



**A COMPARATIVE CLINICAL STUDY ON EFFECT OF SHALI PINDA SWEDA AND
TILA PINDA SWEDA IN PAKSHAGHATA**

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Article Received on 26/06/2021

Article Revised on 16/07/2021

Article Accepted on 06/08/2021

ABSTRACT

Background: *Pakshaghata* or else known as *Pakshavadha* is one among 80 types of *nanatmaja Vatavyadhi*. It is considered as a *maharoga* with the due consideration of problems encountered in the effective management. Internal and external oleation, unctuous sudation as well as unctuous purgation forms the sheet anchor of the treatment of *pakshaghata*. *Pindasweda* is a variety of sudation and is claimed as an effective treatment in the management of *pakshaghata*. This study is intended to evaluate the effect of *Shali Pindasweda* and Tila pindasweda in patients suffering from *pakshaghata* / Vascular Hemiplegia. **Objective:** To evaluate the therapeutic effect of *Tila pindasweda* and *shali pindasweda* in patients suffering from *pakshaghata* / Vascular Hemiplegia. **Design:** Study Type: Interventional; Allocation: Randomized; Endpoint Classification: Efficacy Study; Intervention Model: Double Group Assignment; Masking: Open Label; Primary Purpose: Treatment. **Setting:** Patients admitted to Sri Dharmasthala Manjunatheshwara Ayurveda Hospital with complaints related to *pakshaghata* / acute Vascular Hemiplegia. **Participants:** 30 patients with confirmed diagnosis of *pakshaghata* / Vascular Hemiplegia with stable general condition between January 2016 and January 2017. **Interventions:** Abhyanga with mahanarayana taila followed by *Tila pindasweda* every day for 14 days. **Main outcome measure:** Change from baseline in muscle power of extremities at 15 days. **Result:** *Pakshaghata* of recent onset with stable general condition were selected in the study. In most of the patients the duration of the illness is between 3 to 10 days (72%). Initially before the *Tila pindasweda*, the patients had no movements in the upper and lower extremities of affected side. Following *Tila pindasweda*, maximum number of patients showed improvement in movements in the form of flickering type to gravity eliminated movement. These improvements in the muscle power of upper and lower extremities are also statistically significant. *Swedana* is known to reduce the pain and stiffness of the body parts and alleviate the morbidity of *vata dosha*. The improvement in the muscle power following medication also proves the beneficial effect of *Tila pinda sweda* in alleviating the morbidity of *vata dosha*. **Conclusion:** *Pakshaghata* caused by vitiation of *vata dosha*, characterised by loss of muscle strength in vertical half of the body is best treated by *Tila pinda sweda* than *Shali pindasweda*. That improves the muscle power.

KEYWORDS: *Pakshaghata*, *Tila Pindasweda*, *Shali Pindasweda*, Vascular Hemiplegia.

INTRODUCTION

Stroke is the most common clinical illness of Cerebro-vascular disease mostly occurring in elderly people in developed countries. Acute onset of focal or global neurological deficit that lasts more than 24 hours is characteristic.^[1] Spontaneous loss of muscle strength in any vertical half of the body is termed as *pakshaghata*. *Pakshaghata* or else known as *pakshavadha* is one among 80 types of *nanatmaja Vatavyadhi*.^[2] It is considered as a *maharoga* with the due consideration of problems encountered in the effective management. Either *margavarana* or *dhatu kshaya* tend to cause the illness. Abnormal accumulation of the *kapha* and *medas*

in the *rakta marga* precipitating *margavarana* eventually causes *margavarana* and *pakshaghata*. Or else the vitiated *rakta dhatu* afflicting the *shiras marma* causes *shiro marmabhighata* and finally presents as *pakshaghata*. Vitiated *vata dosha* degenerating the *sira snayu* and *kandara* related one half of the body is the prime pathology.^[3] Internal or external oleation, unctuous sudation and unctuous purgation form the sheet anchor treatment in the management of *pakshaghata*.^[4] While inducing perspiration, the unctuous sudation is said to relieve symptoms like stiffness, contracture, heaviness, pain and coldness affecting different body parts. The procedures of sudation like *pinda sweda*,

nadisweda, and *avagaha sweda* are worth mentioning in this regard.^[5] Loss of muscle strength in any vertical half of the body associated with subjective symptoms of heaviness, numbness, rigidity and contractures are the cardinal manifestation of *pakshaghata* and are best relieved by any of the these unctuous *swedana* procedure. With this rationality in this study; *Tila pindasweda* and *Shali pindasweda* is selected^[6] as an effective treatment of *Pakshaghata* / vascular hemiplegia.

OBJECTIVE

To evaluate the therapeutic effect of *Tila pindasweda* in patients suffering from *Pakshaghata* / Vascular Hemiplegia.

To evaluate the therapeutic effect of *Shali pindasweda* in patients suffering from *Pakshaghata* / Vascular Hemiplegia.

To compare the efficacy of *Shali Pinda sweda* and *Tila pinda Sweda* in *Pakshaghata*/ Vascular Hemiplegia.

Design: Study Type: Interventional; Allocation: Randomized; Endpoint Classification: Efficacy Study; Intervention Model: Double Group Assignment; Masking: Open Label; Primary Purpose: Treatment.

Setting: Patients admitted to Sri Dharmasthala Manjunatheshwara Ayurveda Hospital, Udipi with complaints related to *Pakshaghata* / Acute Vascular Hemiplegia. The medicines required for *Tila pindasweda* and *Shali pindasweda*, are obtained from Sri Dharmasthala Manjunatheshwara Ayurveda pharmacy, Udipi.

Participants: 30 patients with confirmed diagnosis of *pakshaghata* / Vascular Hemiplegia with stable general condition between January 2016 and January 2017.

Inclusion criteria

1. Patients suffering from *Pakshaghata* with parallel diagnosis of Hemi paresis / Hemiplegia due to thromboembolism.
2. Patients above the age of 16 years.
3. Patients of either Sex.

Exclusion Criteria

1. Patients suffering from *Pakshaghata* with associated symptoms indicative of morbid *kapha dosha* and *pitta dosha*
2. Patients of Hemiplegia/Hemi paresis with cerebral infection, Malignancy or Cerebral Haemorrhage.
3. Patients with altered states of consciousness

Interventions

The eligible subjects were invited to participate in this clinical study, after signing a detailed Informed consent and were then registered for the study. The registered participants were randomly allocated into two groups by adapting the permuted block randomization method. Registered participants were treated with *Shali Pinda*

sweda and *Tila Pinda Sweda* of these as per the study protocol details are provided in the table 01. The outcome measures are assessed at baseline and by the completion of the interventions. The selected patients are treated with *Tila pinda sweda* in Group A and *Shali Pinda Sweda* in Group B, every day for 60 minutes in the morning hours for consecutive 14 days. The whole procedure of *pinda sweda* included application of the *talam*, *abhyanga*, *pinda sweda* and hot water bath. After evacuation of the bowel and bladder the patient is subjected to *talam* with *Rasnadi choorna*. Then the patient is made to lie down on the treatment table. *Abhyanga* is carried out using *Mahanarayana taila* for about 30 minutes on the whole body. This is followed by *Tila pindasweda* in Group A and *Shali pinda Sweda* in Group B on the whole body from neck to toe for 30 minutes. Then the patient is asked to take rest for about 30 minutes and then allowed to take hot water bath. This completes the procedure of *Tila pinda sweda* and *Shali Pinda Sweda* is repeated every day until 14 days.

Arm	Intervention / treatment
Experimental:1 Group A	<i>Tila Pinda Sweda</i> Procedure : <i>Tila Pinda Sweda swedana</i> procedure, <i>Tila Pinda sweda</i> is carried out all over body for half an hour every day for 15 days
Experimental:2 Group B	<i>Shali Pinda Sweda</i> Procedure : <i>Shali Pinda Sweda swedana</i> is carried out all over body for half an hour every day for 15 days

Primary outcome measures

1. Change from baseline in **Muscle strength** at 15 days [Grades of Muscle strength is scored as (a). No movement = 0; (b). Flicker with attempting movement = 1; (c). Movement against gravity eliminated = 2; (d). Movement against gravity = 3; (e). Diminished = 4; (f). Normal power =5]
2. Change from baseline in **Paper Holding** at 15 days [Grades of Paper Holding is scored as (a). Patient fails to hold paper = 0; (b). Patient holds gently = 1; (c). Normal = 2;]
3. Change from baseline in **Handgrip Power test** at 15 days [method: The mercury level of Sphygmomanometer was kept steady at 40mm of Hg and patient was asked to press the cuff with maximum strength, first with unaffected hand and then with affected hand. Then mean of three readings are calculated]
4. Change from baseline in **Foot Pressure** at 15 days [method: Patient was asked to press with his leg on the machine as much as possible. Three readings were taken, then mean of three readings were calculated]
5. Change from baseline in **walking time** at 15 days [Method: Patient was asked to walk 50 feet distance in a straight line. The time taken to walk the distance was recorded in seconds.]

Secondary outcome measure

1. Change from baseline in ability of **finger movement** at 15 days [Grades of movement is scored as (a). No movement = 0; (b). Slight movement = 1; (c). Unable to hold the object = 2; (d). Ability to hold with less power = 3; (e). Normal = 4]
2. Change from baseline in **Lifting of arm at Shoulder** at 15 days [Grades of lifting is scored as (a). No = 0; (b). Up to 45= 1; (c). Up to 90= 2; (d). up to 135= 3; (e). Up to 180= 4]
3. Change from baseline in **Lifting of leg at Hip joint** at 15 days [Grades of lifting is scored as (a). No = 0; (b). Upto 45= 1; (c). Upto 90= 2;]

STATISTICAL ANALYSIS

30 Patients suffering from *Pakshaghata* (CVA with Hemiplegia due to Thromboembolism) were screened under strict diagnostic, inclusion and exclusion criteria. 35 Eligible participants were invited to participate in this clinical study and after signing a detailed informed consent, they were registered study. Among 35 patients 05 patients were dropped from the study for various reasons.

Descriptive statistical analysis of these patients was analyzed and presented by using the software Sigma Stat version 3.5. The parametric and nonparametric data obtained by assessing the pain were analyzed by paired t test to note the significance of treatment with in the individual group. ANOVA test was used to compare the results between the groups.

PATIENT INVOLVEMENT

None of the participants were involved in preparing the research question or selecting the regimen, Primary and secondary outcome measures, nor were they involved in establishing the plans for Recruitment, design, or implementation of the study. No participants were asked to suggest the interpretation or writing up of results.

RESULTS

Among the 30 patients 46 % belonged to the age group of 61 to 70 years, 70% were males, 83 % were Hindu, 40 % had poor socioeconomic status, 70% had primary education and 76% of patients were from rural area.

Table 1: Demographic Profile.

Profile	Category	SPS		TPS		Total	
		NO	%	NO	%	NO	%
Age (in years)	41-50	5	33	3	20	8	27
	51-60	5	33.	3	20	8	27
	61-70	5	34	9	60	14	46
Gender	Male	10	67	11	73	21	70
	Female	5	33	4	27	9	30
Educational Status	Illiterate	3	20.5	3	20.5	6	21
	Primary	10	67.5	11	74.5	21	70
	Middle	0	0	1	6	1	3
	High school	1	6	0	0	1	3
	Graduate	0	0	0	0	0	0
	Post graduate	1	6	0	0	1	3
Religion	Hindu	11	73	14	93	25	83
	Muslim	1	7	1	7	2	7
	Christian	3	20	0	0	3	10
	Jain	0	0	0	0	0	0
Habitat	Urban	5	34	2	13	7	24
	Rural	10	66	13	87	23	76
Socio-Economic Status	Very Poor	0	0	1	7	1	3
	Poor	8	53	4	26	12	40
	Lower Middle	4	27	6	40	10	34
	Middle	2	13	3	20	5	17
	Upper middle	1	7	1	7	2	6
	Rich	0	0	0	0	0	0

Observations of Personal History : In all the groups 93 % of participants were married, 90 % recorded mixed diet, 77 % had the addiction of Cigarette smoking, 73 % of patients had disturbance of sleep due to pain occasionally, and 70 % patients had *Madhyama koshtha*.

Table 2: Observations of Personal History.

Profile	Category	SPS	%	TPS	%	Total	%
Marital Status	Married	14	93	14	93	28	93
	Widowed	1	7	1	7	2	7
Diet	Vegetarian	2	14	1	7	3	10
	Mixed	13	86	14	93	27	90
Addiction	Beedi	8	53	9	60	17	57
	Cigarette	11	73	12	80	23	77
	Gutka	9	60	8	53	17	57
	Alcohol	8	53	10	67	18	60
	None	2	13	3	20	5	17
Sleep	Disturbed	12	80	10	67	22	73
	Sound	3	20	5	33	8	27
Koshta	Mrudu	2	13	2	13	4	13
	Madhyama	11	74	10	67	21	70
	Krura	2	13	3	20	5	17

RESULTS**Tila pindasweda: Group A**

Out the 15 patients studied, maximum number of patients i.e 60% belong to the age group of 61-70 years,73% of

the patients were males,93% of the patients were married,93% of the patients were Hindu,40% of the patients belonged to lower middle class.

Table 3: Effect of treatment on primary outcome measures.

Muscle power	Mean score		Difference in means	Paired 'T' Test			
	B.T	A.T		S.D	S.E.M	't'	P
Shoulder	2.867	3.667	0.800	0.561	0.145	5.527	<0.001
Elbow	3.133	3.600	-0.467	0.516	0.133	-3.500	=0.004
Wrist	2.867	3.400	-0.533	0.516	0.516	4.000	0.001
Hip	3.333	3.867	0.533	0.516	0.133	4.000	0.001
Knee	3.200	.533	0.333	0.488	0.126	2.646	=0.019
Ankle	3.067	3.400	0.333	0.724	0.187	1.784	0.096

Effect of treatment on primary outcome measures

Effect of treatment on Muscle strength: Power of different muscle groups at shoulder, elbow, wrist, knee and ankle are assessed at baseline and after the *tila pindasweda*. Increase in the power is recorded in all the muscle groups following treatment with *tila pindasweda*. Also most of these changes following treatment proved to be statistically significant by the t test of comparison with $p < 0.001$. The details of the same is given in the table 03.

Effect of treatment on Paper Holding: The mean score of paper holding was reduced by 0.400 from the initial score of 0.800. However the statistical test of significance revealed the possibility of sample variability for the change (Table 04).

Effect of treatment on Handgrip Power test: In the handgrip power test, the mean of scores at baseline was 32.333 mm of hg; that increased to 39.000 mm of hg following *tila pinda sveda*. Thus there was an increase in handgrip power by 6.667 mm of hg and this was statistically significant as shown by the t test.

Effect of treatment on Foot Pressure: The mean foot pressure recorded was 23.667 kg and the same improved to 25.667 kg following application of *tila pinda sveda* for

14 days. However the t test could not prove the statistical significance of the same. (Table 04).

Effect of treatment on walking time: The average time taken for walking 50 ft on a straight line was 7.2 seconds before the treatment that reduced to 6.6 seconds thus recording an imprudent of 0.6 seconds following the treatment. This meagre improvement may be due to chance factor as the t test could not show the statistical significance (Table 04).

Secondary outcome measure

Effect of treatment on finger movement: The mean score of finger movement test before the treatment of *tila pinda sveda* was 2.467. The same is improved to 3.000 after the treatment. Also the t test proves the statistical significance of the improvement recorded following *tila pinda sveda* (Table 04).

Effect of treatment on toe movement: The initial score of 3.067 in the toe movement improved to 3.667 following treatment with *tila pinda sveda*. This improvement of 0.6 in the mean score of toe movement is statistically significant as indicated by the t test. (Table 04).

Effect of treatment on Lifting of arm at Shoulder: an improvement by 0.467 in the mean score of lifting the arm at shoulder was recorded from the initial score of 2.200. The statistical analysis by t test revealed this small improvement may be due to chance factor. (Table 04).

Effect of treatment on Lifting of leg at Hip joint: Before the tila pinda sveda the mean score of lifting of leg at hip joint was 2.600. This increased to 2.933 following treatment. this improvement after the 14 days of treatment may be due to chance factor and indicated by the t test analysis (Table 04).

Table 04: Effect of treatment on different outcome measures.

Outcome measure	Mean		Difference in Means	Paired 't' Test			
	BT	AT		S.D.	S.E.M	't'	P
Paper holding	0.800	1.200	0.400	0.507	0.131	3.055	= 0.009
Handgrip Power	32.333	39.000	6.667	6.455	1.667	4.000	=0.001
Foot Pressure	23.667	25.667	2.000	2.535	0.655	3.055	=0.009
Walking time	7.200	6.600	0.600	0.986	0.254	2.358	= 0.033
Finger Movement	2.467	3.000	0.533	0.516	0.133	4.000	0.001
Toe Movement	3.067	3.667	0.600	0.507	0.131	4.583	=<0.001
Lifting of arm	2.200	2.667	0.467	0.516	0.133	3.500	0.004
Lifting of Leg	2.600	2.933	0.333	0.333	0.333	2.646	0.019

RESULTS

Shali pinda sweda: Group B

Out the 15 patients studied, maximum number of patients i.e 34% belong to the age group of 61-70 years,67% of the patients were males,93% of the patients were married73% of the patients were Hindu,27% of the patients belonged to lower middle class.

Effect of treatment on primary outcome measures

Effect of treatment on Muscle strength: Power of different muscle groups at shoulder, elbow, wrist, knee and ankle are assessed at baseline and after the *Shali pindasweda*. Increase in the power is recorded in all the muscle groups following treatment with *Shali pindasweda*. Also most of these changes following treatment proved to be statistically significant by the t test of comparison with $p < 0.001$. The details of the same is given in the table 05.

Table 05: Effect of Shali pindasweda on muscle strength.

Muscle power	Mean score		Difference in means	Paired 'T' Test			
	B.T	A.T		S.D	S.E.M	't'	P
Shoulder	3.46	3.66	0.200	0.561	0.145	1.382	<0.050
Elbow	3.133	3.400	0.267	0.594	0.153	1.740	<0.050
Wrist	3.00	3.533	0.533	0.516	0.133	4.00	<0.050
Hip	3.400	3.800	-0.400	0.507	0.131	-3.055	0.009
Knee	3.267	3.867	-0.600	0.507	0.131	4.583	= <0.001
Ankle	3.267	3.133	0.133	0.640	0.165	0.807	0.433

Effect of treatment on Paper Holding: The mean score of paper holding was reduced by 7.467 from the initial score of 7.867. However the statistical test of significance revealed the possibility of sample variability for the change (Table 06).

Effect of treatment on Handgrip Power test: In the handgrip power test, the mean of scores at baseline was 27.200 mm of hg; that increased to 35.133 mm of hg following *Shali pinda sweda*. Thus there was an increase in handgrip power by 8.067 mm of hg and this was statistically significant as shown by the t test.

Effect of treatment on Foot Pressure: The mean foot pressure recorded was 26.000kg and the same improved to 34.000kg following application of *Shali pinda sweda*. for 14 days. However the t test could not prove the statistical significance of the same. (Table 06).

Effect of treatment on walking time: The average time taken for walking 50 ft on a straight line was 7.8 seconds before the treatment that reduced to 7.4seconds thus recording an imprudent of 0.4 seconds following the treatment. This meagre improvement may be due to chance factor as the t test could not show the statistical significance (Table 06).

Secondary outcome measure

Effect of treatment on finger movement: The mean score of finger movement test before the treatment of *Shali pinda sweda* was 2.429. The same is improved to 2.929 after the treatment. (Table 06).

Effect of treatment on toe movement: The initial score of 3.067 in the toe movement improved to 3.600 following treatment with *Shali pinda sweda*. This improvement of 0.533 in the mean score of toe

movement is statistically significant as indicated by the t test. (Table 06)

Effect of treatment on Lifting of arm at Shoulder: an improvement by 2.867 in the mean score of lifting the arm at shoulder was recorded from the initial score of 1.933. The statistical analysis by t test revealed this small improvement may be due to chance factor. (Table 06)

Effect of treatment on Lifting of leg at Hip joint: Before the *Shali pinda sweda*, the mean score of lifting of leg at hip joint was 1.933. This increased to 2.600 following treatment. This improvement after the 14 days of treatment may be due to chance factor and indicated by the t test analysis (Table 06).

Table 06: Effect of treatment on different outcome measures.

Outcome measure	Mean		Difference in Means	Paired 't' Test			
	BT	AT		S.D.	S.E.M	't'	P
Paper holding	1.000	1.267	0.267	0.458	0.118	2.256	= 0.041
Handgrip Power	27.200	35.133	7.933	5.898	1.523	5.210	= <0.001
Foot Pressure	26.000	34.000	8.000	13.470	3.478	= 0.037	= 0.037
Walking time	7.867	7.467	0.400	0.507	0.131	3.055	= 0.009
Finger Movement	2.429	2.929	0.500	0.519	0.139	3.606	= 0.003
Toe Movement	3.067	3.600	0.533	0.516	0.133	4.000	= 0.001
Lifting of arm	1.933	2.867	-0.933	0.799	0.206	4.525	= <0.001
Lifting of Leg	1.933	2.600	0.667	0.617	0.159	4.183	= <0.001

DISCUSSION

Etiological factors or *margavarana* causes vitiation of *vata dosha*. Thus vitiated *vata dosha* degenerates the *sira snayu* and *kandara* related to a vertical half of the body. This *samprapti* loosens the joint anchors and eventually the patient suffers from the *pakshaghata* of the affected vertical half. Internal and external oleation, unctuous sudation, unctuous purgation forms the complete treatment of *pakshaghata*. Among these procedures remission of pain, swelling stiffness of the body parts and the correction of causative *vata dosha* is best achieved by unctuous sudation. Thus the *Tila pinda sweda* and *Shali pindasweda* is planned in patients suffering from *pakshaghata* of recent onset. *pindasweda* induces sweating by the method of applying direct heat. Remission of the illness, lightness of the body part, relief from pain, elimination of stiffness and absence of cold feeling are appreciated by the proper administration of sudation. Pain, stiffness, loss of muscle power, rigidity, and contractures are the common essential symptoms of *pakshaghata* and all are best treated. The improvement in 14 days in the functional ability of the patient in terms of muscle power, Paper Holding Handgrip Power test Foot Pressure Walking time finger movement Lifting of arm at Shoulder Lifting of leg at Hip joint proves the beneficial effect by this treatment. Remission of the symptoms and improvement in the functional ability proves the alleviation of the morbid *vata dosha* by the *tila pindasweda*. Since these interventions have not resulted in complete remission of the illness judicial planning of these procedures for a longer period may prove more effective

CONCLUSION

Treatment of *Tila Pinda Sweda* in patients suffering from *Pakshaghata* stands very effective in combating all the aspect of the disease. This is justified by increase in the muscle power of the upper and lower limbs, improvement in finger movement, toe movement,

improvement in walking time, improvement in hand grip, and foot pressure thereby an overall increase in the functional ability of the patient. The treatment is safe and effective. Despite the benefit, which were seen in the initial phases of this treatment, it has limitations in treating chronic patients suffering from *Pakshaghata*. On the basis of the results of this research work it may be said that with the Treatment of *Tila Pinda Sweda*, facilitated better improvement in conditions of *Pakshaghata*.

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