakarma*, diet regimen, Physiotherapy, *Shamanoushadhis* and was successfully treated with *Ayurveda* interventions with reference to *Pakshavadha* line of management as a rehabilitative management and significant results were obtained after 3 follow ups (total duration for 112 days).

Key words: Hemiplegia, Pakshavadha, Panchakarma, Rehabilitation, Shamanoushadhis.

INTRODUCTION

Hemiplegia is a severe or complete loss of motor function of any one side of the body. It is generally caused due to intra cranial haemorrhage or ischemia (localized to cerebral hemisphere) where opposite side of the affected area the motor and sensory activity will be abnormal exhibiting the symptoms like loss of strength in upper and lower limbs with or without pain.^[1] And the patient also may exhibit the symptoms like slurred or difficulty in speech. And the

management of the condition will be through rehabilitative approach.

Pakshavadha (~stroke) according to *Acharya Charaka* exhibits *Lakshanas* (~signs and symptoms) like immobility and pain in half of the body along with slurred speech due to *Vata Prakopa* (~aggravated *Vata*) in half of the body resulting in constriction of *Sira* (~nerves) and *Snayu* (~includes connective tissue elements like tendons, ligaments or nerves etc).^[2]

According to *Acharya Sushruta* same *Lakshanas* (~signs and symptoms) are explained for *Pakshaghata* (~stroke) which is caused due to *Rakta Dushti* (~*Rakta* vitiation) and *Vata Prakopa* (~vitiating *Vata*).^[3] *Chikitsa* (~treatment) of *Pakshaghata* / *Pakshavadha* (~hemiplegia) according to classical texts are mainly *Brimhana* (nourishing) which includes, *Snehana* (~unctiousness) *Swedana* (~fomentation) *Vatanulomana* (~alleviation of *Vata*) through *Basti Chikitsa* (~enema) and *Mastishka Chikitsa* (~applying various oils on head), *Nasya* (~nasal drops), *Basti* (~enema) and *Vata Shamaka*, *Rakta Prasadaka*, *Balya Gunayukta Shamana Oushadhas* (~drugs which poses *Vata* alleviating action and are nourishing).^[4]

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CASE HISTORY

A 43 year aged male patient with history of recovery from coma before 2 months approached to outpatient section of *Kayachikitsa* of Sri Sri College of Ayurveda science in Bengaluru with complaints of loss of strength in right upper and lower limbs and further detailed explanation are given in table no. 1

Table 1: Clinical events and timeline

Date and Duration	Clinical Events
3/2/22	Patient met with an RTA and was taken to nearby PHC in unconscious state, after first aid they referred the patient to higher neurological department. And there he was declared as stage of COMA.
4/2/22 - 7/2/22	He was on NT tube and catheterisation, and 7th February he got eye opening response with blurred vision.
8/2/22 - 17/3/22	Considering the improvement, he was shifted to general hospital as he was out of danger.
18/4/22- 23/7/22	Gradually he gained his sensorium and noticed loss of strength in right upper and lower limbs. And right ulna and radius fracture was corrected through internal fixation.
23/7/22	Patient could move his right lower limbs with restricted right arm movement. For further better rehabilitation improvement he came to SSCASR

Negative History

No h/o Seizures, Not a known case of HTN

Complaints

Patient complaints of reduced strength in right upper and lower limb associated with stiffness since 6 months. Patient complaints of pain in right scapular region and arm since 2 months. Patient also complaints of slurred speech since 1 month.

Diagnosis

On Physical Examination

Built - Poor

Nourishment - Poorly nourished

BP - 110/70mmhg

Pulse - 68bpm

Temperature - 97.8° F

RR - 22 cycles /minute

Height - 169cm

Weight - 53 kg

BMI - 18.6 kg/m²

Central Nervous System

Patients higher mention functions were intact at the time of examination with reduced muscular strength, muscular tone and abnormal reflexes in right upper and lower limbs which the detailed findings are mentioned in table no. 2, 3, 4.

Table 2: Higher mental function examination.

Higher Functions		
Gait	Right leg circumduction gait	
Speech	Mildly affected (slurred speech)	
Mental Status		
a) HMF	Intact, well oriented	
b) MMSE	30/30	
Cranial Nerve Examination		
Olfactory nerve (CN1)	Intact	
Opticnerve (CN2)		
Occulomotor (CN3)		
Trochlear (CN4)		
Trigeminal (CN5)		
Abducent (CN6)		
Facial (CN7)		
Vestibulocochlear (CN8)		
Glossopharyngeal (CN9)		
Vagus (CN10)		
Hypoglossal (CN12)		
Affected Cranial Nerve	Right	Left
Accessory nerve (CN11)		
a) Shoulder shrugging	Slightly possible	Possible

Without resistance	Not possible	Possible
With resistance		
b) Head turn	Slightly possible	Possible
Without resistance	not possible	Possible
With resistance		

Table 3: Motor system examination

Muscle Tone	Left	Right
Upper Limb	Normal	Rigidity Present
Lower Limb	Normal	Rigidity Present
Muscle Strength		
Upper Limb	5/5	2/5
Lower Limb	5/5	3/5
Muscle Girth		
Mid Thigh Circumference	54cm	54 Cm
Mid Calf Circumference	41cm	41 Cm
Mid Arm Circumference	25.3 Cm	24.9 Cm
Involuntary Muscle Movements	Nil	Nil
Muscle Reflex		
a) Superficial Reflex		
Babinski's Reflex	Normal	Positive
b) Deep Tendon Reflexes		
Biceps	Normal	Diminished
Brachioradialis	Normal	Diminished
Triceps	Normal	Exaggerated
Knee Jerk	Normal	Exaggerated
Ankle Jerk		
Examination for Involvement of Meninges		
<ul style="list-style-type: none"> Neck Rigidity (Nuchal Rigidity) - Nil Kerning's Sign - Nil Brudzinski's Sign - Nil 		

Table 4: Sensory system examination

Sensory Examination	Left Upper Limb	Right Upper Limb	Left Lower Limb	Right Lower Limb
a. Light touch	Normal	Normal	Normal	Normal
b. Sharp touch	Normal	Present (not precise)	Normal	Present (not precise)
c. Pain sensation	Normal	Normal	Normal	Present (not precise)
d. temperature	Normal	Normal	Normal	Present (not precise)
e. Proprioception	Normal	Normal	Normal	Present (not precise)
f. Stereognosis	Normal	Present in thumb and index finger and absent in others	Normal	Normal
g. Graphasthesia	Normal	Present in big toe and 2 nd phalanx and absent in others	Normal	Present (not precise)
h. 2-point discrimination	Normal	Absent	Normal	Absent
Romberg's sign	Negative			
Finger to nose test	Can't do it with right hand			
Rapid alternative movement	Can't do it with right hand			
Tandem walking	Can't perform			
Heel to Shin test	Right heel falls to side of the shin of left leg as it descends down.			

NIH Scoring (National Institutes of Health Stroke scale)

NIH scoring was adopted to assess the changes in the patient before and after the treatment

Which includes certain parameters (table no. 5). It is an 11 item neurological examination stroke scale used to evaluate the cerebral infarction of the levels of

consciousness, language, neglect, visual-field loss, extra ocular movements, motor strength, ataxia, dysarthria, and sensory loss.

Table 5: NIH stroke SCORE assessment

SN	NIH score features	Score
1.	Level of consciousness	1
2.	LOC questions (month and age)	1
3.	LOC questions (eye movement and grip test)	0
4.	Best gaze	1
5.	Instructions (visual)	0
6.	Instructions (facial palsy)	1
7.	Instructions (motor leg)	1
8.	Limb ataxia	1
9.	Instructions (sensory)	1
10.	Instruction (best language)	2
11.	Instruction (extinction and in tension)	1

Investigations

Table 6: Lab investigation impressions

Normal Impression	Abnormal Impression
7/2/22: MRI of cervical spine and brachial plexus.	4/2/22: CT brain plain: acute EDH measuring 18mm along right anterior temporal lobe convexity. Cortical contusion in left temporal lobe fracture of lateral wall of right orbit, zygomatic arch, walls of right maxillary sinus and squamous part of right temporal bone. 7/2/22: MRI (brain) F/s/o DAI & right anterior temporal convexity SDH, clavicle fractures and scalp swelling. 17/6/22: MRI brain: multiple sites of blooming on SWI noted involving the brain stem (rostral midbrain), bilateral cerebral peduncles. Right side of body of corpus callosum and frontal subcortical white matter - s/o haemorrhagic diffuse axonal injury (DAI) grade III. Extra axial T2 hyperintensity noted in close proximity to the left transverse sinus as described above? Collection suggested CEMRI for further characterisation.

Area of gliosis noted in left inferior temporal region with abnormal susceptibility-sequel of prior insult. Micro angiopathic changes noted. No acute infarcts.

Treatment Protocol

Patient was treated with *Shirodhara* (~scalp treatment) with *Brahmi Taila* and *Himasagara Taila*, *Kala Basti*(~enema) with *Anuvasana Dravya*(~ oil enema) as *Ashwagandha Ghrita* and *Niruha Basti* (~decoction *Basti*) *Dravya* as *Erandamoola Niruha Basti*, *Stanika Abhyanga* with *Prasarini Taila* and *Ashwagandha Bala Lakshadi Taila* to right half of the body which was followed by *Stanika Nadi Sweda*, and throughout the hospital stay patient was on physiotherapy. Detailed treatment timeline and protocol is mentioned in the table below.

Table 6: Timeline of the treatment during hospital stay.

Duration	Panchakarma Treatments	Medications Used
Day 1 - Day 20	1. <i>Shirodhara</i> 2. <i>Kala Basti</i>	1) <i>Brahmi Taila</i> + <i>Himasagara Taila</i> 2) A) <i>Anuvasana Basti</i> (<i>Ashwagandha Ghrita</i>) = 75ml B) <i>Niruha Basti</i> = <i>Erandamoola Niruha Basti</i> Ingredients: <i>Madhu</i> - 50 ml <i>Saindhava Lavana</i> - 1 pinch <i>Ashwagandha Ghrita</i> - 75 ml <i>Shatapushpa Kalka</i> - 15grams <i>Erandamoola Kashaya</i> - 450 ml
Day 1 - Day 20	<i>Yoga (Pranayama)</i>	<i>Anuloma</i> and <i>Viloma</i> (5 time for each side of the nostril)

Day 4 - Day 9	Physiotherapy	Range of movement exercises
Day 5 - Day 20	<i>Stanika Abhyanga</i> + <i>Stanika Nadi Sweda</i> (right half of the body)	<i>Prasarini Taila</i> + <i>Ashwagandha Bala Lakshadi Taila</i>

Shamanoushada

Based on *Rogi Bala* (~patients strength) and *Lakshana* (~signs and symptoms) exhibited nerve strengthening and stabilizing logic was applied and was advised with tablet Nural, capsule *Ksheerabala* 101 DS, Tablet Prolong was given till hospital stay and was advised with separate list of *Shamanoushadhis* as discharge medications for 1 month and after that 2 follow ups were done after every 15 days.

Table 7: Oral medications during hospital stay

SN	Yogas	Dosage	Duration	Timing
1.	T. Nural	1	TID	After food
2.	C. <i>Ksheerabala</i> 101 DS	1	TID	Before food
3.	T. Prolong	1	HS	At bed time

And the patient was advised to continue the existing allopathic medications

Existing Medications

1. Tab. Folitrix 10mg (Once in week)
2. Tab. Folic Acid 5mg (Once in a week)
3. Tab. MCQS 200mg (0-0-1) (Rheumatoid Arthritis)
4. Tab. Shelcal 500 Mg (0-1-0)
5. Tab. Retoz 60mg SOS for Pain
6. Cap. Evion LC 0-1-0

Discharge Medications and Follow Ups.

By considering the positive changes in the patient by the end of treatment course in hospital patient was advised to discharge with same set of medicines which were given during hospital stay with altered dose for 1

month and then was followed by 2 follow ups in each 15 days. And details of the medicines are mentioned in the table no.8. So, the total duration of the treatment was for 112 days.

SN	Shamana Yogas	Day 20 - Day 50	Day 51 - Day 81	Day 82 - Day 112
1.	T. Nural 1 TID A/F	+	1 BID A/F	-
2.	C. <i>Ksheerabala</i> 101 DS 1TID B/F	+	1 BID A/F	-
3.	T. Prolong 1 HS	+	+	-
4.	<i>Amalaki Churna</i> - 30 gms + <i>Guduchichurna</i> - 30 gms + <i>Musta Churna</i> - 30 gms 1 Tsf BID A/F	-	+	1 TSF at bed time A/F
5.	<i>Balarishta</i> 10 ml BID A/F	-	-	+
6.	T. Livon 1 BID A/F	-	-	+
7.	T. Jointapp 1 BID A/F	-	-	+
8.	T. Neo joint CQ 1 HS	-	-	+
9.	T. <i>Shankha Vati</i> 1 TID B/F	-	-	+
10.	C. Coligo 1 TID SOS	-	-	+

RESULT

There was a significant improvement in gait of the patient compared to the initial days (right circumduction gait) to almost normal gait without imbalance by the end of the treatment that is on Day 112.

Other improvements include increased grades in muscle strength and tone of the muscles in right upper and lower limbs and the details are given in table 8 and table 9.

Table 8: End Point Results


Muscle Reflex	RT	LT
Babinskis reflex	Negative	Normal
Biceps reflex	Diminished	Normal
Brachio-radialis	Normal	Normal
Triceps	Diminished	Normal
Knee jerkankle jerk	Normal	Normal
Ankle jerk	Normal	Normal
Muscle Strength	RT	LT
Upper limb	3/5	5/5
Lower limb	5/5	5/5
Sensory Examination	Right Upper Limb	Right Lower Limb
a. Light touch	Normal	N
b. Sharp touch	Present	Present
c. Pain	Normal	N
d. Temperature	 Present in thumb and index finger absent in other fingers	N
e. Proprioception		Present
f. Stereognosis		Absent
g. Graphesthesia		Absent
h. 2 point discrimination	Absent	Absent

Table 9: NIH SCORE comparison before and after treatment

SN	NIH score features	Score BT	Score AT
1.	Level of consciousness	1	0
2.	LOC questions (month and age)	1	0
3.	LOC questions (eye movement and grip test)	0	0
4.	Best gaze	1	0
5.	Instructions (visual)	0	0
6.	Instructions (facial palsy)	1	0
7.	Instructions (motor leg)	1	1

8.	Limb ataxia	1	1
9.	Instructions (sensory)	1	0
10.	Instruction (best language)	2	0
11.	Instruction (extinction and intension)	1	0

DISCUSSION

Haemorrhagic stroke is a condition which includes symptoms such as loss of strength and if not treated in right approach can lead to coma or patient can be in the stage of coma soon after the head injury and could recover back but with partial loss of sensory or motor activities. Which depends on location of the haemorrhage and extent of gliotic changes in the cerebral hemisphere. Here in the present case initially patient was in stage of coma (without rapid eye movement) which after hospitalisation, gradually he came out of stage of COMA. And now he came to our hospital with concerned to loss of strength in right upper and lower limbs which we can compare to *Pakshavadha/Pakshaghata* in *Ayurveda* and *Vata Vyadhi Chikitsa Sutra*^[5] (~*Vata* type of disease and treatment) was adopted. Main aim of the treatment for the present case was achieved through *Brimhana* (~nourishing), *Rakta Prasadana* (~blood circulation), and *Balya* (~strengthening), *Vata Pradhana Tridosha Shamaka Dravyas* (~drugs processing *Vata* and other *Dosha* alleviating properties).

Mode of Action

Shirodhara was adopted for *Shiro Marma Chikitsa* for *Vata-Pitta Shamana* and *Medya* action by *Brahmi Taila* which is *Medya Dravya*^[6] also told for *Medya* and *Jarturdva Roga Chikitsa*, and *Himasagara Taila* is having key ingredients such as *Shatavari* (*Asparagus racemosus*), *Vidari* [*Pueria tuberosa* (Roxb.ex Wild)], *Kushmanda* [*Benincasa hispida* (Thunb.)Cogn.], *Dhatri* [*Embllica officinalis* Gaertn.], *Shalmali* [*Bombax ceiba*] is *Vata Pitta Shamaka* and is indicated for *Shiro Abhghata* which does *Rakta Prasadana* and *Vata Hara* and is *Medya*.^[7]

Karma Basti was given as *Brimhana Basti* with *Ashwagandha Ghrita* (~ghee based medicine) as *Anuvasana* which is having *Guna-Karma* (~properties)

such as *Brimhana* (~nourishing therapy), *Rasayana* (~rejuvenation therapy), *Balya* (~strengthening) properties and *Eranda moola Niruha Basti* is classically indicated for *Vata Vyadhi* (~diseases of *Vata*).^[8]

Stanika Abhyanga was adopted for *Snehanarta* (~Oleation) with *Prasarini Taila* which is having properties of *Vata-Shamaka*, *Rakta Prasadaka* properties and *Ashwagandha Bala Lakshadi Taila* in which the ingredients possess properties as *Balya Brimhana*, and *Vata Shamaka* and helps in clearing the occurred pathology.^[9]

Shamana Oushadhis

Tab. Nural which is having ingredients like *Brihat Vata Chintamani*, *Rajata Bhasma*, *Maharasnadi Kwatha*, *Dashamoola Kwatha*, *Ashwagandha*, *Eranda*, *Kapikachchu*, *Rasona*, *Guggulu*, *Trikatu*. Accountably they exhibit functions such *Deepana*, *Pachana*. *Brihat Vata Chintamani* does *Vata Shamana* and strengthens nervous system. *Pravala Bhasma* is claimed to have properties of *Balya* and *Dhatu Prasadana* (~promoting tissue promoting action) and it has got nano particles of calcium, gold does regulating presynaptic plasticity in nerve cells.^[10]

Tab. Prolong is a curcumin extract which has got apoptotic activity^[11] can stop the gliotic changes in the brain. And is also mentioned as *Shirovirechanopaga* by *Acharya Vagbhata*

Cap. *Ksheerabala* 101 DS - Based on studies it is claimed to have neuroprotective action, *Bala* is the main ingredient in the *Yoga* and it is indicated for *Vata Vyadhi*.^[12]

Amalaka Churna - As the basic pathology involved in this case is hemorrhage, there will be *Rakta Dhatu Kshaya* and so, as *Amalaka* [*Emblica officinalis* Gaertn.] is having *Amla Rasa Pradhana* (~predominant sour taste) and *Rasayana Dravya* (~rejuvenator) it does *Swayoni Vardhana* and helps in *Dhatu Poshana* (~tissue nourishment) and *Balavardhana*.^[13]

Guduchi Churna - Based on studies it is claimed to be an anti-inflammatory and immune-modulator drug^[14] even in classical texts also properties of *Guduchi*

[*Tinospora cordifolia*] is mentioned as *Tridosha Shamaka* (~alleviates *Tri Doshas*), *Rasayana* is also a *Balya Dravya*.

Musta Churna - *Musta Churna* [*Cyperus rotundus* Linn.] is told as *Deepana*, *Pachana* (~digestive stimulants) and *Rakta Dushti Hara* by *Acharya Charaka*^[15] And based on studies it is claimed to have properties like anti-inflammatory action.^[1]

Balarishta - The key ingredients of the yoga are *Bala* [*Sida cordifolia* Linn.], *Ashwagandha* [*Withania somnifera*(L.)] which are mainly *Vata Hara* (~alleviates *Vata*) is directly indicated for *Vata Vyadhi* (~diseases of *Vata*). It promotes *Balya* action through its *Brimhana* (~nourishing) action and enhances muscular activities. And classically told as *Bala*, *Pushti* and *Agni Vardhana* (~enhances strength, vigour, and digestive capacity).^[16]

Livon tablet - Livon contains key ingredients such as *Katuki* [*Picrorhiza kurroa*], *Bhumyamalaki* [*Phyllanthus niruri* Linn.], *Patola* [*Trichosantheum diocius*], *Punarnava* [*Boerhavia diffusa* (BD) Linn.], *Chitraka* [*Plumbago zeylanica* Linn.] which in this case helps in *Agni Vardhana* (~digestive enhancer), *Pitta Rechana*, *Patola* helps in *Rakta Prasadana* and hence it may act in liver protection.

T. Jointapp, T. Neo joint CQ (*Cizzus quadrangularis*) was given as calcium supplement as the patient was also had fractures.

T. *Shankha Vati*, C. Coligo was given during follow for other digestion related complaints.

Pathya Apathya

Patient was advised to eliminate brinjal, pulses, potatoes and sprouted legumes as regular diet as they cause further *Vata Prakopa*. And patients was given with *Pongal*, *Purana Shali* (old rice), *Jeera Rasam*, green leafy vegetables, *Mudga Yusha*, *Yavagu*, *Chapati* and well boiled vegetables (all freshly prepared) milk with sugar candy at night, 1 tsp of ghee daily, during hospital stay and was advised to continue the same even after discharge with *Mamsa Rasa*. Meditation and *Anuloma* and *Viloma* was advised as *Pathya Vihara* and 20 minutes of dhyana was also advised.

CONCLUSION

Ayurveda line of management depends upon the extent of gliotic changes that have happened in the brain tissues, *Rogi Bala* and chronicity of the disease with respect to Hemiplegia. So, here through a well understood case history, involved *Dushti* and based on *Vata Vyadhi* line of management, treatments were planned and successful outcome was established. Through this it can be inferred that it is possible to treat case of hemiplegia in Ayurveda and rehabilitation can be established with our line of management.

PATIENT CONSENT

Patients consent was taken before taking the case for article writing.

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