AYUSHDHARA
ISSN: 2393-9583 (P)/ 2393-9591 (O)
An International Journal of Research in AYUSH and Allied Systems

Research Article

CLINICAL ASSESSMENT OF *ALAMBUSHADI CHURNA* AND *DWIPANCHMULADHYA TAIL VASTI* IN THE MANAGEMENT OF *AMAVATA* VIS-A-VIS RHEUMATOID ARTHRITIS

Sunil Kumar[1]*, O.P.Singh[2]

*[1]Jr 3nd, [2]Professor, Dept. of Kayachikita, IMS, B.H.U., Varanasi, Uttar Pradesh, India.

KEYWORDS: *Alambusadi churna*, *Dwipanchmuladi tail*, *Vasti, Aamvata*, Rheumatoid Arthritis.

***Address for correspondence**
Dr. Sunil kumar
Jr 3nd, Dept. of Kayachikita, IMS, B.H.U., Varanasi, Uttar Pradesh, India.
Email: murmu2529@gmail.com

ABSTRACT

Amavata is a chronic immune inflammatory systemic disorder mainly affecting synovial joints, caused due to formation of *Ama* and its association with vitiated *Dosha* and deposition in *Shleshma sthana* i.e. joints. Clinical features of *Amavata* resembles with Rheumatoid Arthritis, it poses a challenge for the physician owing to its chronicity, morbidity and complications. The treasure of Ayurveda therapeutics has laid out detailed treatment line for *Amavata.* Hence to establish a firm scientific basis for classical Ayurvedic formulation is now being felt. Keeping in view the above concepts, the research work entitled Clinical Assessment of *Alambushadi Churna* and *Dwipanchmuladhya Tail Vasti* in the Management of *Amavata* vis-a-vis Rheumatoid Arthritis.

The sample of 60 patients presenting with classical signs and symptoms of *Aamavata* according to Ayurvedic classics, after subjection to modern parameters were subdivided randomly into four groups. Out of 60 patients only 51 patients completed the follow up study in which group A (*Alambushadi churn* orally) consist of 13 patients, group B (*Matra Vasti* by *Dwipanchmuladhya Tail*), consist of 12 patients group C (*Alambushadi Churn* orally) consist of 13 patients and group D (methotrexate Folic Acid) consist of 13 patients.

The research work and the Ayurvedic management schedule of *Matra Vasti* and *Alambushadi churna* can be used in the chronic as well as acute patients of *Amavata* with fruitful results.

INTRODUCTION

Ayurveda is a system of healing unlike any other, offering a unique approach to health care in the form of self-discovery. Occurrence of *Amavata*[1] on large scale is one of the outcomes of modification of the dietary habits, social structure, life style, and environment change. It is a chronic condition involving loss of mobility and enduring pain of the joints with some swelling of the synovial joints. Persistent synovial inflammation often causes cartilage damage and bone erosions that badly disturbs joint integrity, as an outcome of which one third of patients suffer from working disability by five years. RA[2] is correlated with *Amavata* mentioned in Ayurveda. Inspite of the description of multiple drug therapy on *Amavata* in different classics of Ayurveda, potential and durable results are not found due to non-removal of the basic cause. Hence, special emphasis should be put into searching for a standard and suitable drug for *Amavata*. Hence to establish a firm scientific basis for classical ayurvedic formulation is now being felt. Keeping in view the above concepts, the research work entitled "Clinical Assessment of *Alambushadi Churna* and *Dwipanchmuladhya Tail Vasti* in the Management of *Amavata* vis-a–vis Rheumatoid Arthritis" was carried out in Department of *Kayachikitsa*, S.S.Hospital, B.H.U. Varanasi. In *Amavata, Vata* is dominant *Dosha* and *Ama* is the chief pathogenic factor. Ancient Acharyas of Ayurveda have described sequential employment of *Deepana*[3], *Pachana*[4], *Shodhana*[5] and *Shamana*[6] therapies in the management of *Amavata.* The

formulations under trial in this study, *Alambushadi churna*[7] and *Matra Vasti with Dwipanchmuladhya Taila*[8] are described in the Ayurvedic text in *Chakradatta Amavataadhikara* and in *Bhavprakash Amavatadhikara* respectively. In present study *Vasti Karma*[9] is selected as *Shodhana Chikitsa*. It is directly mentioned in the *Chikitsa Sutra* of *Amavata* by Chakradatta and is considered as *Ardha Chikitsa*[10] in Ayurvedic texts. *Alambushadi churna* is selected as *Shaman Chikitsa*. It performs *Deepan* and *Pachan karma* in the patient of *Amavata*. The selected trial drug *Alambusadi churna* is mentioned by *Acharya Chakrapani* in *Chakradatta* in reference to *Amavata Rogadhikara* and *Matra Vasti* is mentioned by *Bhavprakash* in *Amavataadhikara* in reference of *Amavata* with the emphasis that they destroy the disease from its root. *Alambushadi churna* is given by oral rout and *MatraVasti* with *Dwipanchmuladhya Taila* by anus route.

DESIGN OF THE STUDY

The study is open-labelled, randomized clinical study.

AIMS AND OBJECTIVES

- To clinically assess the efficacy of *Alambusadi churna* in the management *Amavata* vis-à-vis Rheumatoid arthritis.
- To clinically assess the efficacy of *Dwipanchmuladhya Taila Vasti* in the management *Amavata* vis-à-vis Rheumatoid arthritis.
- To clinically assess the efficacy of *Dwipanchmuladhya taila vasti* and *Alambusadi churna* in the management of *Amavata*.
- To compare the clinical efficacy of Interventional group and Control group in the management *Amavata* vis-à-vis Rheumatoid arthritis.

MATERIAL AND METHODS

Preparation of Drugs

Alambushadi Churna was prepared following the SOP norms as follows- Starting from *Lajjalu*, all the drugs upto *Trivrita* in given quantity were mixed and made into fine *Churna* (powder).

Table 1: Contents of *Alambushadi Churna*[11]

S.No.	Name	Botanical Name	Quantity
1.	*Lajjalu*	*Mimosa pudica*	1 part
2.	*Gokshur*	*Tribulus terrestris*	2 part
3.	*Amalaki*	*Emblica officinalis*	3 part
4.	*Haritki*	*Terminalia chebula*	4 part
5.	*Bibhitki*	*Terminalia bellirica*	5 part
6.	*Sunthi*	*Zingiber officinalis*	6 part
7.	*Guduchi*	*Tinospora cardifolia*	7 part
8.	*Trivrita*	*Operculina turpethum*	28 part

Table 2: Contents of *Dwipanchmuladhya Tail Vasti*[12]

S.No.	Name	Botanical name	Quantity
1	*Belmultwak*	*Aegle marmelos*	1 part
2	*Gambharimultwak*	*Gmelia arborea*	1 part
3	*Patalamul*)	*Stereospermum suaveolens*	1 *Pala*
4	Sonapatha	*Oroxylum indicum*	1 part
5	*Arnimul*	*Premna mucronata*	1 part
6	Shalparni	*Desmodium gangeticum*	1 part
7	Prishnaiparni	*Uraria picta*	1 part
8	*ChotKatari*	*Solanum surattense*	1 part
9	*BadiKatari*	*Solanum indicum*	1 part
10	*Gokshur*	*Tribulus terrestris*	1 part
11	*TilaTaila*	Sesame oil	Q.S.

Method of Preparation

All the crude drugs were available in pharmacy of Rasasastra department. All drugs were tested for their quality and authenticity. *Dwipanchmuladhya taila* was prepared according to Ayurvedic Classic Text Book.

Time of Administration: It is a *Matra vasti* that can be given after the meals (*Bhukte Cha Api Pradiyate*).

Method of Administration of *Vasti*: Patient was advised to lie on an even *Vasti* table in left lateral position with straight body and left hand kept as pillow. His right leg was folded at knee joint and made to rest flat over the left leg. Patient's anus and rubber catheter was smeared with cutting substance like *tail*.

Rubber catheter was introduced in anus by its 4-6cm part slowly. *Vasti dravya* was taken in Asepto pump and forced slowly in one push then after Rubber catheter was taken out slowly.

Selection of Cases: Total 60 patients of *Amavata* were randomly selected for the present study, from the *Kayachikitsa* OPD and IPD of Sir Sunder Lal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi. The case selection was random regardless of age, sex, occupation and religion. Both acute and chronic phase of *Amavata* patients were taken for the study, following the criteria of the diagnosis of Rheumatoid Arthritis in modern medicine and the clinical features of *Amavata* described in *Madhava Nidana*.

Inclusion Criteria

- Age between 20-60 years.
- Patient willing to participate for this trial.
- Diagnosed cases of *Amavata* based on symptoms and signs described in *Nidana* and EULAR 2010.
- Sero positive and sero negative both cases are included.
- Patients with H/O 1-5 years with established disease.

Exclusion Criteria

- Not willing patients.
- Patients should not be less than 20 years and more than 60 years.
- Patients of Rheumatic Arthritis, Gouty Arthritis, Septic Arthritis, Osteoarthritis and Ankylosing Spondylitis.
- HIV, Tuberculosis, Hypertension, D.M. and other systemic problem.
- Pregnant and lactating women.
- Patients with major complication are also excluded.

Diagnostic Criteria for Rheumatoid Arthritis

- Eular Criteria[13]
- Eular classification system is a score-based algorithm for RA that incorporates the following 4 factors-
- Joint involvement
- Serology test results
- Acute-phase reactant test results
- Patient self-reporting of the duration of signs and symptoms
- The maximum number of points possible is 10. A classification of definitive RA requires a score of 6/10.
- **EULAR 2010**

Joint Involvement	1 Large Joint (Shoulder, Elbow, Hip, Knee, Ankle)	0
	2-10 Large joints	1
	1-3 Small joints (MCP, PIP, Thumb, IP, MTP, wrist)	2
	4-10 Small joints	3
	>10 joints (atleast 1 small joint)	5
Serology	Negative RF and negative Anti CCP Antibody	0
	Low positive RF or low positive Anti CCP Antibody	2
	(</=3 times of upper limit of normal value)	
	High positive RF or high positive Anti CCP Antibody	3
	(>3 times of upper limit of normal value)	
Acute phase reactants	Normal CRP and normal ESR	0
	Abnormal CRP and abnormal ESR	1
Duration of symptoms	<6 week	0
	>6 week	1

Diagnosis of *Amavata* was made on the basis of symptom of *Amavata* described in Ayurvedic text book.

- *Sandhishoola* (Pain)
- *Sanshishotha* (Swelling)
- *Sandhigraha* (Stiffness)
- *Sparsha-asahatva* (Tenderness)
- *Sashabdasandhi* (Crepitus)

Physical Examination: Under the physical examination patient's general condition, pulse rate, blood pressure, pallor, icterus, cyanosis, lymphadenopathy, and body weight were recorded at the basal level and at each successive follow ups.

Study Design

The sample of 60 patients presenting with classical signs and symptoms of *Aamavata* according to Ayurvedic classics, after subjection to modern parameters were subdivided randomly into four groups. Out of 60 patients only 51 patients completed the follow up study in which group A consist of 13 patients, group B consist of 12 patients, group C consist of 13 patients and group D consist of 13 patients.

Registration and Allocation of 60 Patients in different groups

Group A (N=15)	**Group B (N=15)**	**Group C (N=15)**	**Group D (N=15)**
No. of patients completed trial (N=13)	No. of patients completed trial (N=12)	No. of patients completed trial (N=13)	No. of patients completed trial (N=13)
Drop out patients (N=2)	Drop out patients (N=3)	Drop out patients (N=2)	Drop out patients (N=2)
Not following instructions (N=1) Patient improvement was slow (N=1)	Not following instructions (N=2) Patient further diagnosed with TB (N=1)	Not following instructions (N=1) Patients not coming for regular follow up (N=1)	Not following instructions (N=2)

Group A

No. of patients	**Medicine**	**Dosage**	**Duration & follow up**
13	*Alambushadi churn* (orally)	5g BD with lukewarm water	90 Days with a follow up every 1 Month

Group B

No. of patients	**Medicine**	**Dosage**	**Duration & follow up**
12	*Matra Vasti* by *Dwipanchmuladhya Tail*	60ml/day for 7 days	90 Days with a follow up every 1 Month

Group C

No. of patients	**Medicine**	**Dosage**	**Duration & follow up**
13	*Alambushadi Churn* (orally)	5g BD with lukewarm water	90 Days with a follow up every 1 Month
	Matra Vasti by *Dwipanchmuladhya Tail*	60ml/day for 7 days	90 Days with a follow up every 1 Month

Group D

No. of patients	**Medicine**	**Dosage**	**Duration & follow up**
13	[14] methotrexate Folic Acid	5mg OD weekly 5mg OD Weekly	90 Days with a follow up every 1 Month.

Parameters for the Assessment of Improvement

Clinical Assessment of *Amavata*

Assessment of Functional Status

Walking time: This test provides functional status of hip, knee, ankle and smaller joints of the lower limbs. In the present study a distance of 25ft was fixed for the purpose, and grading was given

0 =15 - 20 sec
1 = 21- 30 sec
2 = 31- 40 sec
3 = > 40 sec

Grip power and pressing power: The functional status of wrist joints, metacarpophalangeal joints and interphalangeal joints was assessed by measuring of pressing power and grip power.

0 = 200mmHg
1 =198 - 120mmHg
2 =118 - 70mmHg
3 =<70mmHg

Foot pressure: To have an objective view of the functional capacity of the legs, foot pressure was recorded by the ability of the patients to press a weighing machine.

0 = 25- 20 kg
1 = 20-16 kg
2 = 15- 10 kg
3 = 10 kg

Clinical Assessment of the Disease

Clinical assessment of the disease, its severity, extent and grades of inflammation were objectively done in terms of pain swelling tenderness, deformity, general function capacity and stiffness of the joints.

Pain: It is determined by intensity of pain on passive movement and rate of analgesic drug requirement.

0 No pain
1 Pain complaints but tolerable
2 Pain complaints difficult to tolerate and taking analgesic once a day.
3 Intolerable pain and taking analgesics two times a day
4 Intolerable pain and taking analgesics more than two times in a day.

Swelling

0 No swelling
1 Feeling of swelling + Heaviness
2 Apparent swelling
3 Huge (Synovial effusion) swelling

Stiffness

0 No stiffness
1 20% limitation of normal range of mobility
2 50% limitation of mobility
3 75% or more reduction of normal range of movement

General Function Capacity

0 Complete ability to carry on all routine duties
1 Frequent normal activity despite slight difficulty in joint movement
2 Few activities are persisting but patient/attendant can take care of him or herself
3 Patient is totally bed ridden

Tenderness

0 No tenderness
1 Mild tenderness
2 Moderate tenderness
3 Severe tenderness

Laboratory Profile

Hematological investigations

CBC, TLC, HGB, PLT, LFT, RFT, RBS, LIPID profile, Anti CCP and RA

OBSERVATION & RESULT

Table 1: Pain

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.0	0	0.0	0	0.0	0	0.0	χ2=37.554 p=0.000
	1	0	0.0	0	0.0	0	0.0	4	30.8	
	2	0	0.0	0	0.0	6	46.2	5	38.5	
	3	5	38.5	6	46.2	7	53.8	4	30.8	
	4	8	61.5	7	53.8	0	0.0	0	0.0	
B	0	0	0.0	0	0.0	0	0.0	0	0.0	χ2=32.556 p=0.000
	1	0	0.0	0	0.0	0	0.0	5	41.7	
	2	0	0.0	2	16.7	5	41.7	6	50.0	
	3	3	25.0	7	58.3	7	58.3	1	8.3	
	4	9	75.0	3	25.0	0	0.0	0	0.0	
C	0	0	0.0	0	0.0	0	0.0	5	38.5	χ2=37.331 p=0.000
	1	0	0.0	0	0.0	3	23.1	7	53.8	
	2	0	0.0	4	30.8	8	61.5	1	7.7	
	3	6	46.2	8	61.5	2	15.4	0	0.0	
	4	7	53.8	1	7.7	0	0.0	0	0.00	
D	0	0	0.0	0	0.0	0	0.0	8	61.5	χ2=37.984 p=0.000
	1	0	0.0	0	0.0	7	53.8	5	38.5	
	2	0	0.0	2	15.4	6	46.2	0	0.0	
	3	6	46.2	9	69.2	0	0.0	0	0.0	
	4	7	53.8	2	15.4	0	0.0	0	0.0	
Inter group comparison among the groups Kruskal Wallis test		χ2=1.515 P=0.679		χ2=9.981 P=0.019 (S)		χ2=21.472 P=0.000 (HS)		χ2=27.265 P=0.000 (HS)		

Table 2: Swelling

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	3	23.1	χ2=35.605 p=0.000
	1	0	0.00	0	0.00	4	30.8	9	69.2	
	2	4	30.8	7	53.8	9	69.2	1	7.7	
	3	9	69.2	6	46.2	0	0.00	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	1	8.3	χ2=30.810 p=0.000
	1	0	0.00	0	0.00	5	41.7	8	66.7	
	2	3	25.0	9	75.0	7	58.3	3	25.0	
	3	9	75.0	3	25.0	0	0.00	0	0.00	
C	0	0	0.00	0	0.00	0	0.00	9	69.2	χ2 =36.378 p=0.000
	1	0	0.00	0	0.00	9	69.2	4	30.8	
	2	5	38.5	11	84.6	4	30.8	0	0.00	
	3	8	61.5	2	15.4	0	0.00	0	0.00	
D	0	0	0.00	0	0.00	0	0.00	8	61.5	χ2=35.845 p=0.000
	1	0	0.00	1	7.7	10	76.9	5	38.5	

	2	5	38.5	9	69.2	3	23.1	0	0.00	
	3	8	61.5	3	23.1	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		χ2=0.707 P=0.872		χ2=3.478 P=0.324		χ2=7.383 P=0.61		χ2=15.605 P=0.001		

Table 3: Joint Stiffness

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	1	7.7	χ2=34.189 p=0.000
	1	0	0.00	0	0.00	5	38.5	9	69.2	
	2	4	30.8	9	69.2	8	61.5	3	23.1	
	3	9	69.2	4	30.8	0	0.00	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	2	16.7	χ2=28.372 p=0.000
	1	0	0.00	1	8.3	8	66.7	8	66.7	
	2	6	50.0	10	83.3	3	25.0	2	16.7	
	3	6	50.0	1	8.3	1	8.3	0	0.00	
C	0	0	0.00	0	0.00	0	0.00	5	38.5	χ2=34.902 p=0.000
	1	0	0.00	1	7.7	9	69.2	8	61.5	
	2	7	53.8	9	69.2	4	30.8	0	0.00	
	3	6	46.2	3	23.1	0	0.00	0	0.00	
D	0	0	0.00	0	0.00	0	0.00	5	38.5	χ2= 35.690 p=0.000
	1	0	0.00	1	7.7	11	84.6	8	61.5	
	2	4	30.8	10	76.9	2	15.4	0	0.00	
	3	9	69.2	2	15.4	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		χ2=2.363 P=0.001		χ2=2.716 P=0.438		χ2=5.866 P=0.118		χ2=8.345 P=0.039		

Table 4: Walking Time

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	1	7.7	χ2=34.091 p=0.000
	1	0	0.00	0	0.00	8	61.5	11	84.6	
	2	5	38.5	11	84.6	5	38.5	1	7.7	
	3	8	61.5	2	15.4	0	0.00	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	4	33.3	χ2=32.774 p=0.000
	1	0	0.00	0	0.00	9	75.0	8	66.7	
	2	6	50.0	11	91.7	3	25.0	0	0.00	
	3	6	50.0	1	8.3	0	0.00	0	0.00	
C	0	0	0.00	0	0.00	2	15.4	10	76.9	χ2=35.619 p=0.000
	1	1	7.7	3	23.1	9	69.2	3	23.1	
	2	6	46.2	10	76.9	2	15.4	0	0.00	
	3	6	46.2	0	0.00	0	0.00	0	0.00	
D	0	0	0.00	0	0.00	0	0.00	10	76.9	χ2=36.885

	1	0	0.00	1	7.7	11	84.6	3	23.1	p=0.000
	2	5	38.5	11	84.6	2	15.4	0	0.00	
	3	8	61.5	1	7.7	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		$\chi2$=1.257 P=0.739		$\chi2$=6.771 P=0.80		$\chi2$=3.901 P=0.272		$\chi2$=18.437 P=0.000		

Table 5: Grip Power

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	1	7.7	$\chi2$=33.956 p=0.000
	1	0	0.00	1	7.7	6	46.2	12	92.3	
	2	5	38.5	10	76.9	7	53.8	0	0.00	
	3	8	61.5	2	15.4	0	0.00	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	1	8.3	$\chi2$=31.912 p=0.000
	1	0	0.00	0	0.00	8	66.7	10	83.3	
	2	6	50.0	11	91.7	4	33.2	1	8.3	
	3	6	50.0	1	8.3	0	0.00	0	0.00	
C	0	0	0.00	0	0.00	0	0.00	7	53.8	$\chi2$=35.619 p=0.000
	1	0	0.00	1	7.7	11	84.6	6	46.20	
	2	6	46.2	12	92.3	2	15.4	0	0.00	
	3	7	53.8	0	0.00	0	0.00	0	0.00	
D	0	0	0.00	0	0.00	0	0.00	7	53.8	$\chi2$=35.542 p=0.000
	1	0	0.00	2	15.4	8	61.5	6	46.2	
	2	5	38.5	10	76.9	5	38.5	0	0.00	
	3	8	61.5	1	7.7	0	0.000	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		$\chi2$=0.500 P=0.919		$\chi2$=1.963 P=0.580		$\chi2$=4.209 P=0.240		$\chi2$=12.743 P=0.005		

Table 6: *Angamard*

Groups	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.0	0	0.0	0	0.0	1	7.7	$\chi2$=33.393 p=0.000
	1	0	0.00	0	0.00	8	61.5	10	76.9	
	2	5	38.5	11	84.6	5	38.5	2	15.4	
	3	8	61.5	2	15.4	0	0.00	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	5	41.7	$\chi2$=32.528 p=0.000
	1	0	0.00	1	8.3	6	50.0	7	58.3	
	2	4	33.3	9	75.0	6	50.0	0	0.00	
	3	8	66.7	2	16.7	0	0.00	0	0.00	
C	0	0	0.00	0	0.00	0	0.00	8	61.5	$\chi2$=35.410 p=0.000
	1	0	0.00	1	7.7	11	84.6	5	38.5	
	2	6	46.2	12	92.3	2	15.4	0	0.00	
	3	7	53.8	0	0.00	0	0.00	0	0.00	

D	0	0	0.00	0	0.00	0	0.00	6	46.2	χ2=35.690 p=0.000
	1	0	0.00	0	0.00	9	69.2	6	46.2	
	2	5	38.5	11	84.6	4	30.8	1	7.7	
	3	8	61.5	2	15.4	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		χ2=0.434 P=0.933		χ2=2.980 P=0.395		χ2=3.507 P=0.320		χ2=9.486 P=0.023		

Table 7: *Aruchi*

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	1	7.7	χ2=33.491 p=0.000
	1	0	0.00	0	0.00	4	30.8	10	76.9	
	2	4	30.8	9	69.2	9	69.2	2	15.4	
	3	9	69.2	4	30.8	0	0.00	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	3	25.0	χ2=35.292 p=0.000
	1	0	0.00	0	0.00	6	50.0	6	50.0	
	2	4	33.3	8	66.7	6	50.0	3	25.0	
	3	8	66.7	4	33.3	0	0.00	0	0.00	
C	0	0	0.00	0	0.00	0	0.00	9	69.2	χ2=36.328 p=0.000
	1	0	0.00	3	23.1	8	61.5	4	30.8	
	2	5	38.5	9	69.2	5	38.5	0	0.00	
	3	8	61.5	1	7.7	0	0.00	0	0.00	
D	0	0	0.00	0	0.00	0	0.00	6	46.2	χ2=35.043 p=0.000
	1	0	0.00	2	15.4	7	53.8	7	53.8	
	2	5	38.5	10	76.9	6	46.2	0	0.00	
	3	8	61.5	1	7.7	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		χ2=0.246 P=0.970		χ2=8.318 P=0.040		χ2=2.621 P=0.454		χ2=13.049 P=0.005		

Table 8: *Trishna*

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	1	7.7	χ2=32.135 p=0.000
	1	0	0.00	0	0.00	6	46.2	10	76.9	
	2	6	46.2	10	76.9	6	46.2	2	15.4	
	3	7	53.8	3	23.1	1	7.7	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	3	25.0	χ2=32.654 p=0.000
	1	0	0.00	0	0.00	8	66.7	9	75.0	
	2	4	33.3	9	75.0	4	33.3	0	0.00	
	3	8	66.7	3	25.0	0	0.00	0	0.00	
C	0	0	0.00	0	0.00	2	15.4	9	69.2	χ2=35.154 p=0.000
	1	0	0.00	3	23.1	8	61.5	4	30.8	
	2	6	46.2	9	69.2	3	23.1	0	0.00	

	3	7	53.8	1	7.7	0	0.00	0	0.00	
D	0	0	0.00	0	0.00	1	7.7	8	61.5	$\chi2$=34.342 p=0.000
	1	0	0.00	4	30.8	11	84.6	5	38.5	
	2	7	53.8	8	61.5	1	7.7	0	0.00	
	3	6	46.2	1	7.7	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		$\chi2$=1.063 P=0.786		$\chi2$=8.029 P=0.045		$\chi2$=8.111 P=0.044		$\chi2$=15.054 P=0.002		

Table 9: *Alasya*

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	3	23.1	t =30.961 p=0.000
	1	0	0.00	3	23.1	8	61.5	7	53.8	
	2	6	46.2	8	61.8	4	30.8	3	23.1	
	3	7	53.8	2	15.4	1	7.7	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	2	16.7	t =30.360 p=0.000
	1	0	0.00	1	8.3	5	41.7	7	58.3	
	2	5	41.7	8	66.7	7	58.3	3	25.0	
	3	7	58.3	3	25.0	0	0.00	0	0.00	
C	0	0	0.00	0	0.00	0	0.00	9	69.2	t =35.147 p=0.000
	1	1	7.7	4	30.8	11	84.6	4	30.8	
	2	4	30.8	6	46.2	2	15.4	0	0.00	
	3	8	69.2	3	23.1	0	0.00	0	0.00	
D	0	0	0.00	0	0.00	0	0.00	6	46.2	t =34.565 p=0.000
	1	0	0.00	2	15.4	9	69.2	6	46.2	
	2	4	30.8	9	69.2	4	30.8	1	7.7	
	3	9	69.2	2	15.4	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		$\chi2$=0.650 P=0.885		$\chi2$=1.218 P=0.749		$\chi2$=4.993 P=0.172		$\chi2$=10.507 P=0.015		

Table 10: *Gaurav*

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	0	0.00	$\chi2$=32.215 p=0.000
	1	0	0.00	0	0.00	4	30.8	11	84.6	
	2	4	30.8	10	76.9	9	69.2	2	15.4	
	3	9	69.2	3	23.1	0	0.00	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	3	25.0	$\chi2$=30.240 p=0.000
	1	0	0.00	1	8.3	4	33.3	6	50.0	
	2	4	33.3	8	66.7	8	66.7	3	25.0	
	3	8	66.7	3	25.0	0	0.00	0	0.00	
C	0	0	0.00	0	0.00	2	15.4	10	76.9	$\chi2$=305.462 p=0.000
	1	0	0.00	2	15.2	9	69.2	3	23.1	

	2	7	53.8	11	84.6	2	15.4	0	0.00	
	3	6	46.2	0		0	0.00	0	0.00	
D	0	0	0.00	0	0.00	1	7.7	6	46.2	$\chi2$=33.956 p=0.000
	1	0	0.00	2	15.4	8	61.5	7	53.8	
	2	6	46.2	10	76.9	4	30.8	0	0.00	
	3	7	53.8	1	7.7	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		$\chi2$=1.844 P=0.605		$\chi2$=5.617 P=0.132		$\chi2$=12.070 P=0.007		$\chi2$=17.837 P=0.000		

Table 11: *Jwara*

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	1	7.7	$\chi2$=29.909 P=0.000
	1	0	0.00	3	23.1	6	46.2	10	76.9	
	2	6	46.2	8	61.5	6	46.2	2	15.4	
	3	7	53.8	2	15.4	1	7.7	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	3	25.0	$\chi2$=29.722 P=0.000
	1	0	0.00	4	33.3	7	58.3	9	75.0	
	2	8	66.7	8	66.7	5	41.7	0	0.00	
	3	4	33.7	0	0.00	0	0.00	0	0.00	
C	0	0	0.00	1	7.7	6	46.2	9	69.2	$\chi2$=31.660 P=0.000
	1	2	15.4	8	61.5	6	46.2	4	30.8	
	2	8	61.5	4	30.8	1	7.7	0	0.00	
	3	3	23.1	0	0.00	0	0.00	0	0.00	
D	0	0	0.00	0	0.00	1	7.7	4	30.8	$\chi2$=31.800 p=0.00
	1	0		5	38.5	9	69.2	9	69.2	
	2	8	61.5	7	53.8	3	23.1	0	0.00	
	3	5	38.5	1	7.7	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		$\chi2$=4.038 P=.257		$\chi2$=7.609 P=0.55		$\chi2$=14.408 P=0.002		$\chi2$=13.061 P=0.005		

Table 12: *Apaka*

Group	Score	BT		F1		F2		AT		Within the group comparison Friedman Test
		No. of pt.	%	No. of pt.	%	No. of pt.	%	No. of pt.	%	
A	0	0	0.00	0	0.00	0	0.00	1	7.7	$\chi2$=30.083 p=0.000
	1	0	0.00	2	15.4	5	38.5	10	76.9	
	2	6	46.2	9	69.2	8	61.5	2	15.4	
	3	7	53.8	2	15.4	0	0.00	0	0.00	
B	0	0	0.00	0	0.00	0	0.00	4	33.3	$\chi2$=25.105 p=0.000
	1	1	8.3	6	50.0	8	66.7	6	50.0	
	2	7	58.3	3	25.0	3	25.0	2	16.7	
	3	4	33.3	3	25.0	1	8.3	0	0.00	
C	0	0	0.00	1	7.7	6	46.2	10	76.9	$\chi2$=31.088

	1	6	46.2	10	76.9	7	53.8	3	23.1	p=0.000
	2	7	53.8	2	15.4	0	0.00	0	0.00	
	3	0	0.00	0	0.00	0	0.00	0	0.00	
D	0	0	0.00	0	0.00	4	30.8	8	61.5	χ2=31.702 p=0.000
	1	4	30.8	10	76.9	9	69.2	5	38.5	
	2	7	53.8	3	23.1	0	0.00	0	0.00	
	3	2	15.4	0	0.00	0	0.00	0	0.00	
Inter group comparison among the groups Kruskal Wallis test		χ2=15.714 P=0.001		χ2=15.549 P=0.001		χ2=22.971 P=0.000		χ2=15.359 0.002		

Table 13: Hemoglobin

Group	Hb (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	11.353± 1.661	11.120± 1.5392	11.468± 1.6034	12.09± 1.576	t=2.398 p=0.034
B	11.450± 1.5548	11.725± 1.3308	12.233± 1.1625	12.67 ±1.366	t=-5.104 p=0.000
C	10.977± 1.914	11.708± 2.1566	12.062± 1.5196	12.45 ±1.187	t=-4.351 p=0.001
D	11.038± 1.2413	10.92± 1.1415	10.78± 1.2121	10.46 ±1.015	t=-7.129 p=0.041
Between the group comparison One-way ANOVA Test	F=0.261 P=0.853	F=0.303 P=0.134	F=0.567 P=0.499	F=0.776 P=0-513	

Table 14: TLC

Group	TLC (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	6.93± 3.36	6.52± 2.38	6.35± 1.86	6.5± 1.70	t=0.580 p=0.573
B	6.69± 2.06	7.55± 2.24	7.64± 1.93	7.5± 1.64	t=-3.395 p=0.006
C	7.09± 1.58	7.44± 1.65	6.85± 1.64	7.00± 1.97	t=-0.158 p=0.877
D	6.79± 1.79	6.83± 1.62	6.92± 1.57	7.26± 1.74	t=-2.332 p=0.038
Between the group comparison Kruskal Wallis test	χ2=0.714 P=0.870	χ2=2.299 P=0.513	χ2=2.681 P=0.443	χ2=1.379 P=0.710	

Table 15: Platelet

Group	Platelet (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	191.92 ±57.799	192.85 ±54.516	185.82 ±56.138	197.57 ±54.360	t=-1.227 p=0.243
B	190.33 ±36.252	191.72 ±31.908	199.75 ±36.197	202.88 ±36.344	t=-4.691 p=0.001
C	203.31 ±93.298	205.22 ±89.949	215.68 ±91.633	233.54 ±88.833	t=-2.593 p=0.024

D	191.28 ±50.520	197.69 ±52.938	202.28 ±61.314	215.38 ±75.585	t=-1.650 p=0.125
Between the group comparison One-way ANOVA Test	F=0.119 P=0.949	F=0.127 P=0.943	F=0.461 P=0.422	F=0.725 P=0.542	

Table 16: RBS

Group	RBS (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	126.400 ±20.32	126.85± 15.14	122.23± 14.77	123.88± 17.03	t=0.618 p=0.548
B	119.525 ±24.77	123.58± 26.77	124.00± 50.18	152.71± 47.63	t=-2.076 p=0.062
C	114.669 ±32.25	118.17± 25.04	115.07± 37.00	126.33± 23.12	t=-1.734 p=0.108
D	127.769 ±7.417	124.95 ±6.76	126.50 ±9.15	129.48± 10.40	t=-0.558 p=0.587
Between the group comparison One-way ANOVA Test	F=0.917 P=0.440	F=0.454 P=0.716	F=0.307 P=0.820	F=2.807 P=0.050	
Post Hoc Test					
A vs B				P=0.013	
B vs C				P=0.022	
B vs D				P=0.042	

Table 17: SGOT

Group	SGOT (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	33.20± 23.26	31.57± 20.24	29.86± 16.01	30.42± 15.81	t=1.062 p=0.309
B	30.53± 14.24	28.43± 11.45	27.97± 9.85	28.53± 9.30	t=1.049 p=0.317
C	25.33± 10.47	23.93± 8.43	24.10± 6.87	25.15± 6.36	t=0.105 p=0.918
D	23.00± 7.51	21.55± 5.53	22.04± 5.130	22.73± 5.25	t=0.299 p=0.770
Between the group comparison Kruskal Wallis test	$\chi2$=2.041 P=0.564	$\chi2$=2.846 P=0.416	$\chi2$=2.722 P=0.427	$\chi2$=3.005 P=0.391	

Table 18: SGPT

Group	SGPT (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	42.05± 28.35	42.98± 27.04	45.45± 83.60	40.00± 17.50	t=0.517 p=0.614
B	33.77± 18.27	33.01± 16.32	33.32± 15.07	33.990± 14.54	t=-0.152 p=0.882
C	28.02± 17.07	28.96± 12.43	30.48± 12.87	29.690± 11.74	t=0.699 p=0.498
D	23.56± 5.02	23.30± 3.71	23.75± 4.50	24.57± 4.41	t=-1.417 p=0.182

Between the group comparison Kruskal Wallis test	$\chi 2$=5.984 P=0.112	$\chi 2$=8.471 P=0.037	$\chi 2$=9.543 P=0.023	$\chi 2$=10.090 P=0.018	
Post Hoc Test					
A vs C		P=/0.042	P=/0.046	P=/0.048	
A vs D	P=/0.014	P=/0.005	P=/0.018	P=/0.004	

Table 19: Direct bilirubin

Group	Direct bilirubin (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	0.3962 ±0.28342	0.4554 ±0.21030	0.4708 ±0.33062	0.4269 ±0.26164	t=-0.284 P=0.781
B	0.4675 ±0.43766	0.3642 ±0.26603	0.4308 ±0.39730	0.4300 ±0.26031	t=-0.224 P=0.827
C	0.2162 ±0.14431	0.4308 ±0.28863	0.4100 ±0.34271	0.4908 ±0.28652	t=-2.747 P=0.018
D	0.3308 ±0.13775	0.4654 ±0.33014	0.5131 ±0.28188	0.4623 ±0.24574	t=-1.520 P=0.154
Between the group comparison Kruskal Wallis test	$\chi 2$=6.928 P=0.074	$\chi 2$=1.905 P=0.592	$\chi 2$=2.140 P=0.544	$\chi 2$=1.058 P=0.787	

Table 20: Urea

Group	Urea (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	25.577 ±8.6066	27.8985 ±8.34488	29.1162 ±9.00886	28.99 ±8.065	t=-3.322 P=0.006
B	19.950 ±4.7769	20.6167 ±4.64383	21.1750 ±4.58458	21.90 ±4.923	t=-5.649 P=0.000
C	26.400 ±14.6255	27.0231 ±11.06520	28.1385 ±11.27812	27.74± 11.552	t=-0.697 P=0.499
D	40.500 ±6.9162	41.3077 ±6.37619	43.2692 ±6.94855	45.27 ±6.879	t=-8.644 P=0.000
Between the group comparison One way ANOVA test	F=10.668 P=0.000	F=14.849 P=0.000	F=15.426 P=0.000	F=18.657 P=0.000	
Post Hoc Test					
A vs B		P=0.028	P=0.022	P=0.037	
A vs D	P=0.000	P=0.000	P=0.000	P=0.000	
B vs C			P=0.044		
B vs D	P=0.000	P=0.000	P=0.000	P=0.000	
C vs D	P=0.000	P=0.000	P=0.000	P=0.000	

Table 21: Creatinine

Group	Creatinine (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	0.8246 ±0.34594	0.8915 ±0.30542	0.7238± 0.25138	0.9123± 0.27776	t=-0.731 P=0.479
B	0.8083 ±0.25715	0.7342 ±0.29296	0.7750± 0.24612	0.7333± 0.23094	t=0.641 P=0.535
C	0.7992	0.8638	0.9062±	0.8185±	t=-0.235

	±0.23722	±0.33278	0.33503	0.25570	P=0.818
D	0.6769 ±0.35392	0.6200 ±0.22672	0.7238± 0.23712	0.7823± 0.16604	t=-0.980 P=0.347
Between the group comparison One way ANOVA test	F=0.642 P=0.592	F=2.388 P=0.081	F=1.313 P=0.281	F=1.294 P=0.288	

Table 22: Cholesterol

Group	Cholesterol (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	170.50 ±16.939	171.37 ±16.923	171.98 ±17.274	171.74 ±16.448	t=-1.195 P=0.285
B	162.48 ±34.159	166.17 ±33.324	176.20 ±50.056	187.40 ±61.563	t=-2.410 P=0.035
C	164.83 ±47.647	161.11 ±34.127	164.70 ±36.441	164.14 ±31.1248	t=-0.099 P=0.923
D	166.85 ±38.390	168.21 ±36.612	170.69 ±36.652	173.30 ±36.1399	t=-4.524 P=0.001
Between the group comparison One way ANOVA test	F=0.112 P=0.953	F=0.248 P=0.863	F=0.211 P=0.888	F=0.211 P=0.524	

Table 23: HDL

Group	HDL (Mean±SD)				Within the group comparison Paired t test (BT-AT)
	BT	F_1	F_2	AT	
A	46.51 ± 15.840	45.87 ± 14.931	48.06 ± 15.779	49.41 ± 14.698	t=-1.731 P=0.479
B	51.60 ± 10.103	50.33 ±8.738	52.79 ±8.212	55.42 ±7.171	t=0.641 P=0.535
C	52.26 ± 16.570	50.70 ± 13.580	50.25 ±10.34	48.73 ±8.788	t=-0.235 P=0.818
D	53.38 ± 12.278	54.45 ±9.963	55.42 ±8.51	56.88 ±7.863	t=-0.980 P=0.347
Between the group comparison One way ANOVA test	F=0.611 P=0.611	F=1.089 P=0.363	F=1.047 P=0.380	F=2.144 P=0.107	

Table 24: Anti CCP

Group	Anti CCP (Mean±SD)		Within the group comparison Wilcoxon Signed Rank test
	BT	AT	
A	76.55± 160.088	70.33± 146.357	Z=-2.758 P=0.006
B	74.94± 163.620	49.97± 93.868	Z=-2.293 P=0.022
C	131.03± 140.061	87.62± 98.557	Z=-3.111 P=0.002
D	52.86± 13.356	26.41± 7.419	Z=-3.181 P=0.001
Between the group comparison Kruskal Wallis test	$\chi 2$=15.461 P=0.001	$\chi 2$=7.303 P=0.063	

Table 25: RA

Group	RA (Mean±SD)		Within the group comparison Wilcoxon Signed Rank test
	BT	AT	
A	59.70± 109.735	57.883± 106.7949	Z=-1.992 P=0.046
B	64.36± 39.344	45.208± 22.3579	Z=-2.347 P=0.019
C	80.42± 46.740	69.262± 83.1046	Z=-2.040 P=0.041
D	77.77± 16.146	47.308± 18.7189	Z=-3.184 P=0.001
Between the group comparison Kruskal Wallis test	$\chi 2$=6.650 P=0.084	$\chi 2$=2.845 P=0.416	

Discussion on Therapeutic Profile

Pain[15]- From the statistical evaluation, it is concluded that Inter group comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in pain significantly observed was in Group D (61.5%) followed by Group C (38.5%).

It may be due to *Ushna virya* property of drug like *Shunthi, Guduchi, Trivrit* help in *Ama pachan*, thereby reducing pain. This may be due to decreased PGE2 release inside the joint space.

Swelling[16]- From the statistical evaluation, it is concluded that Inter group comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in swelling significantly observed was in Group D (61.5%) followed by Group A (23.1%). Swelling occurs due to predominance of VK *Dosha*. Therefore the drug like *Vibhitaki, Haritaki, Guduchi* having *Ushna virya* property, thereby reducing the swelling. This relief in swelling may be due to inhibition of IL-1, IL-6 and TNF-α.

Joint stiffness[17]- From the statistical evaluation, it is concluded that Intergroup comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in joint stiffness significantly observed was in Group C and Group D are equal (38.5%) followed by Group B (16.7%) and Group A (7.7%). Joint stiffness occurs due to predominance of *Vata Dosha*. Therefore *Vatahara* drug like *Trivit, Shunthi* having *Ushna* property, thereby reducing joint stiffness.

Walking Time[18]- From the statistical evaluation, it is concluded that Inter group comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in walking time significantly observed was in Group C and Group D are equal (76.9%) followed by Group B (33.3%) and Group A (7.7%).

Morning stiffness is the common manifestation in RA. After receiving treatment by the patients there will be reduction in joint stiffness, thereby enhancing the walking time. As per Ayurvedic text, *Vasti* is said to be the major procedure to reduce *Vata* and stiffness is mainly related to *Vata Dosha*. That is why those patients who receive *Vasti* show better result.

Grip power[19]- From the statistical evaluation, it is concluded that Intergroup comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in grip power significantly observed was in Group C and Group D are equal (53.8%) followed by Group B (8.3%) and Group A (7.7%). Administration of *Vasti* pacified *Vata Dosha*, thereby enhancing grip power.

***Angamarda*[20]-** From the statistical evaluation, it is concluded that Inter group comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in *Angamard* significantly observed was in Group C (61.5%) followed by Group D (46.2%), Group B (41.7%) and Group A (7.7%). *Ama* is the causative factor of *Amavata. Kaphahara* property of drugs like *Amalaki, Vibhitaki* reduces the *Ama* and hence gets relief from *Angamarda*.

***Aruchi*[21]-** From the statistical evaluation, it is concluded that Inter group comparison showed

significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in *Aruchi* significantly observed was in Group C (69.2%) followed by Group D (53.8%), Group B (25%) and Group A (7.7%). *Aruchi* occurs due to vitiation of *Kapha Dosha*. After receiving treatment by *Ushna Virya* property like *Shunthi, Vibhitaki* produce *Ruchikar* effect.

***Trishna*[22] -** From the statistical evaluation, it is concluded that Inter group comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in *Trishna* significantly observed was in Group C (69.2%) followed by Group D (61.5%), Group B (25%) and Group A (7.7%). It occurs due to *Vata Pitta Dosha*. In order to reduce the *Trishna* drug like *Lajjalu*, *Gokshur* having *Shita virya* property and *Vata pitta shamak* nature they reduces *Trishana*.

***Alasya*[23] -** From the statistical evaluation, it is concluded that Inter group comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in *Alashya* significantly observed was in Group C (69.2%) followed by Group D (46.2%), Group A (23.1%) and Group B (16.7%). It occurs due to *Kapha Dosha*. After receiving treatment by *Ushna virya* drug like *Shunthi, Guduchi* reduces *Kapha Dosha* and ultimately reduces *Alasya*.

***Gaurav*[24]-** From the statistical evaluation, it is concluded that Inter group comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in *Gaurav* significantly observed was in Group C (76.9%) followed by Group D (46.2%) and Group B (25%).

It occurs due to *Ama Dosha*. After receiving treatment by *Ushna Virya* drug like *Shunthi*, *Guduchi, Trivrit* reduces *Ama Dosha* and ultimately reduces *Gaurav*.

***Jwara*[25]-** From the statistical evaluation, it is concluded that Inter group comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in *Jwara* is significantly observed was in Group C (69.2%) followed by Group D (30.8%), Group B (25%) and Group A (7.7%). It occurs due to *Pitta Dosha*. After receiving treatment by *Shita Virya* drug like *Gokshura, Lajjalu* reduces *Pitta Dosha* and ultimately reduces *Jwara*.

***Apaka*[26] -** From the statistical evaluation, it is concluded that Inter group comparison showed significant changes at all the follow up. Within the group showed highly significant changes in all the groups. The treatment response of the groups according to relief in *Apaka* is significantly observed was in Group C (76.9%) followed by Group D (61.5%), Group B (33.3%) and Group A (7.7%).

It occurs due to *Ama Dosha*. After receiving treatment by *Ushna Virya* drug like *Haritaki*, *Guduchi*, *Trivrit* reduces *Ama Dosha* and ultimately reduces *Apaka*.

Discussion on Laboratory Parameter

There is no significant change were observed in Haemoglobin, Total Leucocyte Count, Random Blood Sugar, Serum Glutamic Pyruvic Transaminase (SGPT), Serum Glutamic Oxaloacetic Transaminase (SGOT), Creatinine and Urea after treatment in all four groups.

Anti CCP[27]

The assessment of response of drug treatment showed that, in group A- initial mean was 76.55±160.088 and changed to 70.33±146.357. In group-B- initial mean was 74.94±163.620 and changed to 49.97±93.868 after treatment. In group- initial mean was 131.03±140.061 and changed to 87.62±98.557 whereas in group-D, initial mean was 52.86±13.356 and changed to 26.41±7.419 after treatment. There was a significant reduction in Anti-CCP in all groups. It may be due to reduction in inflammation of disease. Macrophage migration inhibitory factor (MIF) and vascular endothelial growth factor, as crucial parameter of angiogenesis and inflammation, were evaluated to identify the role of cyclic citrullinated peptic antibodies (Anti ccp) during angiogenesis in rheumatoid arthritis.

Rheumatoid Arthritis [28]

The assessment of response of drug treatment showed that, in group-1 initial mean was 59.70± 109.735 and changed to 57.883±106.794. Then after treatment, In group-B, initial mean was 64.36±39.344 and changed to 45.208±22.3579 after treatment. In group-C, initial mean was 80.42 ±46.740 and changed to 69.262±83.1046 whereas in group-D, initial mean was 77.77±16.146 and changed to 47.308±18.7189 after treatment. There was a significant reduction in RA factor titre in all groups. It may be due to breaking of pathogenesis of disease by *Srotosodhan* property of *Matra Vasti*. IgM, IgG, IgA isotype of RF factor occur in sera from patients with RA, although the IgM isotype is the one most frequently measured by commercial

laboratories. Serum IgM RF has been found in 75-80% of patients with RA; therefore, a negative result does not exclude the presence of disease. It is also found in other connective tissue, such as primary Sjogrens systemic lupus erythematosus, Hepatitis B and C and in chronic infection.

EULAR

The assessment of response of drug treatment showed that, in group- A initial mean was 8.31±1.82 and changed to 6.77±0.725 after treatment. In group-B, initial mean was 7.92±1.379 and changed to 5.83±1.030 after treatment. In group-C, initial mean was 7.62±1.446 and changed to 5.15±1.068 whereas in group-D, initial mean was 7.46±1.330 and changed to 5.31±1.032 after treatment. The maximum number of points possible is 10. A classification of definitive RA requires a score of 6/10 or higher. Patients with a score lower than 6/10 should be reassessed over time. Overall effect of therapy was excellent in group C in which *Alambushadi churna* and *Matra vasti* were combined given to the patients. In group B only *Matra Vasti* was used which showed good result. Effect of *Alambushadi churn* in patient of Group A was also good. Lastly, patients under group D who were on Methotrexate 5mg 1OD per week had the good improvement followed by Folic acid 5mg ODS.

CONCLUSION

On evaluation of the knowledge of the literature and experience of the present work it may be concluded, that

- Disease *Amavata* can be correlated to Rheumatoid Arthritis, which is one among the chronic destructive polyarthritic systemic disease.
- The exact etiology of the disease remains unknown, but the pathognomic *Nidana* like *Ama* is believed to be acts as autoantigen, which triggers the immunological reaction in genetically susceptible individuals.

  Primarily the *Samprapti* originates in the *Annavahasrotasa.*
- The disease *Amavata* is diagnosed on symptomatology, specific laboratory tests like RF, CRP help in diagnostic and help in assessment of treatment given.
- EULAR 20101 criteria help in the diagnosis of RA.
- Some of the *Pravriddha Amavata Laxana* and *Upadravas* can be considered as the extra-articular manifestations of *Amavata* (RA).
- As the disease is genetic and autoimmune in origin the permanent complete remission is not possible.
- The sign and symptoms e.g., Loss of appetite, *Angamarda*, *Alasya* etc. due to derangement of *Aamare* observed to be improved in by *Alambushadi churn* oral and *Matra Vasti* regime as compared to Methotrexate.
- There was neither any side effect produced nor any side effect observed during the trial drug therapy.

We have observed that in group C oral intake of *Alambushadi churna* and *Matra vasti* by *Dwipanchmuladhya taila* is effective in treating all the sign and symptoms and other associated *Lakshanas* of the disease.

So we feel immense pleasure in declaring highly encouraging results of the research work and can say that the Ayurvedic management schedule of *Matra vasti* and *Alambushadi churna* can be used in the chronic as well as acute patients of *Amavata* with fruitful results.

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Cite this article as:
Sunil Kumar, O.P.Singh. Clinical Assessment of Alambushadi Churna and Dwipanchmuladhya Tail Vasti in the Management of Amavata vis-a-vis Rheumatoid Arthritis. AYUSHDHARA, 2019;6(4): 2286-2304.

Source of support: Nil, Conflict of interest: None Declared