

## CLINICAL EFFICACY OF PANCHAMULADI KAAL BASTI IN THE MANAGEMENT OF AMAVATA (RHEUMATOID ARTHRITIS)

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### ABSTRACT :

*Amavata* has been a challenging problem to the medical field; it can be correlated with Rheumatoid Arthritis (R.A.). *Ama* and vitiated *Vata* plays dominant role, though all *Dosha* take part in the causation of the disease. Various treatment protocols are applied in this disease with partial success. *Amavata* is such a disease which continues to pose challenge to physician due to severe morbidity and crippling nature. It causes intolerable pain and severe deformities making the patient disable and bed ridden. Many research works have been carried out to solve this clinical enigma. But an effective, safe and less complicated treatment is still required for the management of *Amavata*. In present clinical study 12 patients of clinically proven *Amavata* (Rheumatoid Arthritis) were treated with *Panchamuladi Kaal Basti* to evaluate its efficacy in them. All clinical *Nidanadi Ayurvediya* parameters & ARA guidelines for Rheumatoid Arthritis were followed. Before treatment & after treatment analysis was done & results were calculated statistically using paired 't' test. Results obtained are encouraging & indicate the efficacy of *Panchamuladi Kaal Basti* over *Amavata* (Rheumatoid arthritis) exploring many aspects of this clinical entity.

**Key words:** *Panchamuladi Kaal Basti*, *Amavata*, Rheumatoid Arthritis.

**INTRODUCTION:** We are lucky to be born in this country where grew the eternal science of medicine *Ayurveda*, which migrated to other countries of world and took part in the origin of other medical sciences. *Ayurveda* suffered many setbacks by various causes especially by foreign invasion in India, but it still existed (*Shashvato nirdishyate*)<sup>1</sup> and is regaining its popularity which was lost in the recent past. In *Ayurveda* it is explained that, *Samprapti* (pathogenesis) of almost all the diseases begins with the *Agnimandya*<sup>2</sup> which leads to formation of *Ama*. This

*Ama* is the utmost important causative factor for the various diseases. On the other hand *Vata Dosa* is most powerful among three *Doshas* and it controls the other two *Dosha*<sup>3</sup> as well as it is very difficult for treatment. Therefore, when these two factors (*Ama* & *Vata*) simalteniously take part in the *Samprapti* (pathogenesis) then the resultant disease becomes very difficult to treat.

*Amavata* is one of the most challenging diseases caused by *Ama* combining with vitiated *Vata Dosa*. The *Samprapti* (pathogenesis) starts in the

*Annavaha Srotasa* & then extends through *Madhyama Roga Marga* with special inclination for *Kapha Sthanas*<sup>4</sup> especially *Sandhis* (joints). The disease *Amavata* belongs to *Abhyantara* as well as *Madhyama Roga Marga*.

Having several features similar to Rheumatoid Arthritis, so that *Amavata* is generally compared to this disease. Rheumatoid Arthritis is an autoimmune polyarthritis of unknown aetiology. The prevalence of RA is ~0.8% of the population (range 0.3-2.1%) women are affected approximately three times more often than men. The prevalence increases with age and sex difference diminish in the older age group. The onset is most frequent during fourth and fifth decades of life, with 80% of all patients developing the disease between the ages of 35-50. The incidence of RA is more than six times greater in 60 to 64 year old women compared to 18 to 29 year women. RA clinically present with symmetrical joint involvement & effects many other systems too. In such a condition patient weeps in agony of pain and reduced functional capacity with severe stiffness and crippling deformity of joints, which make them bed ridden<sup>5</sup>.

Till today there is no effective treatment for this disease. In *Ayurveda* many approaches are in practice to treat *Amavata*, but still remains a challenging problem. Many research works have been done on this disease but still there is a need for an effective, safe and less complicated treatment. In present study *Basti Chikitsa* was selected for clinical trials, as *Basti* is the major treatment in *Ayurveda* which directly acts over the *Vata Dosa* & many a times is called as *Ardha Chikitsa* or *Sarva Chikitsa*<sup>6</sup>. Also *Basti* especially *Kshara*

*Basti* is main treatment for *Amavata*<sup>7</sup>. So a clinical study was planned to evaluate the clinical efficacy of *Panchamuladi Kaal Basti*<sup>8</sup> over *Amavata*. In this study, *Kaal Basti Krama* has been prescribed to the patients of *Amavata*. *Panchamuladissidhhi Niruha Basti* and *Panchamuladissidhhi Anuvasan Basti* have been given as per *Kaal Basti* schedule. In the *Panchamuladissidhhi Niruha Basti* all ingredients are *Katu Tikta Rasa Pradhana*, *Ushna Virya*, *Amapachaka*, *Shothahara* & *Vatakaphashamaka* properties and *Kshara* is also one of the ingredients of *Basti Dravya*, so it helps to destroy the *Samprapti* of *Amavata*.

#### AIMS AND OBJECTIVES:

1. To study the etiopathogenesis and Symptomatology of *Amavata* according to *Ayurveda* and modern medical science.
2. To evaluate the efficacy of *Panchamuladi Kaala Basti* in *Amavata* (Rheumatoid Arthritis).

#### MATERIALS AND METHODS

- **Selection of the patients:** The Patients fulfilling the criteria for diagnosis of the disease were randomly selected from the O.P.D. & I.P.D. of Govt. Akhandanand & Maniben Ayurvedic Hospital irrespective of their Sex, Religion, Education etc.
- **Inclusion Criteria:** The patients age of between 16-60 years and having clinical signs and symptoms of *Amavata* as per *Ayurvedic* texts were taken for the present work. The basis of criteria led down by American Rheumatism Association (ARA) 1987 was also taken into consideration.
- **Exclusion Criteria:** Patients having chronicity for more than 5 years or with severe crippling deformity were excluded. The patients suffering from

systemic Chronic diseases like D.M., VSD, LVH, IHD, AIDS, T.B etc. and other diseases which may lead to fatal condition were also strictly rejected for present study.

- **Investigations:** For the purpose of assessing the general condition of the patient and to exclude other pathologies Rheumatoid Factor, Routine Haematological investigation and Routine Urine examination were carried out before & after the treatment.

- **Therapeutic regimen:** The patients were mainly diagnosed on classical signs and symptoms of *Amavata*. An elaborate Performa was filled containing clinical history as well as complete general and physical examination of the patients. All the 12 patients taken for the study were kept on *Langhana* (fasting) for first 3 days. During this period they were advised to consume *Mudgayusha* only. Complete fasting was avoided as it may aggravate the *Vata Dosa*. Whereas, *Deepana pachana* was done from day 4<sup>th</sup> to day 6<sup>th</sup> with *Trikatu churna* 10 gms in 3 divided doses every day along with *Ushnodaka* (luke warm water) as *Anupana* & patients were advised to consume *Mudgadal* & rice during this period. After that *Kaala Basti* was performed from 7<sup>th</sup> day onwards for 16 days. Patients were kept on normal hospital diet during this period and *Basti* is given at morning time every day. The sequence of *Kaal Basti* was as per *Charaka Samhita*<sup>9</sup> i.e. a total of 16 *Bastis* with *Anuvasana Basti* 10 and *Asthapana Basti* 6. The *Anuvasana Basti* & *Asthapana Basti* were administered in sequence of 1 *Anuvasana Basti* in the beginning & then 6 *Asthapana Basti* & 6 *Anuvasana Basti* on alternate days & 3 *Anuvasana Basti* in the end.

- **Karma Review:** The procedure of administration of *Basti* was divided into 3 stages.

- **Purva Karma:** The patients were advised to consume little quantity of light diet before every *Anuvasana Basti*, while every *Asthapana Basti* was administered in empty stomach. Before administering every *Basti*, local *Abhyanga* with lukewarm *Tila taila* was done on abdomen, thighs & buttocks for 5 to 10 minutes & After *Abhyanga* the *Nadi Swedana* was done on abdomen, thighs & buttocks for 5 to 10 minutes. On the day of every *Asthapana Basti*, *Basti* was prepared by mixing all the ingredients in their sequence & kept ready.

- **Pradhana Karma:** The patient was advised to lie down on left lateral position on *Basti*(enema) table with right lower extremity flexed on knee & hip joint & left lower extremity straight. The patient was asked to keep his left hand below the head. Oil was applied on anus with cotton dipped in oil.

- **Anuvasana Basti:** 80 ml of lukewarm *Panchamuladi taila* was filled in enema syringe. Rubber catheter oiled with oil was attached to enema syringe & air was removed. Rubber catheter was introduced into anus of patient upto length of 4 inches. The *taila* was pushed inside leaving little quantity within syringe in order to avoid entrance of *Vayu*.

- **Asthapana Basti:** 480 ml of lukewarm *Basti Dravya* was filled in enema can. Rubber catheter oiled with oil was attached to enema can & air was removed. Rubber catheter was introduced into anus of patient upto length of 4 inches. The *Basti dravya* was allowed to move inside leaving little quantity within enema can in order to avoid entrance of

Vayu. While introduction of catheter & drug the patient was asked to take deep breath.

- **Pashchat Karma:** After administration of *Basti*, the patient was advised to lie in supine position with hand and legs freely spread over the table. Thereafter patient's both legs were raised

- **Drugs Review:**

for few minutes so as to raise the waist & gently tapped over the hips. Patient was advised to void the urge of stool whenever he feels so. *Basti Pratyagamana Kaala* was noted after every *Basti*. *Krushra* is given before *Anuvasan Basti* and after *Prayagamana* of *Asthapana Basti*.

**Table no. 1 Following table shows ingredients of Panchamuladi Kaal Basti.**

	Sanskrit Name	Botanical name	Preparation & Dose
Panchamuladi Kwatha Dravya	<i>Bilwa</i>	<i>Aegle marmelose</i>	Total amount of <i>Dhamuladi Bharad</i> is about 50 gm was taken in pot (Every drug have been taken in equal quantity) and 16 times water i.e 800ml is added in it, these pot is heated on slow flame of gas ( <i>Mandyani</i> ). Heating has been continus till 1/4 <sup>th</sup> liquid is remain in the pot, now these <i>Kwath</i> is ready for <i>Niruha Basti</i> . <i>Panchamuladi Kwath:-</i> 200ml.
	<i>Agnimantha</i>	<i>Premna mucronata</i>	
	<i>Syonaka</i>	<i>Oroxylum indicum</i>	
	<i>Kashmarya</i>	<i>Gmelina arborea</i>	
	<i>Patala</i>	<i>Stereospermum suaveolans</i>	
	<i>Shalaparni</i>	<i>Dasmodium gangeticum</i>	
	<i>Prushniparni</i>	<i>Uraria picta</i>	
	<i>Bruhati</i>	<i>Solanum indicum</i>	
	<i>Kantakari</i>	<i>Solanum xanthocarpum</i>	
	<i>Gokshura</i>	<i>Tribulus terrestris</i>	
	<i>Haritaki</i>	<i>Terminalia chebula</i>	
	<i>Vibhitaki</i>	<i>Terminalia bellerica</i>	
	<i>Amalaki</i>	<i>Embelica officinalis</i>	
	<i>Bilwa</i>	<i>Aegle marmelose</i>	
<i>Madanaphala</i>	<i>Randia spinosa</i>		
Kalka Dravya	<i>Indrayava</i>	<i>Holarrhena antidysentrica</i>	Total amount <i>Kalka</i> is about 40 gm was taken. (Every drug have been taken in equal quantity)
	<i>Patha</i>	<i>Cissampelos pariera</i>	
	<i>Madanaphala</i>	<i>Randia spinosa</i>	
	<i>Musta</i>	<i>Cyperus rotundus</i>	
Other Dravya	<i>Madhu</i>	Honey	60ml
	<i>Saindhav</i>	Sodii chloridum	05gm
	<i>Yava Kshara</i>	Potasii carbonas	05gm
	<i>Eranda taila</i>	<i>Ricinus Commimunis</i>	120ml
	<i>Gomutra Arka</i>	-	50ml

<p><i>Panchamulladi Taila</i></p>	<p>All ingredient of <i>Panchamuladi Kwatha</i></p>		<p>Total amount of <i>Dhamuladi Kalka</i> (Every drug have been taken in equal quantity) is about 1part was taken in pot and 4 times <i>Erand Taila</i> &amp; 16 times water is added in it, these pot is heated on slow flame of gas(<i>Mandyani</i>). Heating has been continus till water gets complitely evapurate &amp; only <i>Taila</i> is remain in the pot, now these <i>Talia</i> is ready for <i>Anuvasana Basti</i>.</p>
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#### Method of preperation:

- *Asthapana Basti Dravya*: Each *Asthapana Basti* was prepared with classical method which is as follows. First of all the *Kwatha* is prepared as per classical method & kept ready. The *Saindhava* (5gm) & *Yava kshara* (5gm) are taken in a mortar to which *Madhu* (60ml) is added. Both are mixed well by triturating. When it is properly mixed the *Eranda Taila* (120ml) is added & mortaring is further continued. To this mixture then *Kalka Dravya* (40gm) is added & is mixed well. When these ingredients are emulsified properly by mortaring the *Kashaya Dravya* (200ml) is added & at last *Gomutra Arka* (50ml) is added mortaring is continued till they get

properly mixed. In these way 480ml *Asthapana Basti Dravya* is ready.

- *Anuvasana Basti Dravya*: *Panchamuladi Taila* was prepared using ingredients of *Panchamuladi Basti* as per classical method of *Taila* preparation. 80ml *Panchamuladi Taila* was taken in pot and heated (*Sukoshna*) on hot water each time.

#### Dose of Basti Dravya:

- *Asthapana Basti*: Each *Basti* was administered in a dose of 480 ml.
- *Anuvasana Basti*: 80 ml of *Panchamuladi Taila* was administered in each *Basti*.

**Time of Administration of Basti:** At morning (8.00am to 8.30am).

**Duration of the treatment:** 22 days. The treatment was done as follows

1	<i>Langhan</i>	-	3 days
2	<i>Deepan-Pachan</i>	-	3 days
3	<i>Kaal Basti</i>	-	16 days

**Follow-Up:** 4 weeks after completion of treatment.

**Dietary Restrictions:** The patients were strictly advised to follow the restrictions regarding food, food habits and life style

which are mentioned in *Basti* chapter & disease *Amavata*. They were instructed to avoid the possible causative factors of disease and causes for *Agnimandya*.



**Criteria for Assessment:** The results of therapy were assessed on the basis of clinical signs & symptoms mentioned in *Ayurveda* classics. Functional capacity of patients was also assessed & laboratory

investigations were repeated at the end of the treatment schedule. All the signs & symptoms were given scoring pattern depending upon severity as below.

**a. Criteria for Cardinal symptoms**

**Table 2: Scoring criteria of Sandhiruja (Joint pain)**

Grade	Score
No pain	00
Mild pain of bearable nature, felt occasionally.	01
Moderate pain, but no difficulty in joint movement, appears frequently and requires some <i>Upashaya</i> measures for relief.	02
Slight difficulty in joint movements due to pain or severe pain, requires medication and may remain throughout the day.	03
More difficulty in joint movement and pain is severe, disturbs sleep and requires strong analgesics	04

**Table 3: Scoring criteria of Sandhishotha (Swelling in the Joint)**

Grade	Score
No swelling	00
Mild swelling.	01
Moderate swelling	02
Severe swelling.	03

**Table 4: Scoring criteria of Sandhistadbhata (Stiffness of the joints)**

Grade	Score
No stiffness or stiffness lasting for 5 min	00
Stiffness lasting for 5 min to 2 hrs.	01
Stiffness lasting for 2 to 5 hours	02
Stiffness lasting for 5 to 8 hours	03
Stiffness lasting for more than 8 hours	04

**Table 5: Scoring criteria of Sandhi-Asahishnuta (Tenderness of joints)**

Grade	Score
No tenderness	00
Subjective experience of tenderness	01
Wincing of face on pressure	02
Wincing of face with withdrawal of affected parts on pressure	03
Resists to touch	04

**Ushnashparshtha (Warmth of joint):** The temperature of the joint surface was measured using the dorsum of palm of the physician and compared with the normal body surface.

**Table 6: Scoring criteria of Ushnashparshtha (Warmth of joint)**

Grade	Score
Raised temperature when compared to the normal body surface	02
Normal temperature	00
Fall in local temperature after treatment	01

No change in temperature after treatment	02
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**b. Criteria for General & Associated Symptoms:** Symptoms like *Aruchi, Alasya, Agnimandya, Apaka, Trishna, Angamarda, Gaurava, Jwara, Praseka,*

*Daha, Anaha, Bahumutrata, Kukshishula, Nidraviparyaya, Chhardi, Bhrama, Hritgraha, Vibandha, Antrakujana, and Daurbalya* were scored as below

**Table 7: Scoring criteria of Associated Symptoms**

Grade	Score
Symptom observed before treatment	02
Complete relief after treatment	00
Some relief after treatment	01
No improvement after treatment	02

**c. Dosha Lakshana, Dushya Lakshana and Strotodushti Lakshana:** These

symptoms were also scored like above general symptoms.

**Table 8: Scoring criteria of Associated Symptoms**

Grade	Score
Symptom observed before treatment	02
Complete relief after treatment	00
Some relief after treatment	01
No improvement after treatment	02

**d. Functional Assessment:** Following periodical functional tests were carried out for objective assessment of the improvement of *Amavata* patients.

- **Walking time:** The patients were asked to walk a distance of 25 feet and the time taken was recorded before and after the treatment by using stop watch.
- **Grip Strength:** To find out the functional capacity of the affected upper limb, the patient's ability to compress an inflated ordinary sphygmomanometer cuff under standard conditions was recorded before and after the treatment.
- **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.

**e. Assessment of the disease activity:** To exclude the other pathologies and to assess the disease activity, following

investigations were carried out before and after treatment.

- **Hematological:** These routine investigations of blood were carried out before and after treatment. Hemoglobin (Hb%), RBC count, Total & Differential Leukocyte count (TLC & DLC) & Erythrocyte Sedimentation Rate (ESR).
- **RA factor** – The serum of the patient were tested for Rheumatoid factor to assess the severity of the disease activity.
- **Radiological examination** – For the assessment and detection of articular changes, for the confirmation of diagnosis and to grade the disease, the radiological examination were carried out of affected joints. (If possible)

**f. Overall assessment of the therapy:** To assess the overall effect of the therapies, the criteria laid down by ARA (1967) were adopted. Results are classified in to four groups as listed below.

**i. Complete remission**

- No systemic sign of Rheumatoid activity
- No sign of inflammation.
- No evidence of activity in any extra articular process including nodules, sinusitis etc.
- No elevation of ESR
- Articular deformity or extra articular involvement due to irreversible changes may be present.
- No lasting impairment of joint mobility other than that associated irreversible changes.

#### ii. Major Improvement

- No systemic sign of rheumatoid activity with the exception of elevated ESR.
- Major sign of inflammation resolved such as heat, redness, etc.
- No new rheumatoid process in intra articular or extra articular structure.
- Minimum joint swelling may be present.
- Impairment of joint associated with minimum residual activity may be present.
- Articular deformity or extra articular involvement due to irreversible changes may be present.

#### iii. Minor Improvement

- Any decrease in the signs of R. activity inadequate to fulfill the criteria of grade – II.
- Diminution of systemic disease, sign of R activity.
- Sign of joint inflame only partially resolved.
- Decrease but not minimum joint swelling present.
- Impairment of joint mobility may be present.
- Articular deformity may be present.

#### iv. Unimproved

- Undiminished signs of rheumatoid activity.
- Exacerbation of any previously involved joint or development of sites of rheumatoid activity.
- Roentgenological changes indicative of progression of Rheumatoid process, excepting hypertrophic changes.
- In the presence of one or more of the aforesaid criteria, improvement in other features including a normal or lowered ESR not significant.

**Statistical Analysis:** The informative data collected from observation at the end of treatment. They were subjected to statistical analysis in terms of mean score ( $\bar{x}$ ), standard deviation (S.D.), standard error (S.E.), paired and unpaired 't' test was carried out at the level of 0.05, 0.01, 0.001 of 'P' level. The results were interpreted as:

- **P > 0.05 : Insignificant**
- **P < 0.05 : Significant**
- **P < 0.01 : Highly Significant**
- **P < 0.001: Highly Significant**

**OBSERVATIONS:** Maximum number of patients i.e. (41.66%) were in the age group of 41-50 yrs. Maximum no. of patients i.e.(83.33%) were female , were house wives(50%) , belonged to lower middle class(41.66%). It was found that maximum numbers of patients were of *Vata-Pitta Prakriti* (75%), had *Rajasa-Tamasa prakruti* (58.33%). All the patients (100%) had *Avara Vyayama shakti*, *Abhyavaharana shakti* & *Jarana shakti*, It was observed that 83.33% patients had *Mandagni* & 75% patients having *Krura Kostha* while 50% patients were R.A. positive, 50% patients shows chronicity below 1year, 58.33% patients had gradual



onset and 33.33% patients got the disease in 4<sup>th</sup> decade.

Maximum no of patients (58.33%) had *Vata-Kapha Dosanubandha*, Were indulging in *Virudhaahara*, *Abhishyandi ahara* & *Snigdhaahara* (91.66%), were consuming *Guru* & *Madhura Ahara* (83.33%), were indulging in *Vishmashana* & *Adhyashana* (58.33%) were indulging in *Bhojnottara Vyayama* & *Divaswapna* (58.33%). (100%) patients gave the history of *Sandhi Ruja* (joint pain), *Sandhi Shotha* (joint swelling), *Sandhi Stabdhatta* (Joint stiffness) & (83.33%) of patients gave history of *Ushnata* (heat over joint) & *Sparshashatva* (tenderness). (100%) patients showed the features *Angamarda*, *Alasya*, *Gaurava*, *Apaka* & *Anga shunata*. *Aruchi* in (83.33%) of patients, *Trusna* in (41.66%) of patients & *Jvara* in (33.33%) of patients were seen (Table). PIP & MCP joints were affected in (100%) of Patients taken for study, knee joints in (83.33%), wrist & ankle joints in (75%) of patients, shoulder joints in (66.66%) of patients, MTP joints in (25%) of patients & elbow joints in (16.66%) of patients were affected.

## RESULTS:

**Effect on Cardinal Symptoms:** Statistical analysis showed that improvement was highly significant results ( $P < 0.001$ ) were obtained in all the cardinal symptoms *Sandhiruja* (42.08%), *Shotha* (73.3%), *Stabdhatta* (70.09%), *Ushnata* (95%), *Sparshashatva* (100%). (Table 9)

**Effect on General and Associate Symptoms:** Among general symptoms highly significant results ( $P < 0.001$ ) were obtained in *Gaurava* (75 %), *Angamarda* (70%), *Apaka* & *Angashunata* (66.5%) & *Alasya* (41.5%). Significant results ( $p < 0.01$ ) in *Trushna* (70%), Improvement

( $p < 0.05$ ) in *Aruchi* (25%) & (100%) results were observed in *Jvara* (Table). 90% result was observed In *Antrakujana* & *Vidvibandha* which was statistically highly significant. 86.5% result was found in *Anaha* which was highly significant statistically. 83.33% result was observed in *Praseka*, *Cchardi*, *Daha*, *Murccha* which showed improvement statistically. 81.25% result was observed in *Vairasya* a statistically highly significant result. 75%, 71% & 54% results statistically improvement was observed in *Nidra Viprayaya*, *Utsahahani* & *Jadyata* respectively which was highly significant. 33.5% statistically insignificant result was found in *Updrava*. Result was 100% in *Bhrama* & 54% in *Bahumutrata* were observed. (Table 10 & 11)

## Effect on Dosha, Dushya & Strotodusthi:

Clinical finding shows that 64.76 %, 59.15% & 82% relief was observed in *Vata*, *Kapha* & *Pitta Lakshana* respectively which was highly significant. The 62.5 % of relief found in the symptoms of *Rasa Dhatu Dushti* was highly significant at the level  $p < 0.001$ , where  $t'$  is 9.72. The maximum relief was found in the symptoms of *Rasavaha Strotodushti* (62.5%) followed by *Majjavaha Strotodushti Lakshana* (58.82%) & *Annavaha Srotodushti* was (56.95 %). (Table 12)

**Effect on Pathological values:** HB % 11.94% changes were observed after the treatment in Hb%. The difference before & after treatment was highly significant at the level  $p < 0.001$ , with  $t'$  value 5.68. RBC- 14.90% result which was highly significant at the level  $p < 0.001$  was obtained. T.LC. (W.B.C)- 13.23% changes observed after the treatment in W.B.C. 5.91%, 16.14 %, 26.50% & 13.6% changes observed after the

treatment in Neutrophil, Lymphocytes, Eosinophils & Basophils respectively. The change in E.S.R after the treatment was 21.63%. The mean score before the treatment was 95.33 which reduced to 74.58 after the treatment, the difference was found significant at the level  $p < 0.05$ , where 't' was 3.04. (Table 13)

**Effect on Functional Parameters:** Effect of therapy shows that 52% changes were observed after the treatment in Foot pressure which was highly significant at the level  $p < 0.001$  with 't' value 3.18. While

44.44% changes observed in walking time the difference was highly significant at the level  $p < 0.001$  with 't' value 8.33. Statistically highly significant results and 63.2% improvement was observed after the treatment in Grip strength. (Table 14)

**Overall effect of therapy:** It was found that 50% of patients showed minor improvement & equal percentage of patients showed major improvement. None of the patients showed complete remission & no one remained unimproved. (Table 15)

**Table 9: Effect of Panchamuladi Kaal Basti on Cardinal Symptoms**

Cardinal Symptoms	Mean		% relief	S.D.	S.E.	t	P
	B.T.	A.T.					
Sandhi Ruja	3.16	1.83	42.08%	0.49	0.14	9.5	<0.001
Sandhi Shotha	2.25	0.6	73.33%	0.51	0.15	10.53	<0.001
Stabdhatata	1.41	0.41	70.92%	0.42	0.12	8.33	<0.001
Ushnata	2	0.1	95%	0.32	0.10	19	<0.001
Sparshasahyata	1.3	0	100%	0.48	0.50	8.69	<0.001

**Table 10: Effect of Panchamuladi Kaal Basti on Samanya Lakshana of Amavata**

Samanya Lakshana	Mean		% relief	S.D.	S.E.	t	P
	B.T.	A.T.					
Angamarda	2	0.6	70%	0.55	0.39	26.66	<0.001
Aruchi	2	1.5	25%	0.53	0.17	3	<0.05
Trishna	2	0.6	70%	0.55	0.39	6.07	<0.01
Aalasya	2	1.17	41.5%	0.6	0.17	4.88	<0.001
Gaurava	2	0.5	75%	0.52	0.15	10	<0.001
Jvara	2	0	100%	-	-	-	
Apaka	2	0.66	66.5%	0.49	0.14	9.5	<0.001
Angashunata	2	0.66	66.5%	0.49	0.14	9.5	<0.001

**Table 11: Effect of Panchamuladi Kaal Basti on Associated Symptoms of Amavata**

Associated lakshana	Mean		% relief	S.D.	S.E.	t	P
	B.T.	A.T.					
Jadyata	2	0.91	54%	0.29	0.08	13.5	<0.001
Nidra viprayaya	2	0.25	75%	0.58	0.29	5.20	<0.05
Utsahahani	2	0.58	71%	0.51	0.15	9.47	<0.001
Daha	2	0.33	83.33%	0.58	0.33	5	<0.05
Chhardi	2	0.33	83.33%	0.58	0.33	5	<0.05
VidVibandha	2	0.2	90%	0.42	0.13	13.85	<0.001
Praseka	2	0.33	83.33%	0.58	0.33	5	<0.05

AntrakuJana	2	0.2	90%	0.46	0.14	12.86	<0.001
Murccha	2	0.33	83.33%	0.58	0.33	5	<0.05
BahuMutrata	2	0.91	54%	0.29	0.08	13.5	<0.001
Anaha	2	0.27	86.5%	0.47	0.14	12.26	<0.001
Updrava	2	1.33	33.5%	2.27	4.05	016	>0.05
Vairasya	2	0.37	81.25%	0.58	0.18	8.88	<0.001
Bhrama	2	0	100%	-	-	-	

**Table12: Effect of Panchamuladi Kaal Basti on Dosha, Dhatu & Srotas Dushti Lakshana**

Dosha, Dhatu & Srotas Dushti	Mean		% relief	S.D.	S.E.	t	P
	B.T.	A.T.					
Vata	17.5	6.17	64.76%	2.64	0.76	14.87	<0.001
Pitta	3.5	0.62	82%	1.96	0.69	4.15	<0.01
Kapha	11.83	4.83	59.15%	1.86%	0.54%	13.05	<0.001
Rasa Dhatu	9.33	3.5	62.5%	2.08	0.60	9.72	<0.001
Rasa Vaha	9.33	3.5	62.5%	2.08	0.60	9.72	<0.001
AnnaVaha	6	2.58	56.95	1.44	0.42	8.2	<0.001
MajjaVaha	2.83	1.17	58.82%	0.89	0.26	6.50	<0.01

**Table 13: Effect of Panchamuladi Kaal Basti on Hematological Value.**

Tests	Mean		% Changes	S.D.	S.E.	t	P
	B.T.	A.T.					
Hb %	9.84	11.01	11.94%	0.72	0.21	5.68	<0.001
T.C.(W.B.C)	8375	7266	13.23%	19.93	5.75	1.93	>0.05
Neutrophil	74.75	70.33	5.91%	8.24	2.38	1.86	>0.05
Lymphocytes	26.33	22.08	16.14%	2.96	0.85	5	<0.001
Eosinophils	2.83	2.08	26.50%	3.32	0.96	0.78	>0.05
Basophils	1.25	1.08	13.6%	3.32	0.96	0.18	>0.05
R.B.C	3.49	4.02	14.90%	0.10	0.03	17.33	<0.001
E.S.R	95.17	74.58	21.63%	23.44	6.77	3.04	<0.05

**Table 14: Effect of Panchamuladi Kaal Basti on Functional Parameters.**

Functional Parameter	Mean		% relief	S.D.	S.E.	t	P
	B.T.	A.T.					
Foot pressure	2.25	1.08	52%	0.58	0.17	6.89	<0.001
Walking time	2.25	1.25	44.44%	0.43	0.12	8.33	<0.001
Grip strength	2.50	0.92	63.2%	0.51	0.51	10.5	<0.001

**Table 15: Overall effect of Panchamuladi Kaal Basti.**

Treatment effect	No. of Pts.	Percentage
Complete remission	0	00%
Major improvement	6	50%
Minor improvement	6	50%
Unimproved	0	00%

**DISCUSSION:** As per Age wise (41.66%) in this study were in the age distribution maximum numbers of patients group of 41-50 yrs. This is the age where

in *Hani* (deterioration) of *Dhatus* starts<sup>10</sup>. This leads to reduced *Vyadhikshamatva* (immunity) during this age. Increased responsibility towards parents, children & work lead to faulty dietary habits & increased stress during this age. All these factors contribute towards increased incidence of *Amavata* during this age. In this study Maximum numbers of patients (83.33%) were females & among them (50%) were house wives. The female is to male ratio was 5:1. Women's increased responsibility towards house works & day to day family stress may induce *Vata Prakopa* & *Agnimandya* & thus results in *Amavata* in females. As per modern medical science the female: male ratio in Rheumatoid arthritis is 3:1 & below 45 yrs. of age the ratio is 6:1<sup>11</sup>. Data shows that (50%) of patients had chronicity below 1 year, while (25%) of patients were between 1-3 yrs. & remaining (25%) of patients were between 3-5 yrs. This data signifies that people are getting aware regarding importance of *Ayurveda Chikitsa* in this disease So that they approached early to *Ayurveda Hospital*. The present study revealed that (91.66%) of patients were consuming *Virudhaahara*, *Abhishyandi ahara* & *Snigdhaahara* while (58.33%) of patients were indulged in *Bhojnottara Vyayama* & (33.33%) of patients were indulged in *Divasvapna* & *Nishchalatva*. All these *Nidanas* are specific to *Amavata*.

In (100%) of patients the joints were symmetrically involved. PIP & MCP joints were affected in all Patients followed by knee joints in (83.33%) & wrist & ankle joints in (75%) of patients'. Arthritis of hand joints (PIP, MCP) & symmetrical joint involvement are among the diagnostic criteria of rheumatoid arthritis

laid down by American Rheumatism Association (100%) of patients gave the history of *Sandhi Ruja*, *Sandhi Shotha*, *Sandhi Stabdhata* & (83.33%) of patients gave history of *Ushnata* & *Sparshasahatva*. *Sandhi Ruja* & *Stabdhata* are mainly due to *Vata dosa* where as *Shotha*, *Sparshasahatva* & *Ushnata* suggest presence of *Ama*. Above data proves role of *Ama* & *Vata* as chief pathological factors in *Amavata*.

Highly significant results (P<0.001) in all the cardinal symptoms *Sandhiruja* (42.08%), *Shotha* (73.3%), *Stabdhata*(70.09%), *Ushnata* (95%), *Sparshasahyata* (100%), prove that *Panchamuladi Basti* is effective in *Amavata*. *Shula* & *Stabdhata* are mainly due to *Vata Dosa* & above data proves that *Panchamuladi Basti* controls *Vata Dosa* & relieves these symptoms. *Shotha*, *Sparshasahyata* & *Ushnata* suggest presence of *Ama*. Above data proves that *Kshara* property of *Panchamuladi Basti* help in *Amapachana* & thus relieves these symptoms.

**PROBABLE MODE OF ACTION OF BASTI:** *Basti Chikitsa* is the prime treatment modality of *Ayurveda*. *Basti* in general & *Kshara Basti* in specific are told as best *Chikitsa* in *Amavata*. *Panchamuladi Basti* administered through *Pakvashaya* spreads all over the body (head to foot) with its *Virya*<sup>12</sup> & digests *Ama* with its *Kshara* property & at the same time expels the vitiated *Vata* by targeting it in its *pradhan sthana* i.e. *Pakvashaya*<sup>13</sup>. The control gained over *Ama* & *Vata* leads to *Samprapti vighatana* of *Amavata*. Drugs of *Dashmula* are mainly controll over *Vata Dosha* along with *Kapha Dohsa* & also act as *Amapachaka*<sup>14</sup>. *Yavakshara* and *Gomutra*

along with other drugs like *Musta* & *Idrayava* mainly perform *Amapachana* action. *Eranda taila* in *Panchamuladi taila* also aid in breaking the *Samprapti*<sup>15</sup> by controlling *Vata Dosha*.

**CONCLUSION:** *Panchamuladi Kaal Basti* is proved to be an effective therapy in *Amavata*. By combating *Vata Dosa* & *Ama*, it leads to *Samprapti Vighatana* of *Amavata* & hence highly significant results were achieved in all the cardinal symptoms. (50%) of patients showed major improvement & (50%) showed minor improvement. Due to limitation of number of cases & duration of the trial, there is a need to conduct further study in this regard on larger sample & for a longer duration to improve this preliminary study.

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