



Research Article

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ASSESSMENT OF RELATIONSHIP BETWEEN PURĪSADHARĀ AND ASTHIDHARĀKALĀ BY USING CLINICAL STUDY

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ABSTRACT

The present clinical study was carried out for assessment of relationship between purīśadharākālā and aśthidharā kalā which is quoted by dalhanacharya in vishvegchikitsa in kalpasthan of Sushrut Samhita. A single blind controlled study was performed in which 2 groups of 15 patients of asthigatavata which is assumed to be diseases of aśthidharā kalā are selected. Mustadi gana churna which is assumed to be drug for purīśadharākālā is given to Group A which is trial group while placebo given to controlled group i.e. Group B for duration of 30 days. After clinical trial the statistical analysis was done by applying paired and unpaired 't' test. The results of clinical study show that the effect of mustadi gana churna on asthigatavata is statistically significant as compared to placebo. Hence it proves that there is relationship between purīśadharākālā and aśthidharā kalā. This relation may be useful for the treatment of various diseases of bones and joints.

Keywords: PurīśadharāKalā, Aśthidharā kalā, asthigatavata, mustadigana.

INTRODUCTION

Ayurveda emphasizes prevention of disease, rejuvenation of our body systems, and extension of life span. Rachana sharir is one of the basic subjects of the principles of Ayurveda. It includes study of structural aspect of body parts. Sushrut Samhita is renowned for sharirsthana but the interpretation about kalā sharer is not sufficient and is scattered in vague manner. The concept of kalā is still not clear after a long time study. There is confusion about the exact location, macro and micro structure, physiology, pathology occurring in the kalā and its clinical application. So there is a need of conceptual and scientific understanding of concepts such as exact form, structure, function and importance of kalāshareer.

The context "Eva kala purīśadharāsaeva aśthidhareti"¹ explained by Dalhanacharya directly shows the relation of Pureeshadharakālā with the Aśthidharā kalā which is precise according to Shareer. This relation has great importance in Ayurvedic treatment factor though this relation is described in visha-vegantara in kalpasthana. In this study there is clinical application of this relation and the result of clinical trial shows the relationship between the purīśadharā and aśthidharā kalā.

Ayurved has incorporated various metabolic, degenerative, inflammatory and other forms of disorders pertaining to the Bones under pathologically imbalanced state of 'Vata' dosha. The repetitive physical and mental strain causes common musculoskeletal problems like osteoarthritis, cervical spondylitis, lumbago and myopathies manifesting pain, etc. If we compare the sign and symptoms of above disease, they are more relevant to the asthigat vata² which is considered to be the disease related with aśthidharā kalā.

In Ashtang Hridaya Samhita the mustadi gana³ is explained in sutrasthana which is having action of malapachana. It indicates that its action is on purishvahasrotas. Each drug of this gana has no direct relation to improve the quality of Aśthidharā kalā. In this study the drug mustadi gana is given to the patients of asthigatavata, the improvement happens in Asthigat vata can establish correlation of Aśthidharā kalā with Purīśadharākālā.

MATERIALS AND METHODS

Aim and Objectives

Aim

To assess relation between Purīśadharā and Aśthidharā Kalā using clinical study

Objectives

- To study complete literature available in Ayurvedic and modern texts on kalāsharir.
- Establishment of relation between Purīśadharākālā and Aśthidharā Kalā.

Design of study

Correlative study of Patients of Purīśadharā Kalā and Aśthidharā Kalā was done.

Study with the Mustadi Gana churna was done in the patients having Asthigatavata.

Selection of patients

A single blind controlled study was performed in which two groups of 15 patients of asthigatavata which is assumed to have disease of asthidharā kalā were selected. Trial drug is given to Group A while placebo given to Group B.

The detailed clinical examination including general and systemic was done to rule out any existing disease. All the data was maintained in Case Record Form including professional, educational and nutritional status of patients. Record of age, sex, weight and address was also maintained in Case Record Form.

Every 7th day follow-up was maintained for 1 month in the Case Record Form.

Clinical study was conducted between two groups.

- **Group A:** 15 patients receiving Mustadi Gana Churna with Anupana Lukewarm water.
- **Group B:** 15 patients receiving Placebo (Yava Churna) with Anupana Lukewarm water.

Under supervision of Guide and I/C consultants of Kayachikitsa OPD clinical trials were taken of Mustadi Gana Churna with Lukewarm water with specific Aushadhi Sevankala and Matra.

Criteria for inclusion

- Asthibhed
- Asthishula
- Parvashula
- Sandhishula
- Mansabalakshaya
- Age between 20 to 60⁴

Criteria for exclusion

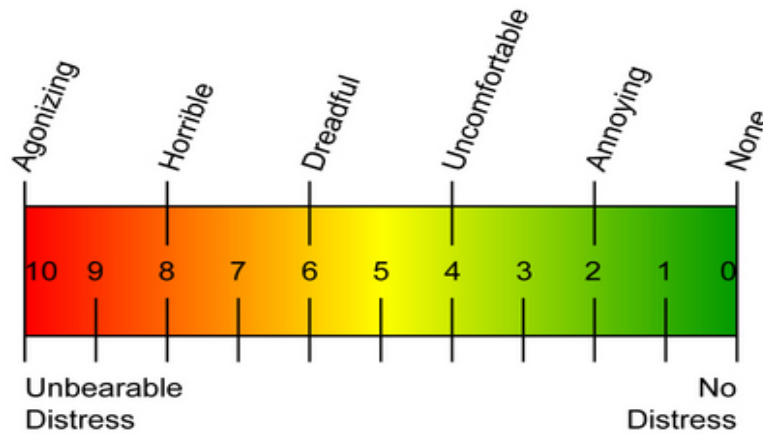
- Congenital anomalies
- Any major illness
- Patients of Grahanivyadhi
- Age above 60 and below 20 years
- Complications etc.

Table 1: Criteria for assessment

Criteria	Score 3	Score 2	Score 1	Score 0
Pain	Severe - (Vas 7 – 10)	Moderate – (Vas 4 – 7)	Mild - (Vas 1 – 4)	Nil – 0 (Vas 0)
Tenderness	Severe	Moderate	Mild	Nil
Swelling	Severely present	Markedly present	Slightly present	Absent
Local Temperature	Severe	Moderate	Mild	Nil
Grip Strength	If poor (below 40 mm of Hg)	If moderate (40-140 mm of Hg)	If mild (140-280 mm of Hg)	If normal (above 280 mm of Hg)
Functional Score	Unable to do	With the help of other person or device	Able to do with difficulty	Able to do without any difficulty

Table 2: Visual Analogue scale

Observation	Visit 1	Visit 2	Visit 3	Visit 4
VAS Score ⁵				



Task _____

Date _____ Start _____ End _____

Informed consent

The subject undergoing this study was informed about the same and consent of each patient in their language was taken. Study was approved by Institutional ethical committee PDEA'S College of Ayurveda and research center, Pune, India

Advice

All patients were informed about Pathya-apathya and instructed to follow it.

Drop out

In case of premature discontinuation of the drug in the treatment, reason of this was noted. 2 Patients of study group and 3 patients of control group had taken incomplete treatment, so they were dropped out from the study.

Preparation of trial drug

All dravyas were collected and authenticated from the department of Botany of Pune University.

The churna of above drugs were mixed properly in equal quantity. The dravya Haimavati was omitted because it is sandigdhadravya. After preparation of drug standardization of the drug was done from the Bhide Foundation Laboratory at Pune.

Methodology

Table 3: Group A and Group B

	Group – A	Group – B
Drug	Mustadi Gana Churna	Placebo (Yavachurna)
Route of administration	Oral	Oral
Dose	3 gm Churna	3 gm Churna
Kala	Vyan – Udan (2 time after meal)	Vyan – Udan
Anupana	Luke warm water	Luke warm water
Duration	1 Month	1 Month
Follow up	Every 7 th day	Every 7 th day

Statistical Analysis

Statistical analysis was done by applying paired and unpaired student ‘t’ test.

RESULT

Table 4: Results of Group A and Group B

Symptom	Day	Group A				Group B			
		Mean	S.D	T	P Value	Mean	S.D	T	P Value
Effect on Pain	BT	1.333	0.724	10.58	P < 0.001	1.467	0.743	1.00	P > 0.05
	AT	0.467	0.516			1.467	0.990		
Effect on Tenderness	BT	1.467	0.516	9.03	P < 0.001	1.333	0.617	1.87	P > 0.05
	AT	0.667	0.488			1.200	0.414		
Effect on Swelling	BT	1.200	0.676	10.69	P < 0.001	1.333	0.516	0.81	P > 0.05
	AT	0.267	0.458			1.333	0.640		
Effect on Local Temp	BT	1.267	0.884	5.25	P < 0.001	1.067	0.799	1.47	P > 0.05
	AT	0.467	0.516			1.000	0.535		
Effect on Grip Strength	BT	1.400	0.507	10.72	P < 0.001	1.267	0.799	0.43	P > 0.05
	AT	0.400	0.507			1.267	0.704		
Effect on Outside Activity	BT	0.733	0.594	5.92	P < 0.001	1.067	0.458	2.26	P > 0.05
	AT	0.133	0.352			0.867	0.640		
Overall effect of Treatment	BT	7.400	1.502	20.12	P < 0.001	7.333	1.633	2.56	P > 0.05
	AT	2.400	1.183			6.933	1.751		

Table 5: Comparison between 2 Groups

Symptom	Group	Mean	S.D	T	P Value
Effect on Pain	A	0.47	0.52	3.47	P<0.01
	B	1.47	0.99		
Effect on Tenderness	A	0.67	0.49	3.23	P<0.01
	B	1.20	0.41		
Effect on Swelling	A	0.27	0.46	4.27	P<0.001
	B	1.33	0.64		
Effect on Local Temp	A	0.47	0.52	2.78	P<0.01
	B	1.00	0.53		
Effect on Grip Strength	A	0.40	0.51	3.87	P<0.01
	B	1.27	0.70		
Effect on Outside Activity	A	0.13	0.35	3.89	P<0.01
	B	0.87	0.64		
Overall effect of Treatment	A	2.40	1.18	8.31	P< 0.001
	B	6.93	1.75		

Effect on Pain

The difference in results of both the groups is statistically significant. The comparative value of $t = 3.47$ ($P < 0.005$) on day 30 indicates that the results obtained in these two groups in Pain are statistically highly significant. Mustadigana choorna proved to be very effective in reducing severity of Pain in Study Group (Group A).

Effect on Tenderness

It was observed that the difference in severity of tenderness on each follow up were statistically highly significant. On 30th day the t value was highly significant ($P < 0.005$). From all these results recorded it is very clear that in Group A there was significant reduction in tenderness when compared to Group B.

Effect on Swelling

There was statistically highly significant difference observed in Swelling. On day 30 the difference was highly significant ($t = 4.27$, $P < 0.001$). The Group A shows marked reduction in Swelling. On the contrary Group B shows no statistically significant reduction in Swelling.

Effect on Local Temp

The results obtained between two groups were checked statistically there were highly significant results drawn in Local

temperature of affected part. After treatment there was significant improvement found. All these results show that in Group A there was marked reduction in Local temperature as compared to Group B.

Effect on Grip Strength

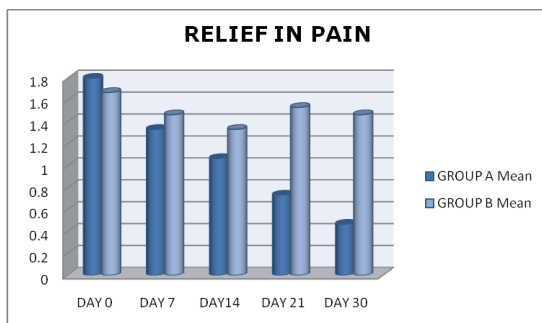
There was statistically highly significant difference observed in Grip Strength. On day 30 the difference was highly significant ($t = 3.87$, $P < 0.001$). The Group A shows marked reduction in Grip Strength. On the contrary Group B shows no statistically significant reduction in Grip Strength.

Effect on Outside Activity

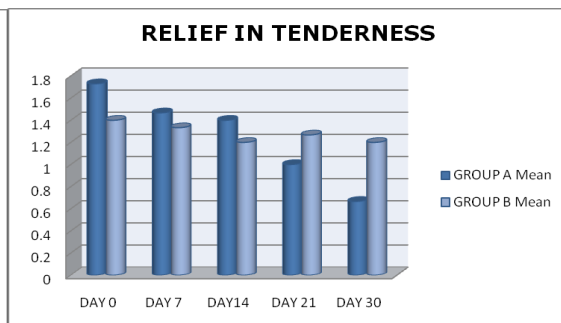
It was observed that the difference in effect of outside activity after treatment was highly significant ($P < 0.005$). On day 30 the t value was highly significant ($P < 0.005$). It is very clear that in Group A there was significant effect on outside activity when compared to Group B.

Overall effect of Treatment

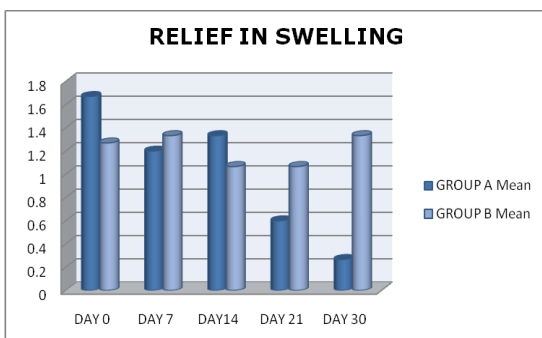
It is found that there is highly significant ($P < 0.001$) difference in results of both groups in Total Symptom Score. On the day 30 statistically highly significant difference was observed ($P < 0.001$). From all these statistical analyses it is found that in Group A there was marked reduction in Total Symptom Score as compared to Group B.



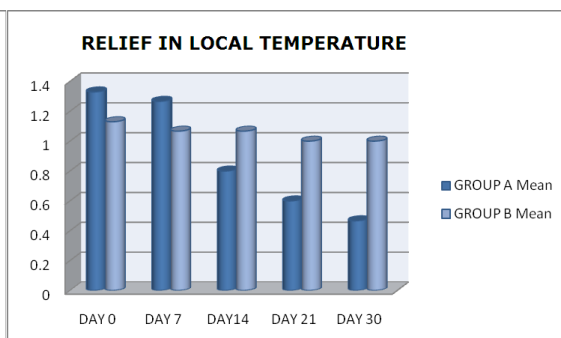
Graph 1: Comparison in relief of Pain



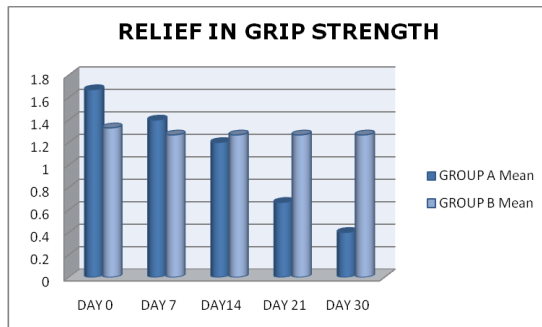
Graph 2: Comparison in relief of Tenderness



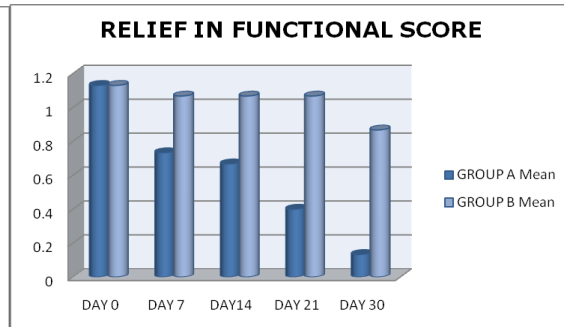
Graph 3: Comparison in relief of Swelling



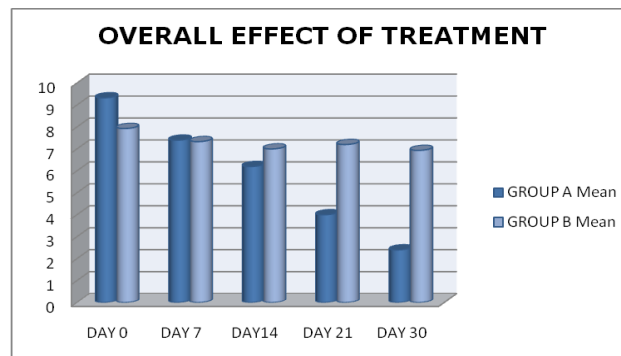
Graph 4: Comparison in relief of Local Temperature



Graph 5: Comparison in relief of Grip strength



Graph 6: Comparison in relief of Functional score



Graph 7: Comparison in Overall effect of Treatment

DISCUSSION

Acharya Sushruta has explained the concept of kalā and its involvement in vishavega. As explained earlier, seven vishavega of snake bite are produced in human beings. Fifth vega of visha is produced after crossing purīśadharakalā, between kapha and purīśa. In the fifth phase, visha penetrates into bones and vitiates prana and agni which leads to pain in joints, hiccup and burning sensation. Though the fifth kalā is purīśadharākālā symptoms of fifth vishavega are related to bones. In this study above relation was applied as a clinically. Therefore, the patients of Asthigatavata were included in clinical trial and mustadigana was given to the subjects of study group. Effect of trial drug was compared with the controlled group (Placebo group) According to Vagbhatacharya in Darvikar⁶ snake bite the symptoms of fifth vishavega are dribbling of kapha, discoloration, cutting pain in the joints, aggravation of all the doshas and pain in large intestine. The symptom parvabheda of fifth vega shows that vishavega of purīśadharākālā is also spreading to aṣṭhidharā kalā. The fifth kalā which is known as Purīśadharākālā is meant for supporting fecal matter. It is found in Pakvashaya (Large intestine and rectum) within abdominal cavity. Purīśadharākālā has property of separating kitta and sarabhag right from Unduk (caecum)⁷. This version of Purīśadharākālā is appropriate because most part of the food is absorbed in small intestine and fecal matter proceeds from caecum upwards and passes through ascending colon, hepatic flexure, transverse colon, descending colon, rectum and sigmoid colon. Thus, this location of purīśadharākālā is very precise.

There is no any detail explanation about Aṣṭhidharā kalā in Ayurvedic text, but it may be correlated with inner layer i.e. cambium of periosteum. Osteoporosis is a condition in which the bones become less dense and more likely to fracture. Fractures from osteoporosis can result in significant pain and disability. People who have ulcerative colitis may be at an increased risk of developing osteoporosis⁸.

According to modern science osteoarthritis is migratory, involves small and large joints is more common in Ulcerative colitis parallels the course of bowel disease and the successful treatment of colitis leads to resolution of joint symptoms. Here the treatment of bowel disease improves the symptoms of osteoarthritis which indicates the relation of purīśadharā and aṣṭhidharā kalā. If the sign and symptoms of osteoarthritis, cervical spondylosis and osteoporosis are compared they are more relevant to the symptoms of asthigatavata. In osteoarthritis pain in bones and painful joint movement indicates resemblance of vata aggravation. Ulcerative colitis is the disease of large intestine i.e. pakvashaya so according to Ayurveda it is the disease of Purīśadharākālā. From above discussion we can conclude that the Patients of ulcerative colitis are at high risk of developing osteoporosis, osteoarthritis which is because of relationship of purīśadharā and aṣṭhidharā kalā. The prevalence of Ulcerative Colitis in patients with Ankylosing Spondylitis is thought to be 5-10 %. However, investigation of unselected spondylo arthritis patients by ileocolonoscopy has revealed that from one third to two third patients with Ankylosing Spondylitis has subclinical intestinal inflammation that is evident either macroscopically or histologically⁹. According to Ayurveda this histological evidence shows relation of Purīśadharā and Aṣṭhidharā Kalā. The patients of Asthigatavata who were also suffering from Grahani vyaadhi were excluded from the study because Grahani vyaadhi is related to pittadharākālā. The sthana of pittadharā kala is pakvashaya which is same as of purīśadharākālā. Thus, inclusion of grahanivyadhi may leads to misinterpretation of result. In this study the dravya "haimavati" had been omitted from trial drug-Mustadigana because it is a controversial drug. And also, godambi was used instead of bhallatak (*Semecarpus anacardium*) which itself is a part of bhallatak (*Semecarpus anacardium*) because it is easy to make churna of godambi.

CONCLUSION

There is definite application of relationship between Purīśadharā and Asthīdharā Kalā. This relation is useful for the treatment of various diseases of bones and joints.

ACKNOWLEDGEMENT

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