



IJCRR
Section: Healthcare
Sci. Journal Impact
Factor: 6.1 (2018)
ICV: 90.90 (2018)



Copyright@IJCRR

Efficacy of *Ayurvedic* Formulations along with *Swedana* Therapy in the Management of *Amavata* (Rheumatoid Arthritis) - A Clinical Study

Sonali Dilip Wairagade¹, Anuja Vasant Nagrare², Tanvi Wairagade³,
Dhuba Hari Chandi⁴

¹Associate Professor, Department of Kayachikitsa, Datta Meghe Ayurved Medical College Hospital and Research Centre, Wanadongri, Nagpur, Maharashtra, India; ²Associate Professor, Department of Agadtantra, Datta Meghe Ayurved Medical College Hospital and Research Centre, Wanadongri, Nagpur, Maharashtra, India; ³MBBS Third year (Major), HBT Medical College and Dr. R N Cooper Hospital, Mumbai, Maharashtra, India; ⁴Assistant Professor, Department of Microbiology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Wardha.

ABSTRACT

Amavata is a disease in which vitiation of *Vata Dosha* and accumulation of *Ama* take place in joint(s), and it simulates rheumatoid arthritis (RA) at modern phraseology. *Shamana* (conservative) and *Shodhana* (biological purification of the body) treatments are advised in *Ayurveda* whereas anti-inflammatory, analgesics, steroids, and disease modifying antirheumatic drugs are required for its management as per modern medicine, which is not free from side effects.

The symptoms of *Amavata* are alike to Rheumatism, which include Rheumatoid arthritis and Rheumatic fever. It is observed that Rheumatism is an autoimmune disorder, which is among the collagen disorders having strong and significant parlance with *Amavata*. A variety of drug trials were already carried out on *Amavata*, yet there is a *lacuna* in the management of *Amavata*. Hence the present study was designed to calculate the effectiveness of *Ayurvedic* formulations in *Amavata*.

The study was conducted in 15 clinically diagnosed cases of *Amavata* (Rheumatoid Arthritis) with objectives of Clinical Evaluation of Therapeutic Effect of *Rasnadikashayam* 3 t.s.f. thrice/day, *Sahachradikashayam* 3 t.s.f. once/day, *Amvatari Ras* 2 tabs once/day were given for 3 months and *Erand tail* ½ t.s.f. once/day at night were given for 1 month along with *Swedan* therapy in patients of *Amavata* (Rheumatoid Arthritis) on the basis of various scientific parameters. Patients were treated with the whole therapeutic regime mentioned in *Ayurvedic* classics i.e., *Langhana*, *Swedana*, use of *Tikta*, *Katu*, and *Deepan dravyaprayoga*, *Virechan*.

The effect of the therapy was assessed by a specially prepared proforma and at the end of the treatment, 39.39% improvement was observed in the overall effect of therapy. Paired t-test was applied to this BT and AT scores as these grades is accepted as per international norms. It showed that administered therapy reduced the degree of disease activity significantly as $P < 0.001$.

Key Words: *Ama*, *Amavata*, *Rasnadikashayam*, *Sahachradikashayam*, *Amvatari Ras*, *Gandharvahastadi Erand tail*, *Swedan*, *Vata*, Rheumatoid arthritis, Clinical trial

INTRODUCTION

Amavata is the disease of *Madhyam Rogmarga* as the *Marma*, *Asthi* and the *Sandhi* are the chief site of presentation of cardinal symptoms like *Sandhishool*, *Sandhigrah* and *Sandhishoth*.¹ At present, people are again getting attracted to, an ancient system of healing, '*Ayurveda*'; as it rectifies disease along with, lifestyle originated consequences. In this present world of hurry, worry and curry, the occurrence of diseases caused by faulty lifestyle is increasing day by day and *Amavata* is one of those diseases. *Amavata* having two

predominant pathological factors *Ama* and *Vata* from which *Ama* is formed due to *Mandagni* along with vitiated *vata* moves towards *Sleshmasthana* including joints then it undergoes *Sthanasanshraya* in the *Sandhis* and causes severe pain.² It is an inflammatory joint disease, mainly affecting the middle age group. It is characterized by swelling, pain, morning stiffness, local temperature, etc. affecting large joints of extremities. It is a debilitating disease in view of its chronicity and complications. Therefore, it has taken the foremost place among the joint disorders. It can be compared with Rheumatoid arthritis, an autoimmune disorder.

Corresponding Author:

Dr. Sonali Dilip Wairagade, Associate Professor, Department of Kayachikitsa, Datta Meghe Ayurved Medical College Hospital and Research Centre, Wanadongri, Nagpur, Maharashtra, India; Mobile: 9822644614; Email: sonaliwairagade@gmail.com

ISSN: 2231-2196 (Print)

ISSN: 0975-5241 (Online)

Received: 18.05.2020

Revised: 15.06.2020

Accepted: 05.07.2020

Published: 08.08.2020

Rheumatoid Arthritis is the most common inflammatory arthritis which mainly affects the synovial joints.³ The typical clinical feature of Rheumatoid Arthritis is the deforming of symmetrically small and large joints polyarthritis some patients present with the mild disease having less joint damage and in others, it is most severe. RA occurs throughout the world in all races, females are three times more prone to this disease than males, the onset of the disease increases as the age advances.⁴ When there is the predominance of *Pitta dosha* along with *Ama* and *Vata* then inflammatory signs like *Raga* (redness) and *Daha* (burning sensation) are observed and heaviness and itching in affected part after the involvement of *Kaphadosha*.⁵ The Apathy *Ahara* and *Vihara* mentioned in *Hetu* of *Amavata* leads to *Doshprakopa* and *Amavastha* simultaneously or one after other.⁶ The *Ama* so formed is distributed due to vitiated *Vata* along with other *Doshas* to *Sleshmasthanas* and leads to *Amavata*.⁷

According to *Ayurveda*; *agni* is the basic pillar of our life as it converts food in the form of energy with the help of which all vital functions are carried out in our body.⁸ *Agni* is the cause of *Oja*, strength, *Bala*, *Varna*, and *Prana*.⁹ *Ama* is toxic, sticky, thick, foul-smelling, undigested food in the body. *Ama* lines the wall of the bowel and impaired the assimilation and absorption of nutrients.¹⁰

Allopathic medicines do give symptomatic relief instantly in *Amavata*, but their prolonged use is certainly not advisable due to severe side effects. Also, those medicines do not cure the disease from the root. So the world is finding an answer to this disease from *Ayurveda*. In *Ayurveda*, *Amavata* was first described separately by *Madhava Nidana*. 'Ama' is an entity, produced from the indigestion of food. This 'Ama' is taken along with vitiated 'Vata' to 'Shleshma Sthanas' including *Hridaya*, *Sandhis*, etc. and *Amavata* is produced.¹¹ So the management of *Amavata* focuses on improving the digestion of food, 'Pachana', and also the 'Pachana' of *Ama Rasa Dhatu* developed in etiopathogenesis.

According to *Yogaratanakara*, the main concept of *Chikitsa* of *Amavata* consists of *Langhana*, *Svedana*, *Deepana*, intake of *Katu*, *Tikta Rasas*, *Virechana*, *Basti*, *RukshaSveda*, as per *Avastha* of *Vyadhi*.

Chakradatta firstly mentioned the treatment of *Amavata*. Management of *Amavata* mainly includes 1. *Langhana* 2. *Shamana Chikitsa* 3. *Shodhana Chikitsa*. As *Amavata* is *Rasa dushtijanya* disease *Langhana* is the best first line of treatment for the digestion of *Ama* and increasing metabolic power.¹² Thus, by using *Ayurvedic* formulations to 15 patients helps to expel out the morbid *Doshas* from the body and thereby giving relief in the disease. Thought in the mind is to evaluate the efficacy of these *Ayurvedic* formulations in the management of *Amavata*. Hence a research work entitled- "Efficacy of *Ayurvedic* Formulations along with *Swedan* Therapy in the Management of *Amavata* (Rheumatoid

Arthritis)-A Clinical Study" was conducted at Datta Meghe Ayurved Medical College Hospital & Research Centre.

AIMS AND OBJECTIVES:

Aim:

To evaluate the utility and efficacy of *Ayurvedic* formulations (*Rasnadikashayam*, *Sahachradikashayam*, *Amvatari Ras*, *Erand tail along with ruksh Swedan*) in the management of *Amvata* (Rheumatoid arthritis).

Objectives:

1. To review all *Ayurvedic* as well as modern literature regarding *Amavata*
2. To study the *Samprapti* of *Amavata* and its management
3. To evaluate the efficacy of *Ayurvedic* formulations in *Amavata*
4. To reveal the probable action of *Ayurvedic* formulations (*Rasnadikashayam*, *Sahachradikashayam*, *Amvatari Ras*, *Erand tail along with ruksh Swedan*) in the management of *Amavata*

MATERIAL AND METHOD

A. Settings:

A total of 15 patients of *Amavata* were randomly selected for the present study, from the *Kayachikitsa* OPD and IPD of Datta Meghe Ayurved Medical College Hospital & Research Centre.

In the present study, total of 15 patients were registered. The case selection was random regardless of age, sex, occupation, and socio-economic conditions. Both acute and chronic phases 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*.

The patients were diagnosed on the basis of American criteria of Rheumatoid Arthritis as well as signs and symptoms mentioned in the classics. American is mentioned as follows:¹³

1. Morning stiffness lasting for at least 1 hour and for more than 6 weeks
Arthritis of 3 or more of 14 possible joints area
2. Arthritis of hand joints, wrist, metacarpophalangeal, interphalangeal, metatarsophalangeal joints for more than 6 weeks
3. Symmetrical arthritis – Simultaneous involvement of the same joint areas
4. Rheumatoid nodules – Subcutaneous nodules over bony prominences

5. Serum Rheumatoid factor
6. Radiological changes

B. Participants:

- Patients – Amavata (Rheumatoid arthritis)
- Gender-Both Male and Female
- Age- From 15yrs-65yrs of age.

C. Data collection tools and process:

Patients fulfilling inclusion criteria and willing to give written consent were enrolled for the study. The selected patients were informed about the possible outcomes and side effects of the interventional drugs.

• Criteria of inclusion:

1. All patients of any age group, sex fulfilling the American criteria for rheumatoid arthritis.
2. All patients presenting with signs and symptoms resembling Amavata

• Criteria of exclusion:

1. Patients not willing for trial
2. Patients who left the treatment in between
3. Patients who were steroid-dependent for relief of symptoms
4. Patients presenting with complications like SLE, endocarditis, etc.
5. Patients with contractures of joints will not be included

D. Treatment Drugs:

Therapeutic regime mentioned in Ayurvedic classics i.e., Langhana, Swedana, Use of Tikta, Katu and Deepan dravyaprayoga, Virechan, Snehan.

Sr. No.	Treatment Drugs	Dose	Timing	Duration	Anupan
1	Rasnadikashayam	3 t.s.f.	9 a.m.	3 months	Water
2	Sahachradikashayam	3 t.s.f.	9 a.m.	3 months	Water
3	Rasnadikashayam	3 t.s.f.	5 p.m.	3 months	Water
4	Amvatari Ras	2 tabs	9 p.m.	3 months	Water
5	Rasnadikashayam	3 t.s.f.	9 p.m.	3 months	Water
6	Erand tail	1/2t.s.f.	10p.m.	1 month	Water
7	Ruksha Swedan	-	10 a.m.	1 month	-

Preparation of Drugs:

Rasnadikashayam, Sahachradikashayam, Amvatari Ras, Erand tail are one of the well known therapeutic preparations described in Bhaishajya Ratnawali having very much similar gunas and action described in chikitsa sutra

1. Rasnadikashayam:¹⁴

Composition: Each 10 ml is prepared out of –

Sr. No.	Sanskrit Name	Botanical Name	Parts used	Quantity
1	Rasna	Alpinia galanga	Root	0.139 gm
2	Eranda	Ricinus communis	Root	0.139 gm
3	Shunti	Zingiberofficinale	Rhizome	0.139 gm
4	Vasa	Adhatodavasica	Root	0.139 gm
5	Sati	Curcuma zedoaria	Rhizome	0.139 gm
6	Dusparsa	Tragiainvolucrata	Plant	0.139 gm
7	Sahachara	Strobilanthes ciliatus	Plant	0.139 gm
8	Ativisha	Aconitum ferox	Root	0.139 gm
9	Ghana	Cyperus rotundus	Root	0.139 gm
10	Bala	Sidacordifolia	Root	0.139 gm
11	Ikshura	Astercanthalongifolia	Root	0.139 gm
12	Devadaru	Cedrus deodara	Stem	0.139 gm
13	Guduchi	Tinosporacordifolia	Stem	0.139 gm
14	Shatavari	Asparagus racemosus	Root	0.139 gm

Method of Preparation:

Add eight parts of water to these herbs and boil them till the amount is reduced to 1/4th part. Filter the mixture and store the filtrate in a clean container.

Benefits:

- Treats rheumatic arthritis
- Eases stiffness in joints
- Reduces general body ache
- Effective in all types of joint pain

2. Sahachradikashayam^{15, 16, 17}

Sr. No.	Sanskrit name	Botanical name	Quantity
1	Sahachara	Barleriapronitis	1 Part
2	Suradaru(Devadaru)	Cedrusdeodara	1 Part
3	Shunti	Zingiberofficianlis	1 Part

Method of Preparation:

Herbal ingredients (coarse powder) 1 part were boiled in 16 parts of water and reduced to 4 parts.

Method of Storage: Stored in airtight container in dry place

Ayurvedic Properties of Sahacharadi Kashayam:

- Roga karma: Useful in Vatarogas.
- Dosha karma: Kaphavatahara.
- Agni karma: Pachana and deepana.

3. AmvatariRas¹⁸

Sr. No.	Ingredients		Quantity
	Sanskrit Name	Chemical/Botanical Name	
1	Parada	Mercury	1 Part
2	Gandhaka	Sulphur	2 Parts
3	Hirda	Terminalia chebula	1 Part
4	Beheda	Terminalia bellirica	1 Part
5	Amalki	Phyllanthus emblica	1 Part
6	Chitrak	Plumbago zeylanica	4 Parts
7	Guggulu	Commiphorawightii	5 Parts
8	Eranda	Ricinus communis	Bhavana Dravya

Method of Preparation of Amavatari rasa:

Process: 1 part of *shuddha Parada* was added with 2 parts of *shuddha Gandhaka* and *Kajjali* was prepared by triturating in a *khalwa*. 5 parts of *guggulu* was taken into a *khalwa* and it was pounded well by adding *kajjali* and 3 parts of *Triphala*, 4 parts of *Chitraka*. During the process, *Eradataila* of required amount was added and pounding was continued until a soft homogeneous mass formed. This soft mass was passed through a pill cutter to prepare the desired size of tablets (500 mg each). The prepared tablets were stored in well-closed glass containers.

4. Erandtail^{19, 20, 21, 22}

Castor oil is a vegetable oil pressed from beans.¹ Castor oil is a colorless to very pale yellow liquid with a distinct taste and odor.

Erand tail is established as highly effective in treatment of rheumatoid arthritis. *Bhavprakash, Madanpal* and *Kaidev-nighantu* indicated *Erand tail* in *Amavata*.

Probable mode of action of Eranda Sneha-

- *Eranda Sneha* due to its *Sukshma Guma* ⁵ penetrate into microchannels and remove obstruction in them⁶
- also due to *Katu Rasa* and *Ushna Virya* it potentiates digestive fire, acts as *Vata Shamaka* due to its *Snigdha Guna*,
- Finally, it enters at *Dhatu level* (cellular level) where it acts as *Ama Pachaka* and *Kapha Shamaka* drug.

5. Ruksha Swedana:²³

Swedan was done by *Valukasweda* on the local parts involved.

In this, the bolus is prepared of sand. This is a typical *Rooksha Sweda* indicated in *Amavata, Vatarakta*, and *Urastambha*, etc. Here, the sand can be fried in *Dhanyamla* along with *Saindhava Lavana*. Much care should be taken in testing the heat of the bolus and only moderate heat should be applied.

In the below presentation of some text with specific actions related to management –

Rukshaswedan: Chakradutta, Yogaratnakar; Banga Sen, Bhaishajyaratnavali of amavata- Baluka Swedan: Chakradutta, Yogaratnakar, Banga Sen

Stambha, gaurava and *shula* these are the predominant features of *Amavata – swedana* gives good result in this condition. *Swedana* helps to liquefy vitiated *doshas* and promotes *doshagati*.

Patients were selected after fulfilling the criteria; and were briefed about the intended procedure. They were asked to sit comfortably over a stool of knee height.

Materials required:

- Clean sand around 300 gms
- Cloth (18 inches length and breadth)
- Thread (2 meter)
- Frying pan and Stove.

Procedure:

- The sand of medium-sized particles around 300gms taken and removed stones and soils from it.
- Sieved it well to make it clean properly.
- Heated the sand using a frying pan. Later 2 *Pottalis* were made with this sand.
- *Pottalis* were used alternatively to give *Swedana* over affected joints. The temperature should be sustainable for the patient. Overheating of *Pottali* was avoided as it may cause rupture of *Pottali*, so thick cloth should be used. The procedure was done by pressing, rubbing, and keeping over the said body parts.

Treatment schedule -

- ✓ *Langhan Therapy* – light meal
- ✓ *Swedan* was done by *Valukasweda* on the local parts involved.
- ✓ *Snehana* (Internal *Snehana*) was used from day 8th day to 15th for the purpose of internal *snehana* and *virechana*. For this purpose *Eradataila* (½ t.s.f.) was given with the lukewarm water at bedtime.
- ✓ The trial drug was given i.e. *Rasnadikashayam, Sahachradikashayam, Amvatari Ras*, in the above-mentioned doses till the completion of three follow-ups (90 days).

E. Assessment Criteria:

The signs and symptoms were assessed by adopting the suitable scoring method and objective signs by using appropriate clinical tools.

Angmarda, Alasya, Gauravata, Agnimandya, Shotha (Swelling), Morning stiffness, Tenderness, Pain were graded as follow:

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. The relative extent of all these criteria was recorded according to the rating scales in each patient at the initial stage and at subsequent follow-ups. These are measured by a simple count of clinically active joints.

1. Pain

It is determined by the intensity of pain on passive movement and the 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.

2. Swelling

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

3. 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

4. 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 can take care of him or herself
- 3 Few activities are persisting patient requires an attendant to take care him/herself
- 4 Patient is totally bedridden

5. Tenderness

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

Subjective and Objective parameters of *Amavata* were recorded before and after the treatment.

Data regarding above said parameters were collected:

- Before treatment, day '0'
- On 30th day
- On 60th day
- On 90th day of follow up

F. LABORATORYPROFILE

For the purpose of diagnosis of disease its assessment, severity, clinical improvement, and to assess the possible side effects, certain routine, and specific investigations were performed in every patient viz.

• Hematological investigations:

Every patient was investigated for the complete haemogram. The following methods were adopted for the purpose.

- (a) Total leucocytes count: This was done with the help of an improved Neubaur's hemocytometer and was recorded in the unit of per cubic millimeter.
- (b) Differential leucocytes count: This was done with the help of thin blood smear prepared with Leishman's staining.
- (c) Hemoglobin: Estimation of Hemoglobin in blood was done with Sahlis haemoglobinometer recorded in gm% unit.
- (d) Erythrocyte Sedimentation Rate: This was done by the Wintrob's method and recorded in mm/hr unit for the first hour.

• Biochemical: C - reactive protein (C-RP)titer

This was done by the method of qualitative and semi-quantitative latex fixation slide test. The test was based on the immunologic reactions between CRP as an antigen and Latex particle counted with nonspecific anti-human CRP and sensitized to detect levels greater than six (6) micrograms per milliliter (0.6 mg/dl).

• Rheumatoid factor (RA titer)

In rheumatoid arthritis (R.A.), diagnostically useful auto antibodies termed as a rheumatoid factor can be detected which are immunoglobulin of the class IgG, IgM, IgA and IgE, IgM class RF with specificity to human IgG Fc is the most prognostic marker for RA. RF plays a role in perpetuating the rheumatoid inflammatory process; the severity of joint damage could be predicted according to the strength of RF reactivity. A significant decline of RF with remission of disease activity has also been demonstrated. Therefore, quantified serial determinations of RF are more meaningful in the diagnosis, prognosis, and assessment of therapeutic efficacy of rheumatoid arthritis.

Degree of disease Activity:

For diagnostic and therapeutic purposes, the degree of disease activity was estimated on the basis of criteria laid down by the American Rheumatism Association (1967). Details are given in the Table. In these criteria, the maximum score is 27, which represents an average grade of 3 (severely active). By dividing the total score by 9, the grade of the disease was obtained and denoted by grades zero (0) to three (3). The table is described here:

Table 1: Table Showing Semi Quantitative Criteria of Estimating of Degree of Disease Activity

Grade	0	1	2	3
Morning stiffness	No morning stiffness	Morning stiffness >1/2 hr but <1 hr	>1hr but <6 hr	All the day through
Fatigue	None	Work fulltime despite some fatigue	Patient must interrupt work to take rest	Fatigue at rest
Pain	None	Mild pain of low intensity not disturbing routine work	Moderate pain hampers daily routine work	Severe pain causing definite interruption in routine work
General function	All activities without difficulty	Most activities but with difficulty	Few activities Care for self	Little self care mainly chair & bed ridden
Spread in joints	None	0 to 5	5 to 10	More than 10
ESR	0 – 20	20 – 40	40 – 60	>60
Hb gm %	>12	12-10	10-9	<9
Physicians estimate	Inactive	Minimum	Moderately Active	Severely Active
Patients estimate	Fine	Almost well	Pretty good	Pretty bad

Table 2: Table Showing Age-Wise Distribution of 15 Patients of Amavata

Sr. No.	Age Group	No. of Patients	Percentage
1	15-20	1	6.66
2	20-25	0	0
3	25-30	3	20
4	30-35	2	13.33
5	35-40	3	20
6	40-45	1	6.66
7	45-50	2	13.33
8	50-55	0	0
9	55-60	2	13.33
10	60-65	1	6.66

Table 3: Table Showing Sex-Wise Distribution Of 15 Patients Of Amavata

Sr. No.	Sex	No. of Patients	Percentage
1	Male	4	26.67
2	Female	11	73.33

Table 4: Table Showing Religion wise Distribution of 15 Patients of Amavata

Sr. No.	Religion	No. of patients	Percentage
1	Hindu	11	73.33
2	Muslim	1	6.66
3	Buddha	3	10

Table 5: Table Showing Socio Economic Status Of 15 Patients Of Amavata

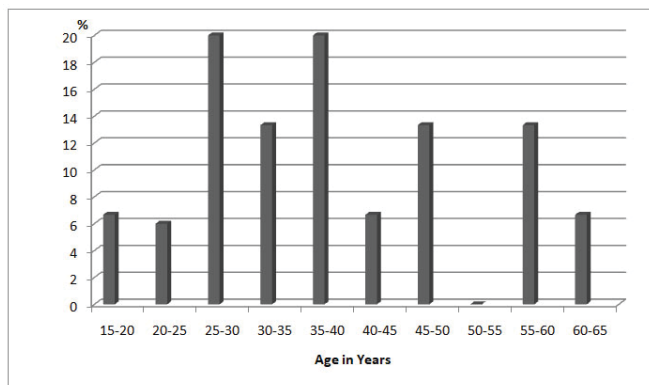
Sr. No.	Economical Status	No. of Patients	Percentage
1	Poor	6	40
2	Middle	7	46.66
3	Rich	2	13.33

Table 6: Table Showing Physical Built-wise Distribution Of 15 Patients Of Amavata

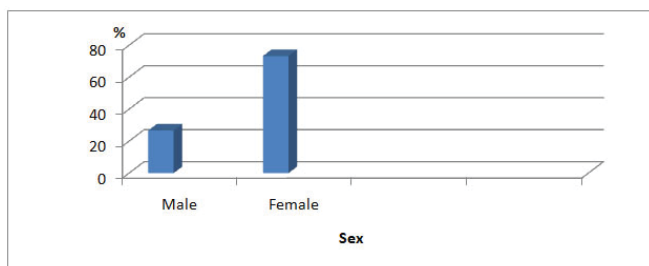
Sr. No.	Physical Built	No. of Patients	Percentage
1	Krishna	8	53.33
2	Madhyama	4	26.66
3	Sthoola	3	20

Table 7: Table Showing Effect of Treatment on Signs and Symptoms of 15 Patients Of Amavata

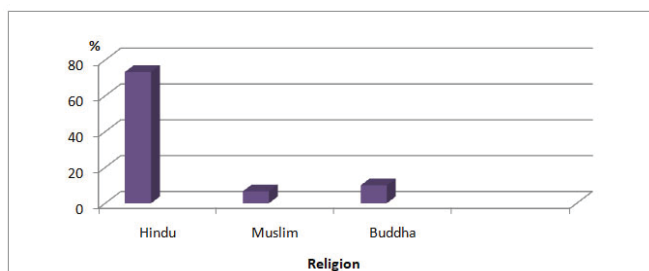
Sr. No.	Sign/Symptom	Symptom score			% of relief
		BT	AT	Difference	
1	AngAmarada	40	18	22	55
2	Alasya	42	22	20	47.62
3	Gauravata	38	17	21	55.26
4	Agnimandya	45	24	21	46.66
5	Swelling	48	39	9	18.75
6	Morning Stiffness	50	37	13	26
7	Tenderness	54	36	18	33.33
8	Pain	46	27	19	41.3
	Total	363	220	143	39.39



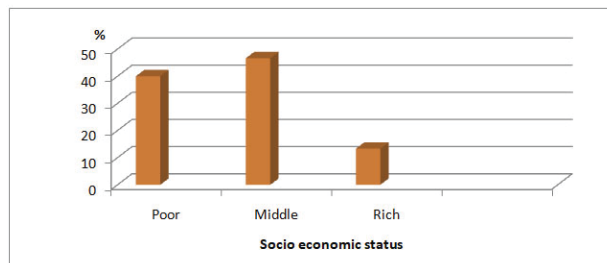
Graph A: Distribution according to Age wise status.



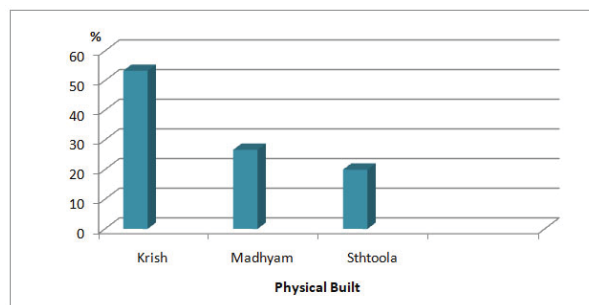
Graph B: Distribution according to Sex wise status.



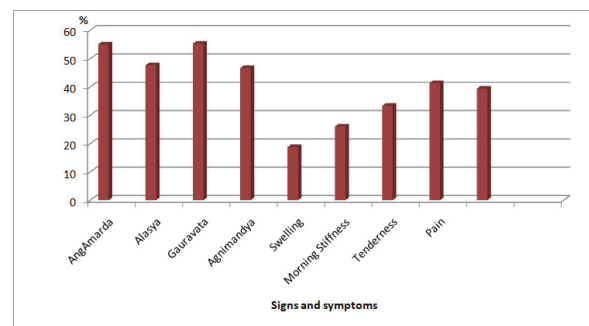
Graph C: Distribution according to religion wise status.



Graph D: Distribution according to Socio-economic wise status.



Graph E: Distribution according to Physical built wise status.



Graph F: Distribution according to relief in signs and symptoms wise.

Table 8: Table Showing Effect of Therapy on Haematological Parameters of 15 Patients of Amavata By Paired t Test

Sr. No.	Haematological parameters	Mean \pm SD		Mean of Diff. \pm SD	SEd	T	P
		BT	AT				
1	Haemoglobin	11.3 \pm 1.0925	12.34 \pm 0.786	1.04 \pm 0.8567	0.1916	5.425	<0.001
2	ESR	54.6 \pm 5.566	45.15 \pm 7.035	9.45 \pm 5.394	1.206	7.830	<0.001

Table 9: Table Showing Effect of Therapy on Degree of disease activity of 15 Patients of Amavata By Paired t Test

Sr. No.	Parameters	Mean \pm SD		Mean of Diff. \pm SD	SEd	T	P
		BT	AT				
1	Morning stiffness	2.05 \pm 0.223	0.8 \pm 0.523	1.25 \pm 0.444	0.099	12.57	<0.001
2	Fatigue	1.8 \pm 0.523	0.7 \pm 0.571	1.1 \pm 0.307	0.0688	15.97	<0.001
3	Pain	1.9 \pm 0.447	0.95 \pm 0.394	0.95 \pm 0.2236	0.050	18.99	<0.001
4	General function	1.85 \pm 0.366	0.9 \pm 0.447	0.95 \pm 0.2236	0.050	18.99	<0.001
5	Spread in joints	1.1 \pm 0.3077	0.95 \pm 0.2236	0.15 \pm 0.366	0.0819	1.830	>0.05
6	Hb gm %	0.95 \pm 0.510	0.45 \pm 0.510	0.5 \pm 0.512	0.1147	4.356	<0.02
7	ESR	2.1 \pm 0.0377	1.74 \pm 0.444	0.35 \pm 0.489	0.1094	3.197	<0.02
8	Physicians estimate	2.0 \pm 0.3244	0.95 \pm 0.223	1.05 \pm 0.2236	0.050	20.98	<0.001
9	Patients estimate	2.05 \pm 0.2336	0.95 \pm 0.2336	1.1 \pm 0.3077	0.0688	15.975	<0.001
Total disease activity		1.78 \pm 0.2142	0.945 \pm 0.2416	0.835 \pm 0.0812	0.0181	45.92	<0.001

Observations and Results:

All the patients of *Amavata* of this series were examined in detail with respect to the special proforma.

Most of the patients (60%) of this series were male (Table-2). 20% were of age group 25 to 30 years (Table-1). 73.33% of the patients from were Hindu religion (Table-3). Most of the patients (46.66%) were from middle economic status (Table-4). 53.33% of patients were *Krishna* in physical built (Table-5).

Before starting the treatment, symptoms present in all patients were graded and their values were noted before treatment (BT). After completion of treatment, they were noted after treatment (AT). The data was assessed as a percent of relief as shown in Table-6.

55.26% relief was observed in *Gauravata* while 47.62 reliefs were seen in *Alasya*. The swelling was relieved by 18.75% only; while 41.3% relief was observed in Pain. The average percentage relief was 39.39%. It was observed that Hb gm% Mean \pm SD was 11.3 \pm 1.0925 before treatment which was increased to 12.34 \pm 0.786 which is highly significant as P<0.001. The paired t-test was also applied to ESR, which was 54.6 \pm 5.566 before treatment, was reduced to 45.15 \pm 7.035; this is highly significant as P < 0.001. It was observed that morning stiffness, fatigue, pain, general functions, Hb gm%, ESR, physician estimate, and patient's esti-

mate showed significant progress. The average of all criteria of the degree of disease activity before treatment was 1.78 \pm 0.2142 which was reduced to 0.945 \pm 0.2416. The paired t-test was applied to this BT and AT scores as these grades are accepted as per international norms.

It showed that administered therapy reduced the degree of disease activity significantly as P < 0.001.

DISCUSSION

Amavata is a commonest inflammatory joint disease, because of which patient's life becomes miserable, patients are crippled. No effective remedies are available so far in modern science or other streams of medical science. In patients suffering from *Amavata*, Ayurveda has a definite role to manage the disease with *Deepana*, *Pachana*, and *Ruksha Swedan* in this study patient suffering from *Amavata* had an average of 39.39% of relief.

While the maximum percentage of relief 55.26% was noted in *Gauravata* while *Shotha* was relieved by 18.75%. It was observed that Hb gm% Mean \pm SD was 11.3 \pm 1.0925 before treatment which was increased to 12.34 \pm 0.786 which is highly significant as P<0.001. The paired t-test was also applied to ESR, which was 54.6 \pm 5.566 before treatment, was reduced to 45.15 \pm 7.035; this is highly significant as

$P < 0.001$. It was observed that morning stiffness, fatigue, pain, general functions, Hb gm%, ESR, physician estimate, and patient's estimate showed significant progress. The average of all criteria of the degree of disease activity before treatment was 1.78 ± 0.2142 which was reduced to 0.945 ± 0.2416 . The paired t-test was applied to this BT and AT scores as these grades is accepted as per international norms. It showed that administered therapy reduced the degree of disease activity significantly as $P < 0.001$.

CONCLUSION

It is very obvious from the aforesaid observation and results that *Ayurvedic* Formulations along with *Ruksha Swedana* therapy had a beneficial effect in only 11 days. Patients were relieved up to a certain extent from their sufferings. This management was not much costlier or did not show any side effects. The drug mentioned in *Ayurveda* in the management of *Amavata* gives the promising results and cure the disease by eliminating the root cause of the disease which cannot be achieved with the help of modern medicines. It is very obvious from this study that *Ayurvedic* concept of management of *Amavata* plays a major role in the present era to serve mankind. Also, it is observed that along with this line of treatment, when *Rasayana* Drugs like *Amrit Bhallataka Agleha*, *Bhallataka Kshirpaka* are administered to patients, they improve digestion and immunity as well; thus are useful in the management of *Amavata*.

Acknowledgement: Authors acknowledge the immense help received from Datta Meghe Ayurvedic Medical College Hospital & Research Center, Wanadongri, Nagpur for conducting this study.

Conflict of interest: None

REFERENCES

1. Shri Shastri Sudarshan, *Madhavnidanam Purvardha, Amvatnidanamadhyaya* 25/1-5, edition reprint, published by - Chaukhamba Sanskrit Sansthan Varanasi, 2010; 511.
2. Shri Shastri Sudarshan, *Madhavnidanam Purvardha, Amvatnidanamadhyaya* 25/1-5, edition reprint, published by - Chaukhamba Sanskrit Sansthan Varanasi, 2010; 509.
3. Current Medical Diagnosis and Treatment, Mc. Graw Hill, forty seventh Edition, 2008; 721.
4. Davidson's principles and practice of medicine, chapter 20 musculoskeletal disorder, 19th edition Churchill Livingstone publication, 2002; 1002.
5. Upadhyay Y., Madhav Nidan Madhukoshvyakhya, *Amavatanidanam*, ch 25, edition reprint, published by- Chaukhamba Sanskrit Sansthan Varanasi, 2003; 512.
6. Shri Shastri Sudarshan, *Madhavnidanam Purvardha, Amvatnidanamadhyaya* 25/1-5, edition reprint, published by - Chaukhamba Sanskrit Sansthan Varanasi, 2010; 509
7. Shri Shastri Sudarshan, *Madhavnidanam Purvardha, Amvatnidanamadhyaya* 25/1-5, edition reprint, published by - Chaukhamba Sanskrit Sansthan Varanasi, 2010; 509. Milind et al. World Journal of Pharmacy and Pharmaceutical Sciences www.wjpps.com Vol 7, Issue 10, 2018. 1769
8. Tripathi Ravi Dutt, *Ashtang Samgraha of srimad Vridhavagbhata*, edited with Saroj hindi commentary, sutrasthana chapter 9/36, edition reprint, published by- Chaukhamba Sanskrit Pratishthan Varanasi, 2005; 195.
9. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi- *Chrak Samhita vol 2* edited with 'Vaidya manorama' hindi commentary, chikitsasthan chapter 15/4, edition reprint, published by- Chaukhamba Sanskrit sansthan Varanasi, 2013; 358.
10. Banwari Lal Gaud, *Ashtang Hridayamsamvartika*, Hindi commentary, chapter 13/25-27, reprint published by Chukhambaorientalia, Varanasi, 2007; 237.
11. Shri Shastri Sudarshan, *Madhavnidanam Purvardha, Amvatnidanamadhyaya* 25/1-5, edition reprint, published by - Chaukhamba Sanskrit Sansthan Varanasi, 2010; 509.
12. Banwari Lal Gaud, *Ashtang Hridayamsamvartika*, Hindi commentary, chapter 13/25-27, reprint published by Chukhambaorientalia, Varanasi, 2007; 153.
13. Arnett FC, Edworthy SM, Bloch DA, McShane DJ, Fries JF, Cooper NS et al. (1988) The American Rheumatism Association 1987 revised criteria for the classification of rheumatoid arthritis. *Arthritis Rheum* 31:315-324
14. Sivarajan VV, Balachandran I. *Ayurvedic Drugs and their Plant Sources*. New Delhi: Oxford and IBH Publishing Co. Pvt. Ltd; (1999).
15. Krishna KPR. The efficacy of Ayurvedic treatment for rheumatoid arthritis: cross sectional experimental profile of a longitudinal analysis. *Int J Ayurveda Res*. 2011;2:8-13.
16. Macfarlane GJ, El-Metwally A, De Silva V, Ernst E, Gillian L, Dowds GL, Moots RJ. *Rheumatology (Oxford)*. 2011;50:1672-83.
17. Pushpan R, Nishteswar K, Kumari H. Anti-arthritis natural medicine: Classical Ayurvedic and ethnomedical sources. *ASL Musculoskel Dis*. 2013;1:32-40.
18. Govindadassen, Mishra S. N. Bhaishaijya Ratnavali with Sidhiprada Hindi Commentary. 1st edition. Varanasi; Chaukhamba Surabharati Prakashan; 2005.
19. Thomas, Alfred (2005). "Fats and Fatty Oils". *Ullmann's Encyclopedia of Industrial Chemistry*. Weinheim: Wiley-VCH. doi:10.1002/14356007.a10_173. ISBN 978-3527306732.
20. Chuneker K.C. (Ed.). *Bhavaprakasa Nighantu*. Varanasi, Chaukhamba Bharti Academy, 2010; 286-288.
21. Shastri, J.L.N. (Ed.) *Madanpal Nighantu*. Varansi, Chaukhamba Orientalia, 65.
22. Sharma P.V. and Sharma G.P (Ed.). *Kaideva Nighantu*. Varansi, Chaukhamba Orientalia, 2006; 24-25.
23. Keraleeya Chikitsakrama (Malayalam) chapter 2. Trivandrum: Vasudevavalasam Publications; 1982. P.6.