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A COMPARATIVE CLINICAL STUDY ON THE EFFECT OF *ANUVASANA BASTI, SALVANA UPANAHA* AND *NASYA* IN THE MANAGEMENT OF *PAKSHAGHATA* WITH AND WITHOUT PHYSIOTHERAPY

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ABSTRACT

Pakshaghata is a *vataja nanatmaja vyadhi*, *Pakshaghata* demands a pioneer treatment of *Vata* i.e, *Basti*, especially *Anuvasana Basti* would be more useful. As *shiras/masthika, Marma sthana*, is the *adhishtana* of *Pakshaghata, Nasya karma* is highly advisable. As per Sushruta's line of treatment, *Salvana upanaha* is taken for the treatment of *Pakshaghata*. Rehabilitation helps stroke survivors relearn skills that are lost when part of the brain is damaged. Physiotherapy in the rehabilitation of stroke patients is represented by various approaches like Conventional and Task orientation training. Hence to "evaluate the effect of *Basti, Salvana upanaha* and *Nasya* in the management of *Pakshaghata* with and without Physiotherapy", this study was carried out. The aim of the study was to evaluate the efficacy of *Anuvasana basti, Salvana upanaha* and *Nasya* with and without Physiotherapy in the management of *Pakshaghata.* 30 individuals with confirmed diagnosis of *Pakshaghata* were selected. 15patients were randomly assigned to both groups with *Panchakarma* treatments with *Basti, Salvana upanaha* and *Nasya* alone in Group A and above treatments with Physiotherapy in Group B. Statistically significant results were observed in overall assessment and parameters in both the groups like *Cheshtanivrutti, Ruja,* Facial Palsy, Gait, Arm motor power or raising, Hand motor power or movements, leg motor power or raising, Foot dorsiflexion, Upper limb tone and Lower limb tone. Based on P value it shows there is equal significance in both the groups in regards to all parameters, means both the groups are equally beneficial.

Keywords: *Pakshaghata, Basti, Nasya, Salvana upanaha,* Physiotherapy

INTRODUCTION: *Pakshaghata* is a *vataja nanatmaja vyadhi,* is characterized by loss of function and mobility of half of the body either right or left. *Charaka* considers involvement of half of the body with facial involvement as *Pakshaghata*[1] where as *Sushrutha* considers only the involvement of half of the body.[2]

The condition similar to *Pakshaghata,* in modern science is the hemiplegia. The commonest cause of hemiplegia is cerebrovascular accident or stroke.

"Neurology is learnt "Stroke by Stroke". C. Miller Fisher"

Stroke is an acute onset of neurological dysfunction due to an abnormality in cerebral circulation with resultant signs and symptoms that correspond to involvement of focal areas of the brain (WHO). However, the most common causes are: Thrombus, Emboli, Hemorrhage.[3]According to statistical data, 7, 00,000 Indians are suffering with stroke every year. Out of which 10% recover completely, 25% live with minor impairment, 40% moderate to severe impairment, 10% require care in hospital, and 15% die shortly after the stroke. According to the causes, 85% strokes are

due to ischemic conditions. Management of acute stroke when patient's consciousness is altered though needs modern medicine; the management of left over neurological deficit is challenge. So, in this study an attempt has been made to compare the efficacy of combination of *Panchakarma* treatments *basti, salvana upanaha* and *nasya* alone and added benefits of physiotherapy in the management of *Pakshaghata.*

AIM: To study A comparative clinical study on the effect of *Anuvasana Basti*, *Salvana upanaha* and *Nasya* in the management of *Pakshaghata* with and without Physiotherapy

OBJECTIVES:

1. To evaluate the efficacy of *Anuvasana Basti , Salvana Upanaha* and *Nasya* in the management of *Pakshaghata.*
2. To evaluate the efficacy of *Anuvasana Basti, Salvana Upanaha* and *Nasya* along with Physiotherapy in the management of *Pakshaghata.*
3. To compare the efficacy of Group A and Group B.
4. To study *Pakshaghata* from samhita

MATERIALS AND METHOD:

Method of collection of data

Source of data: 30 patients fulfilling the diagnoastic and inclusion criteria of *Pakshaghata* of either sex, irrespective of their economical status, educational status and caste were selected, registered from OPD and IPD of JSS Ayurveda Hospital, Mysore and taken for the study.

Materials: The present study was a comparative clinical study, and the formulations selected were

1. *Devadarubaladi taila* for *Anuvasanabasti* [4]
2. *Saptanga masha taila* for *Nasya*[5]
3. *Salvana upanaha* for *Upanaha Sweda*[6]

Taila was prepared in JSS *Ayurveda* Pharmacy, Mysore for the purpose of study. All the drugs purchased from M/s Govindaraj shetty & son's, and were authenticated by DG Dept of JSS Ayurveda Medical College, Mysore.

Diagnostic criteria:

1. Clinical features of *Pakshaghata* - *Karmakshaya, Ruja, Sankocha* of half of the body and *Vaksthambha.*
2. Hemiplegia confirmed as CVA by CT/MRI Scan of Brain.

Inclusion criteria:

1. *Pakshaghata* with or without facial involvement.
2. Patients diagnosed as CVA with Hemiplegia
3. Patient's age group between 20 to 80 years irrespective of sex, religion, socioeconomic status and occupation.
4. Patients fit for *Nasya, Salvana upanaha, Anuvasana Basti.*
5. Patients fit for Physiotherapy.
6. Patients already on anti hypertensive and anti diabetic medicines taken for the study and were asked to continue the medicines.

Exclusion criteria:

1. Comatose and unconscious patients.
2. Intracranial infections such as Meningitis Encephalitis….etc
3. Space occupying lesions of brain such as tumour and traumatic conditions
4. Any systemic disease which interfere with the treatment.
5. Co-existing illness which interfere with Physiotherapy.
6. Post cranial surgical patients.

Table 1: SHOWING TREATMENT SCHEDULE

Treatment	Group A	Group B
Basti (1^{st} – 9^{th} day)	9days	9days
Nasya (10^{th} – 16^{th} day)	7days	7days
Upanaha (1^{st} – 16^{th} day)	16days	16days
Physiotherapy (1^{st} – 16^{th} day)	-	16days

Total Duration of Treatment: 16days.

Follow up: It was done on 9^{th}, 16th day of treatment and every 15days after completion of treatment that is on 31st, 45th and 60th day

Total Duration of Study: 60days

INTERVENTION:

- *Anuvasana basti* with *Devadaru baladi taila* 75ml ginven for 9days. Time of administration of *basti, basti pratyagamana* and *samyak anuvasita lakshana* were noted on each day.
- *Nasya* with *Saptanga masha taila* 8drops in each nostril administered for 7days. *Samyak Nasya lakshana* were noted on each day.
- Application of *Slavana Upanaha Ingredients - Arjuna, Guduchi, Bilwa, Krushna, Kulatta, Pashanabheda, Atasi, Kantakari, Gokshura, Jeeraka, Ashwaganhda, Shatapushpa, Eranda, Masha, Devadaru, Rasna, Bala, Sarshapa* taken in equal quantity, powdered and added with water, *Saindhava lavana, Tilataila* and *ghrita* boil the entire mass till it becomes a thick paste. Apply it warmly to the whole body and covered with cotton cloth. After 4hrs patient is advised to take warm water bath. *Samyak sweda lakshana* were noted on each day.
- Physiotherapy with Conventional and Task oriented exercises.

Conventional Exercises: It includes - AROM-Active Range of Movements, Bridging, Exercise in sitting, Exercise in standing, walking practice

Task oriented exercises: It includes – Rolling, Sit to stand practice, Raising from bed, Releasing the knee and moving the hemiplegic leg, Stairs climbing, Facilitation of gait, walking practice

Scoring and interpretation of daily living were analyzed on the basis of Barthel Index of Activities of Daily Living

ASSESSMENT CRITERIA: The cardinal clinical manifestations, both subjective as well as objective parameters of *Pakshaghata* scored according to the severity and considered as the Assessment criteria for the study

Subjective Parameters Scoring

Table 2: Showing gradings of *Cheshtanivrutti* as Modified Rankin Scale

Cheshtanivrutti	Scoring
No symptoms at all	0
No significant disability despite symptoms; able to carry out all usual duties and activities	1
Slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance	2
Moderate disability; requiring some help, but able to walk without assistance	3
Moderately severe disability; unable to walk without assistance and unable to attend to own bodily needs without assistance	4
Severe disability; bedridden, incontinent and requiring constant nursing care and	5

attention	
Dead	6

Table 3: Showing gradings of Pain

No pain	**0**
Mild	**2**
Moderate	**4**
Severe	**6**

Table 4: Objective Parameters Scoring

Scandinavian Stroke Scale (SSS).		
Consciousness	Normally Conscious	6
	Somnolent/Drowsy	4
	Reacts to verbal command	2
	Stupor (Reacts to pain only)	1
	Coma	0
Orientation	Correct for time, place, person	6
	Two of these	4
	One of these	2
	Completely disoriented	0
Speech/Verbal communication	Normal/no aphasia	10
	Speech with less difficult	9
	Limited vocabulary	8
	Incoherent speech	7
	Longer sentences	6
	Longer sentences with difficult	5
	More than yes-no but not longer sentences	4
	Less	3
	Only yes-no	2
	Extremely difficult	1
	Impossible / Aphasia	0
Eye movements/eyes and head shift	NO gaze palsy/none	4
	Gaze palsy/gaze failure	2
	Conjugate eye deviation/forced	0
Facial palsy	None	2
	Slight paresis	1
	Present/paralysis or marked paresis	0
Gait	Fully normal	12
	Walks more than 5min without aids	11
	Walks at least 5min without aids	10
	Walks more than 5min with aids	9
	Walks at least 5min with aids	8
	Walks with only aids	7
	Walks at least 5min with help of another person	6
	Walks with help of another person	5

	Stand with support	4
	Sits without support	3
	Sits with support	2
	Wheel chair	1
	Bedridden	0
Arm: motor power/raising	Raises with normal strength/normal	6
	Raises with reduced strength/possible	5
	Raises with flexion on elbow/incomplete	4
	Can move against gravity	3
	Can move but not against gravity	2
	Flickering movement	1
	Paralysis	0
Hand: motor power /movements	Normal strength/normal	6
	Skilled	5
	Reduced strength	4
	Useful	3
	Fingertips do not reach palm	2
	Flickering movement	1
	Paralysis/useless	0
Leg: motor power/raising	Normal strength	6
	Raises against resistance	5
	Raises with reduced strength	4
	Raises with flexion of knee/against gravity	3
	Can move, but not against gravity	2
	Flickering movement	1
	Paralysis	0
Foot Dorsiflexion	Normal	4
	Against resistance	3
	Against gravity	2
	Flickering movement	1
	Foot drop	0
Upper limb tone	Normal	5
	Slight increase catch and release	4
	Minimal resistance through range following catch	3
	More marked increase tone through ROM	2
	Considerable increase in tone, passive movement difficult	1
	Affected part rigid	0
Lower limb tone	Normal	5
	Slight increase catch and release	4
	Minimal resistance through range following catch	3
	More marked increase tone through ROM	2
	Considerable increase in tone, passive movement difficult	1
	Affected part rigid	0

STATISTICAL ANALYSIS: Data regarding all the above said parameters were collected on 9th, 16th day of treatment and every 15days after completion of treatment that is on 31st, 45th and 60th day. To calculate the test for significance before treatment, after treatment and follow-ups, in the present clinical study Wilkoxon Signed Rank test was used. While to calculate the test for significance between the groups "Mann Whitney U test" was selected. Statistical analysis was done based on "R-Software".

FOLLOW UP STUDY: After the completion of treatment patients were advised to report every 15 days for follow up study, for a period of one month. During the follow up study, further improvement or deterioration or no change in the signs & symptoms were recorded.

OBSERVATIONS: Out of 30 patients of this series, 30%patients were belonging to 61-70 years of age group, 26.66% patients were belonging to 41-50 years of age group, 86.66% patients were male while rest of the patients i.e. 13.33% were females, 63.33% patients were having secondary education, majority of the patients i.e. 36.66% were Farmers, 60% were of middle class, 60% patients were from urban area and remaining 40% patients were from rural area. 60% patients were habituated for mixed diet while rest of the 40% patients were having vegetarian diet habit 53.33% patients were habituated taking coffee/tea, 36.66% patients were taking alcohol, 33.33% patients were smokers and for 13.33% patients there was no notable *vyasana*.43.33% patients were constipated. The majority of the patients i.e. 53.33 % were having *Mandagni*, 43.33% patients were having *Vishamagni* Remaining 3.33% patients having *tikshnagni*. 53.33% patients were having *Madhyama Kostha*, 43.33% patients were having *Krura Kostha* and 3.33% patients were having *Mrudu Kostha*. 46.66% patients were of *Vata-kaphaja prakruti*, 36.66% patients were *Vata-pittaja prakruti* while 16.66% patients were of *Pitta-Kaphaja Prakruti*. 93.33% were having *Avara Vyayama Shakti*, while 6.66% patients were having *Madhyama Vyayama Shakti*. 43.33 % patients were having the chronicity ≤ 1 month, 30% patients were having 3-6months chronicity, 13.33% patients were having 6months – 1year chronicity, 10%patients were having 1-3months chronicity and 3.33% were each of having 1year-2year and more than 2 years Chronicity. 70% patients were having Infarction, 23.33% patients were having Hemorrhage and remaining 6.66% lesion not known. 70% patients were having *margavaranajanya Pakshaghata* remaining 30% patients were having *dhatukshayajanya Pakshaghata*. 73.33% patients were having Sudden onset remaining 26.66% patients were having gradual onset. 76% patients were Suffering from Hypertension remaining 46.66% patients were having Diabetic Mellitus.

Maximum 86.66% patients were doing *Ativyayama*, 53.33% patients were taking *Laghu anna sevana*, 40% patients were doing ati *vyavaya* and *Langhana*, 36.66% patients were having *Ruksha ahara*, 33.33% patients were having *Dhatukshaya* and *chintha*, 30% patients were having *Sheetha ahara* and doing *Ati jagaraana*, 26.66% patients were having *Alpa matra ahara*, 23.33% patients were having *Shoka* and Doing *Sheeghra yana*, 16.66% patients were having *Krodha*, 13.33% patients were having *Roga ati karshana*, 10% patients were having

Vishamaupachara and *Diva swapna*, 6.66% patients were doing *Vega sandharana*, 3.33% patients were having *Dhukka shayyasana* and Doing *Abhojana*. 50% patients were having *karmakshaya* of *Vama hasta* and *pada*, 33.33% were having *karmakshaya* of *dakshina hasta* and *pada*, 10% patients were having *Karmahani* of *dakshina hasta* and *pada*, 6.66% patients were having *karmahani* of *vama hasta* and *pada*. 83.33% patients were having *Ruja*, 70% patients were having *Sankocha*,26.66% patients were having *toda*, 23.33% patients were having *Vakkruchrata*, 16.66% patients were having *Vakstambha* and 13.33% patients were having *Shotha*. 86.66% patients were having Hypertonicity, exhagerated DTR, and Extensor plantar, 23.33% patients were having 7th cranial nerve involvement and 13.33% patients were having hypotonicity.

OBSERVATION ON BASTI: On the 6th or 7th day after *basti* most of the patients had subsidence of *ruja* and improvements in *cheshtanivrutti*, gait and there was marked difference in leg motor power or rising. Average retention of *basti dravya* was 4 to 5hrs in all the patients except one patient had lose bowels after administering *basti*, this may be due to *mrudu koshta* of the patient. *Samyak basti lakshanas* like *Balam, laghuta, swapnanuvruthi, indriyasamprasada, budhisamprasada* were observed in most of the patients after 6th or 7th day after *basti*.

OBSERVATION ON SALVANA UPANAHA: on the 6th day after *salvana upanaha* most of the patients had subsidence of *ruja*, considerable improvements in *cheshta nivrutti*, arm and hand motor power or raising, leg motor power or raising and there was marked difference in upper and lower limb tone. *Samyak swinna lakshanas* like *shoola uparama, stambhanigraha, gaurava nigraha, laghuta, agni deepti, bhaktashudda, tandrahani, swedasrava* were observed in all the patients succeeding by 6th day after *salvana upanaha*. But some of the patients were experienced chills 1hr after application of *salvana upanaha* paste especially during winter season even after covering with cotton cloth.

OBSERVATION ON NASYA: The improvement level of consciousness, orientation, speech or verbal communication and facial palsy was observed after *nasya karma*. Reduction in upper limb pain, improvements in arm and hand motor power or rising were also observed during *nasya* period. *Samyak nasya lakshanas* like *urolaghava, shiro laghava, sroto vishuddhi, manah prasada, vaktra vishuddhi, swara vishuddhi, sukhochwasa, sukha swapna* were observed on 5th or 6th day after *nasya*.

OBSERVATION ON PHYSIOTHERAPY: Most of the patients were able to sit or stand without support after 5th or 6th day of physiotherapy and able to walk with minimum or without support after 9thday. Assessment of Barthel index was scored between 12 to 14 on 9th day and 15 to 17 on 16 day of treatment. Improvements in variables like feeding, bathing, grooming, dressing toilet use, mobility and stair climbing was observed in all the patients.

RESULTS:

Table 6:Showing statistical analysis of features BT and 16th day of treatment in Group A

Sl. No:	Features	Mean BT	Mean 16th day of treatment	% of change	V Value	P value	Significance
1.	*Cheshtanivrutti*	4.26	3.2	24.88	113.5	0.001359	S
2.	*Ruja*	3.7	1.7	54.05	78	0.001715	S
3.	Consciousnes	5	5.3	5.66	0	0.3711	NS
4.	Orientation	4.9	5.3	7.54	0	0.1489	NS
5.	Speech or verbal communication	5.6	6.6	15.15	0	0.01264	NS
6.	Eye movements/ eyes and head shift	3.6	3.6	0	0	NA	NS
7.	Facial palsy	1.6	1.8	11.11	3	0.233	NS
8.	Gait	4.2	6.3	33.33	0	0.0006569	S
9.	Arm: motor power/raising	2.2	3.5	37.14	0	0.0007403	S
10.	Hand: motor power/movements	1.8	3	40	0	0.001047	S
11.	Leg: motor power/raising	2.26	3.8	40.52	0	0.0005332	S
12.	Foot Dorsiflexion	1	2	50	0	0.0003141	S
13.	Upper limb tone	1.9	3.4	44.11	0	0.0005033	S
14.	Lower limb tone	1.9	3.2	40.62	0	0.0004432	S

Table 7: Showing statistical analysis of features BT and 3rd FU (60th day) in Group A

Sl. No:	Features	Mean BT	Mean 3rd FU	% Of change	V Value	P value	Significance
1.	*Cheshtanivrutti*	4.26	3.133	26.45	114	0.001422	S
2.	*Ruja*	3.7	1.4	62.16	78	0.001855	S
3.	Consciousnes	5	5.4	7.4	0	0.1814	NS
4.	Orientation	4.9	5.4	9.25	0	0.1736	NS
5.	Speech or verbal communication	5.6	6.8	17.64	0	0.01356	NS
6.	Eye movements/ eyes and head shift	3.6	3.6	0	0	NA	NS
7.	Facial palsy	1.6	1.8	11.11	120	0.0004827	S
8.	Gait	4.2	8.6	51.16	0	0.0006569	S
9.	Arm: motor power/raising	2.2	3.6	38.88	0	0.0007523	S
10.	Hand: motor	1.8	3.06	41.17	0	0.001155	S

	power/movements						
11.	Leg: motor power/raising	2.26	4	43.5	0	0.0005735	S
12.	Foot Dorsiflexion	1	2	50	0	0.001586	S
13.	Upper limb tone	1.9	3.5	45.71	0	0.0005174	S
14.	Lower limb tone	1.9	3.3	42.42	0	0.0004827	S

Table 8: Showing statistical analysis of features BT and 16th day of treatment in Group B

Sl. No:	Features	Mean BT	Mean 16th Day of treatment	% of change	V Value	P value	Significance
1.	*Cheshtanivrutti*	3.8	2.6	31.57	120	0.0003229	S
2.	*Ruja*	3.8	1.6	57.89	66	0.001586	S
3.	Consciousness	5.8	6	3.33	0	1	NS
4.	Orientation	6	6	0	0	NA	NS
5.	Speech or verbal communication	7.9	8.5	7.15	0	0.02627	NS
6.	Eye movements/ eyes and head shift	3.8	4	5	0	1	NS
7.	Facial palsy	1.6	1.9	15.78	0	0.03689	NS
8.	Gait	2.6	6.8	61.76	0	0.0006653	S
9.	Arm: motor power/raising	2.1	3.6	41.66	0	0.0005033	S
10.	Hand: motor power/movements	1	2.2	54.54	0	0.0002528	S
11.	Leg: motor power/raising	2.4	4.2	42.85	0	0.0004561	S
12.	Foot Dorsiflexion	1.13	2.1	46.19	0	0.0001227	S
13.	Upper limb tone	2	3.4	41.17	0	0.0004827	S
14.	Lower limb tone	2.4	3.9	38.46	0	0.0005033	S

Table 9: Showing statistical analysis of features BT and 3rd FU(60th day) in Group B

Sl. No:	Features	Mean BT	Mean 3rd FU	% of change	V Value	P value	Significance
1.	*Cheshtanivrutti*	3.8	2.6	31.57	120	0.0003229	S
2.	*Ruja*	3.8	1.3	65.78	91	0.001199	S
3.	Consciousness	5.8	6	3.33	0	1	NS
4.	Orientation	6	6	0	0	NA	NS
5.	Speech or verbal	7.9	8.8	10.22	0	0.03351	NS

	communication						
6.	Eye movements/ eyes and head shif	3.8	4	5	0	1	NS
7.	Facial palsy	1.6	1.9	15.78	105	0.0006381	S
8.	Gait	2.6	9.5	72.63	0	0.0006512	S
9.	Arm: motor power/raising	2.1	3.7	43.24	0	0.0004827	S
10.	Hand: motor power/movements	1	2.3	56.52	0	0.000326	S
11.	Leg: motor power/raising	2.4	4.46	46.18	0	0.0004639	S
12.	Foot Dorsiflexion	1.13	2.1	46.19	0	0.0001227	S
13.	Upper limb tone	2	3.5	42.85	0	0.0005332	S
14.	Lower limb tone	2.4	4	40	0	0.0005435	S

Table 10: Showing statistical analysis between the groupA and groupB

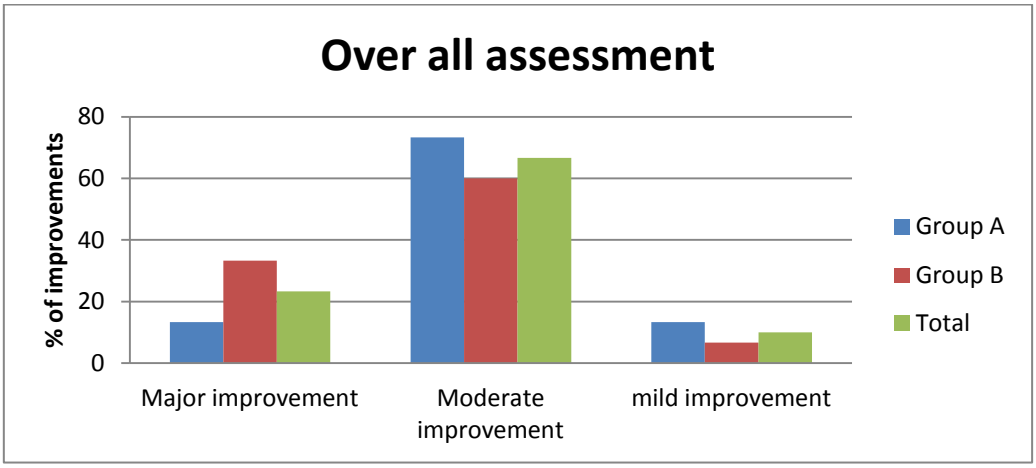
Sl. No:	**Features**	**Mean (G A)**	**Mean (GB)**	**Comparision of Mean value of groups**	**W value**	**P WILCOXON SIGNED RANK TEST**	**Result**
1.	*Cheshtanivrutti*	3.454	2.866	M1>M2	111	0.9571	NS
2.	*Ruja*	2.033	1.95	M1>M2	120	0.752	NS
3.	Consciousness	5.266	5.966	M1<M2	127.5	0.3087	NS
4.	Orientation	5.25	6	M1<M2	135	0.0796	NS
5.	Speech or verbal communication	6.433	8.45	M1<M2	130	0.4419	NS
6.	Eye movements/ eyes and head shift	3.6	3.966	M1<M2	105	0.3506	NS
7.	Facial palsy	1.75	1.816	M1<M2	100	0.5453	NS
8.	Gait	6.96	7.42	M1<M2	161	0.04294	NS
9.	Arm: motor power/raising	3.25	3.3	M1<M2	88.5	0.2793	NS
10.	Hand: motor power/movements	2.73	1.983	M1>M2	113	1	NS
11.	Leg: motor power/raising	3.481	3.903	M1<M2	92	0.3509	NS
12.	Foot Dorsiflexion	1.766	1.8883	M1<M2	112.5	1	NS
13.	Upper limb tone	3.1	3.15	M1<M2	109.5	0.9066	NS
14.	Lower limb tone	2.933	3.566	M1>M2	94.5	0.4074	NS
Average of groups		3.654	4.1003	M1<M2			

- From the above statistical analysis, based on mean we can conclude Group B has given better result than Group A.
- Based on P value it shows there is equal significance in both groups in regards to all parameters

Table 11: Showing the overall assessment in Group A and Group B

Sl.No	Overall assessment	Group A		Group B		Total	
		No.of Patients	%	No.of Patients	%	No.of Patients	%e
1.	Cured	0	0	0	0	0	0
2.	Major Improvement	2	13.33	5	33.33	7	23.33
3.	Moderate Improvement	11	73.33	9	60	20	66.66
4.	Mild improvement	2	13.33	1	6.66	3	10
5.	Unchanged	0	0	0	0	0	0

Graph 1: Showing Overall Assessment



DISCUSSION:

Probable mode of action of Basti: *Guda* is a *Mamsa Marma* of *Sadyapranahara* type.[7] Being a *Marma* it has roots of all four types of *Sira* embedded in it viz. *Vatavaha, Pittavaha, Kaphavaha* and *Shonitavaha*.[8] Due to its *Sadhyapranahara* nature, *Guda* is highly sensitive. Even a mild stimulation to it, say, by *Basti* drugs and procedure may sensitize the whole body by vigorous action of *Vayu* through all the *Siras* present in the body. *Basti* drugs in *Pakvashaya* act on whole body in a same way that of sun, which though placed in the sky, causes evaporation of water on the earth. The *Virya* of collective *Basti* drug is first taken up by *Apana Vayu*, i.e. it acts or influences the *Gunas* of *Apana Vayu* with which it comes in contact first. Consequently the *Samana Vayu* is also affected followed by *Vyana, Prana*, and *Udana*. By the *Gunas* of *Basti Dravya*, the vitiated *Vayu* regain their normal state and supports the body. They also bring vitiated *Pitta* and *Kapha* in their normal state, and the five types of *Vayu* nourish their respective *Sharira-Bhuta Guna*. The *virya* of *Drvya* are propagated by the *Vyana* in *Tiryak* or lateral direction, by the *Apana* in downward direction and

in upward direction by *Prana*, just as water pipes carry water to the different parts of the field similarly the "*Harini*" (Channels) carry the *Gunas* of *Basti Dravya* to every part of the body, hence a *Basti* which is appropriate will with the help of *Vata, Pitta* and *Kapha* through the *Sira* will spread in all body and cures even the most difficult disease.[9]

Mode of action of Swedana: *Swedana* has its main actions like *Stambhaghna*- releases stiffness; *Gauravaghna*- responsible in relieving heaviness in the body, *Sheetaghna*- relieves *Sheetha* and *swedakarakatva.*[10]

Mechanisms of absorption (http://www.vin.com): The skin has been referred to as the largest organ system accounting for a large proportion of the body's total surface area. Due to easy access and the ability to maintain applied formulations for prolonged periods of time, transdermal drug administration has become a dynamic area of investigation.[11,12] Basically, the skin is composed of three layers consisting of the epidermis, dermis and sub dermal tissue. The epidermis in haired skin of the dog and cat is composed of four layers including the stratum corneum, stratum granulosum, stratum spinosum and the stratum basale. The cornified layer of the stratum corneum appears to provide the rate limiting step to transdermal drug absorption. Once thought to be a fairly inert layer, it is now known that this layer actively opposes absorption from outside and loss from within. Penetration of the skin depends on diffusion therefore the hydration of the skin will affect permeability. Absorption via the transdermal route primarily occurs by passive diffusion through the stratum corneum[13]. The rate of diffusion is dependent on the permeability coefficient of the drug, the applied concentration of the drug, the surface area of the skin exposed to the drug and the thickness of the epidermis (Fick's law of diffusion). Studies have revealed the fact that lipoidal barrier is very much suitable for penetration of drug molecule through stratum corneum.[14,15,16] On this basis we can assume that *Salvana Upanaha taila* has been used which may serve lipoidal barrier for the penetration of drug molecules of ingredients and exerts immediate anti inflammatory and analgesic effect. Moreover heat is also maintained due to *ushna a*nd *teekshna* properties of the ingredients in *upanaha.*

Mode of action of *Nasya Karma:* In *Astanga Sangraha – Nasa* being the gateway to *Shira*. The drug administered through nostrils reaches *Shringataka Marma* by *Nasasrota.* Spreads in the *murdha* (brain), reches *marma of Netra* (eye), *Shrotra* (ear), *Kantha* (throat), *Shiramukhas*(opening of the vessels, etc.). Scratches the morbid *Doshas* in supra clavicular region and expels them from *Uttamanga.*[17]

Sushruta has clarified *shringataka Marma* as a *Sira Marma* formed by the union of *siras* (blood vessels) supplying to nose, ear, eye & tongue. He further points out that injury to this *marma* will be immediately fatal.[18]

According to all prominent Acharyas *Nasa* is said to be the gateway of *Shira*. It does not mean that any channel connects directly to the brain but they might be connected through blood vessels or through nervous system (olfactory nerve, etc.)

In this study the assessment of the results were done on 30 patients, with total 15patients in Group A and 15 in Group B. None of the patients had complete remission in either group. 2 patients had marked improvement in Group A while 5patients in Group B, 11 patients showed moderate improvement in Group A, while 9patients in Group B and 2 patients showed mild improvement in Group A, while 1patient in Group B.

On the 9th day of treatment (last day of *basti* along with *salvana upanaha*) there was significant improvement in *cheshtanivrutti* in terms of their ability in doing activities and improvement was gradual from 9th to 16th day of treatment (*nasya* with *salvana upanaha*) and follow-ups. The bedridden patients were able to stand and walk with support, while those who were walking with maximum support were able to walk with minimum or without support. This improvement was more evident in Group B when compared with that of Group A. As the exercises such as Active range of movement, Bridging, rolling, practicing rising from bed, sit to stand practice, walking practice, stairs climbing, releasing the knee and moving hemiplegic leg have helped for facilitating the gait and added benefits to the treatment for better improvement. There was considerable reduction in pain succedingly by 5 or 6 days after *basti* along with *salvana upanaha*. During *nasya* karma period there was marked reduction of pain in upper limbs.

Among 30 patients 5patients were drowsy 3 patients had altered orientation. The improvement in level of consciousness and orientation was observed during *nasya* period even there was significant improvement in speech and facial palsy during *nasya* period.

There significant improvement in arm motor power or rising during *nasya* with *salvana upanaha* period. This was more significant in Group B as the exercises like elevation of the arm, self assisted active range of movements; weight transference through the arms behind, weight transference through the arm sideways had added effect. Patient had reduction in Upper limb tone by 6th or 7th day of *salvana upanaha* and further reduction was noted till end of treatment. There was not much improvements in hand motor power or movements in comparison with arm. But some patients were able to reach finger tips to palm and hold the objects during *nasya* period. 2patients in Group A and 3patients in Group B had no improvements was observed.

On the 9th day of treatment there was significant improvement in leg motor power or rising and reduction in lower limb tone was observed. Improvement was gradual during *nasya* with *salvana upanaha* period. The patients who were not having movements were able to raise leg with flexion of knee and those who were having movements but not against gravity had improved with raising leg against resistance. This improvement was more evident in Group B when compared with that of Group A. As the exercises such as Hip and knee flexion over the side of the bed, The extension with dorsiflexion, Isolated knee extension, Active range of movements, Standing from a high bed to the ground, Standing from a chair have helped for leg motor power or raising.

Improvements in leg motor power or rising after treatment was significant in both the

groups with P value <0.001 and this was maintained during further follow-ups.

There was gradual improvement in foot dorsiflexion in both the groups during treatment. 5 patients in group A and 4 patients in Group B had Grade 0 and improved to grade 2 to 4 after treatment.

The improvement was probably because of *Kaphavatahara, Vatapittahara, balya, brumhana, vrushya, sangnastapana, shoolaprashamana, truptighna* properties of the drugs of *Devadaru Baladi taila* helps for the mitigation of *vata* thus alleviate *ruja* and *sankocha* and improve strength of the muscle .

Vatakaphahara, tridoshaghna, angamardhaprashamana, swedanopaga, balya, brumhaneeya, shothahara, vrushya, rasayana properties of the drugs of *salvana upanaha* helps for *ruja* and *sankocha* of extremities in *Pakshaghata* and improve the strength of muscles, in turn the limbs. *Vatakaphahara, tridoshaghna, balya, brumhaneeya, angamardaprashamana, vrushya, shoolahara, snigdha, Guru guna* and *ushna properties of drugs of Nasya* very useful to alleviate the *vata* which is aggravated by *dhatukshaya* and *vata prakopa ahara vihara.*

Conventional treatment attempts to improve the muscle strength and coordination between opposite group of muscles. Hence, conventional regimen improves the mobility of the patient while maintaining balance. Task orientation involves continuous supervision and passive treatment resulting in more active participation of the patient, thus the patients were treated with combination of these exercises for the better result.

CONCLUSION: *Pakshaghata* is one among the *vata nanatmaja vikara*. It is a most distressing disease among *Vatavyadhi.* The combination of *Basti with Devadarubaladi taila, Salvana upanaha* and *Nasya* with *Saptanga masha taila* treatments has shown very effective result in *Pakshaghata* and improved the activities of daily livings there by making better the quality of life of the patients. However better result were obtained when above therapy combined with physiotherapy with conventional and task oriented exercises.

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