

COMPARATIVE STUDY OF THE SHIVA GUGGULU AND SIMHANADA GUGGULU IN THE MANAGEMENT OF AMAVATA (RHEUMATOID ARTHRITIS)

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ABSTRACT

Objective: Comparison of effectiveness of two drugs (Shiva Guggulu and Simhanada Guggulu in the same dose of both drug given separately in two different group A and Group B) on patients of Amavata.

Methods: Patients between 18-60 y of age with classical features of Amavata [9] from OPD and IPD of Government autonomous Ayurvedic College and Hospital were selected for the present work; irrespective of their sex, religion, education, etc. Detailed research Performa was prepared to incorporate all the signs and symptoms of the disease *Amavata* is the second most common joint disorders. Nowadays erroneous dietary habits, lifestyle and environment have led to various autoimmune disorders i.e. *Amavisajanya Vikaara* and *Amavata* is one among them. Rheumatoid arthritis can be correlated with *Amavata* in view of its clinical features. Many research studies have been done to solve this clinical enigma, but an effective, safe, less complicated treatment is still required for the management of *Amavata*. In the present study, 24 patients of *Amavata* were registered and randomly grouped into two. In group A, *Shiva Guggulu* 6 g/day in divided doses and in group B, *Simhanada Guggulu* 6 g/day in divided doses were given for 8 w. On analysis of the results, it was found that *Simhanada Guggulu* provided better results as compared to *Shiva Guggulu* in the management of *Amavata*. In group A, the mean score of grip strength was 1.14 before treatment, which was reduced to 0.57 after treatment, with 50% relief. It was statistically insignificant. The mean score of grip strength in group B was 2.4 before treatment, which was reduced to 1.5 after treatment, with 37.5% relief. It was statistically highly significant.

Results: Before treatment the mean score of walking time in group A was 2, which was reduced to 1 after treatment, with 50% relief. It was statistically insignificant. The mean score of walking time in group B was 1.75 before treatment, which was reduced to 0.75 after treatment, with 45.71% relief. It was statistically significant.

In group A, the mean score of foot pressure was 1 before treatment, which was decreased to 0.66 after treatment, with 33.33% relief. It was statistically insignificant. The mean score of foot pressure in group B was 2.3 before treatment, which was decreased to 1.4 after treatment with, 39.13% relief. It was statistically highly significant.

In group A, the mean score of general functional capacity was 1.33 before treatment, which was reduced to 0.66 after treatment, with 50% relief. It was statistically highly significant. The mean score of general functional capacity in group B was 1.66 before treatment, which was reduced to 0.66 after treatment, with 60% relief and was statistically insignificant.

In group A, the mean score of the degree of disease activity was 1.75 before treatment, which was reduced to 1 after treatment, with 42.85% relief. It was statistically highly significant. The mean score of the degree of disease activity in group B was 1.5 before treatment, which was reduced to 0.75 after treatment, with 50% relief. It was statistically significant.

Regarding ESR value, the mean scores before treatment in A and B groups were 54.5 and 55.2, respectively, and they were reduced to 45.3 and 40.1, respectively, after treatment. Group A percentage relief was 16.88%, while in group B it was 27.35%.

An apparent difference in improvement of all the cardinal symptoms was observed with the treatment. On comparing Group B proved to be better than Group A. Statistically highly significant difference was found in the improvement of *Sandhigraha* and statistically significant difference was found in the improvement of *Sandhishoola* and *Sparshasahyata* by *Simhanada Guggulu* than *Shiva Guggulu*, whereas insignificant difference was observed in the improvement of *Sandhishotha*. So, from the obtained data it may be inferred that group B is more effective than group A.

Conclusion: It was observed from the treatment that *Simhanada Guggulu* provided comparatively better relief in cardinal signs and symptoms of *Amavata*.

Keywords: *Agni, Ama, Amavata, Rheumatoid arthritis, Shiva Guggulu, Simhanada Guggulu*

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INTRODUCTION

Amavata (Rheumatoid Arthritis) is a challenge to the physician owing to its chronicity, incurability, complications, morbidity and crippling nature. The word Amavata is made up of a combination of two words, Ama and Vata. [1] The disease is mainly due to derangement of Agni, resulting in the production of Ama which circulates in the body and gets located in the Sandhis (joints) causing pain, stiffness, and swelling over the joints. [2] According to modern medicine, it can be correlated with Rheumatoid Arthritis (RA), [3]

which is a chronic autoimmune disease that causes inflammation and deformity of the joints. RA can also cause inflammation of the tissues around the joints as well as other organs in the body. It is a common disorder, with varied clinical signs and symptoms related to multiple anatomical sites, both articular and extra-articular.

Allopathic system of medicine has got an important role to play in overcoming symptoms of articular diseases. Drugs [4] are available to ameliorate the symptoms due to inflammation, in the form of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), and the long-term

suppression is achieved by the Disease-Modifying Antirheumatic Drugs (DMARDs). [5] But most of the NSAIDs [6] have gastrointestinal side effects, whereas DMARDs have marrow, renal, and hepatic suppression. Hence, the management of this disease is merely insufficient in other systems of medicine and patients are continuously looking with hope towards Ayurveda to overcome this challenge.

Many research works have been done to solve this clinical enigma, but an effective, safe, less complicated treatment is still required in the management of Amavata. In this clinical study, two drugs Shiva Guggulu [7] and Simhanada Guggulu [8] have been attempted to evaluate their comparative efficacy in Amavata.

MATERIALS AND METHODS

Selection criteria

Patients between 18-60 y of age with classical features of Amavata [9] from OPD and IPD of Government autonomous Ayurvedic College and Hospital were selected for the present work; irrespective of their sex, religion, education, etc. Detailed research Performa was prepared to incorporate all the signs and symptoms of the disease.

Inclusion criteria

The criteria laid down by American Rheumatism Association (ARA)-1988 [10] were also taken into consideration as follows:

1. Morning stiffness lasting for >1 h,
2. Arthritis of three or more joints
3. Arthritis of hand joints
4. Symmetrical arthritis
5. Presence of rheumatoid nodules
6. Presence of rheumatoid factor (RA factor)
7. Radiological changes.

*First four criteria must be present for the duration of 6 w or more.

**Diagnosis of RA is made with four or more criteria.

Exclusion criteria

1. Chronicity for more than 10 y
2. Having severe crippling deformity
3. Patients are suffering from cardiac disease, pulmonary TB, Diabetes Mellitus, etc.

Investigations

For the purpose of assessing the general condition of the patient and to exclude other pathologies, the following investigations were carried out.

1. RA factor.
2. Haematological investigations: The routine haematological examination was carried out which included total leukocyte count, differential count, haemoglobin, packed cell volume, and Erythrocyte Sedimentation Rate (ESR).
3. Urine analysis: Routine urine analysis was carried out to detect the involvement of kidneys and to exclude the urinary tract infections and conditions like gonorrhoea.

Follow-up

Follow-up study was carried out for 8 w after completion of treatment.

Dietary restrictions

The patients were strictly advised to follow dietary restrictions and changes in lifestyle.

Criteria for assessment

The results of the therapy were assessed on the basis of clinical signs and symptoms mentioned in *Ayurvedic* classics as well as by ARA

(1988). Functional capacity was also assessed, and laboratory investigations were repeated at the end of the treatment. The scoring pattern adopted for the assessment is as follows:

Assessment criteria

The assessment criteria is shown in

Subjective criteria	Scoring
1-Pain	
No Pain	0
Mild Pain	1
Moderate Pain	2
Severe Pain	3
2-Burning sensation	
No Burning sensation	0
Mild Burning sensation	1
Moderate Burning sensation	2
Severe Burning sensation	3
3-Malaise	
No Malaise	0
Mild Malaise	1
Moderate Malaise	2
Severe Malaise	3
Objective Criteria	Scoring
4-Tenderness	
No Tenderness	0
Patients complain of pain	1
Patients complain of pain and wincing	2
Patients complain of pain and withdraw	3
5-Oedema	
No swelling	0
Mild swelling	1
Moderate swelling	2
Gross swelling	3
6-Local colour changes in skin	
No colour changes	0
Mild colour changes	1
Moderate colour changes	2
Severe colour changes	3
7-Walking Abilities	
Walk easily	0
With mild difficulty	1
With moderate difficulty	2
With mark difficulty	3
Impossible	4
8-Peripheral Pulses	
Absent	0
Feeble	1
Less Volume	2
Full Bounding	3
9-Stiffness of joint	
No Stiffness	0
Stiffness lasting from 5 minutes to 2 h	1
Stiffness lasting from 2 h to 8 h	2
Stiffness lasting from more than 8 h	3
10-Warmth of joint-	
Raise temperature when comparison to normal body surface.	0
Fall in local warmth	1
Normal temperature	2
No change after treatment	3
General symptoms of Amavata like Aruchi Agnimandhya Apaka Angamard Trisna Gaurava Alasya Jwara Praseka Daha Anaha Bahumutrata Vivandha Antrakujan and Daurbalya were record as mention below.	
Symptoms observed before treatment	2
Symptoms relief after treatment	1
Complete relief after treatment	0
No improvement after treatment	2
11. Daha and Srotodusti	
Symptoms observed before treatment	2
Improvement in symptoms	1
Absence of symptoms after treatment	0
No changes	2

Functional assessment

The following periodical functional tests were carried out for objective assessment of the improvement of *Amavata* patients.

1. 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 stopwatch.

2. 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.

3. 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.

4. General functional capacity

Complete ability to carry on all routine duties	0
Adequate normal activity despite slight difficulty in joint movement.	1
Few activities are persisting, but patient can take care of himself.	2
Patients are totally bedridden.	3

Degree of disease activity

For diagnostic as well as for assessment purpose, the degree of disease activity was estimated on the basis of criteria laid down by ARA (1967).

Table 1: ARA criteria for RA

Grade	0	1	2	3
Fatigue	No there	Work full time despite fatigue	Pt. must interrupt work to rest	Fatigue at rest
Grip strengths	200 mmHg or more	199-120 mmHg	119-70 mmHg	Under 70 mmHg
Haemoglobin (gm %)	12.5 or more	12.4-11	10.9-9.5	<9.5
General function	All activities without difficulty	Most of the activities but with difficulty.	Few activities care for self.	A Little self-care mainly chair and bed.
Patient estimate	Fine	Almost well	Pretty good	Pretty bad
Physician estimate	inactive	Mainly active	Moderately active	Severely active
Foot pressure	25-21 kg	20-16 kg	15-10 kg	<10 kg
Walking time (25ft)	15-20 second	21-30 second	31-40 second	>40 second

In the criteria given above, the maximum score is 30, which represents an average of grade 3 (severely active). By dividing the total score by 10, the grade of disease is obtained and denoted by fig. from 0 to 3.

Total effect of therapy was assessed on the basis of the criteria given as below

Complete remission	100% relief
Marked Improvement	75%-99% relief
Moderate Improvement	50%-74% relief
Mild Improvement	25%-49% relief
Unchanged	<24% relief

Statistical analysis

The obtained information was analyzed statistically. Paired *t*-test was carried out to evaluate the statistical significance of the therapy. $P < 0.01$ is considered as significant and $P < 0.001$ is considered as highly significant. *Trial Drug and Posology*: Both the trial drugs were prepared at Govt. Ayurvedic Pharmacy, Indore MP. The composition is provided at [table] and [table 3].

Table 2: Composition of Shiva Guggulu

Drug	Latin name	Proportion
Shiva	<i>Terminalia Chebula</i>	1 part
Vibhitaki	<i>Terminalia bellirica</i>	1 part
Amalaki	<i>Emblica officinalis</i>	1 part
Erandmoolachurna	<i>Ricinus communis</i>	4 parts
Shuddhagandhaka	-	2parts
Rasana	<i>Pluchea lanceolata</i>	1 part
Vidanga	<i>Embelica ribs</i>	1 part
Marich	<i>Piper nigrum</i>	1 part
Pippali	<i>Piper longum</i>	1 part
Dantimoola	<i>Balispermum montanum</i>	1 part
Jatamansi	<i>Nordostachys jatamansi</i>	1 part
Shundi	<i>Zinziber officinale</i>	1 part
Devdaru	<i>Cedrus deodara</i>	1 part
Shuddaguggulu	<i>Commiphora mukul</i>	1 part

Table 3: Composition of Simhanada Guggulu

Drug	Latin name	Proportion
Shiva	<i>Terminalia Chebula</i>	
Shuddaguggulu	<i>Commiphora mukul</i>	1 part
Vibhitaki	<i>Terminalia bellirica</i>	1 part
Amalaki	<i>Emblica officinalis</i>	1 part
Erandmoolachurna	<i>Ricinus communis</i>	4 parts
Shuddhagandhaka	-	2parts

Shiva Guggulu (group A): The patients of this group were treated with *Shiva Guggulu* at a dose of 6 g/day for 8 w with Luke warm water.

Simhanada Guggulu (group B): The patients of this group were treated with *Simhanada Guggulu* at a dose of 6 g/day for 8 w with Luke warm water.

RESULTS AND OBSERVATION

A maximum number of patients (41.66%) belonged to the age group of 41-50 y. The majority of the patients were females (91.66%), 75% patients were Hindus, and 91.66% were married. 66.66% patients were housewives, 50% were from middle class, and 33.33% were uneducated patients. Maximum numbers of patients were of *Vata-Kapha Prakriti* (45.83%), *Mandagni* (62.5%), *Madhyama Sara* (54.16%), *Madhyama Sattva* (50%) and *Madhyama Samhanana* (58.33%) were found in the majority of the patients. 50% of patients had negative family history, 58% patients had a gradual onset and 37.5% patients had chronicity of 2-4 y. Most of the patients were found to be indulged in *Viruddha Ahara* (66.66%), *Snigdha Ahara* (45.83%), *Vishamashana* (62.5%), *Bhojanottara Vyayama*, *Adhyasana* (54.16%), and *Divasavyata* (50%). It was observed that maximum (41.6%) patients had *Atichinta*, followed by 33.33% with *Manodvega* and 25% with *Shoka* as *Manasika Nidana*. It was observed that maximum numbers of patients (100%) have *Sandhishoola* followed by *Sandhishotha* (91.66%), *Sparshasahyata* (75%), and *Sandhigraha* (87.50%). Among the general symptoms, *Angamarda* was observed in 79.16%, *Aruchi* in 70.83%, *Gaurva* in 83.33%, *Apaka* in 62.50%, *Sunata-Anganama* in 54.16%, *Alasya* in 37.5%, *Trishna* in 41.66%, and *Jwara* in 37.5% of patients. Majority of the patients (83.33%) had *Vibandha*, and 75% had *Ushnata* around the joints and *Anaha*, followed by 70.83% with *Daurbalya*, 66.66% with *Agnimandya*, 58.33% with *Nidraviparyaya*, 45.83% with *Bahumutrata*, 29.16% with *Daha*, 25.00% had *Kandu* and *Bhrama* each, 20.83% had *Kukshishula*, *Hridgraha*, *Chhardi* each, while 12.5% had *Praseka* and 4.16% had *Antrakujana*.

In majority of patients, Proximal Inter-Phalangeal (PIP) joint was involved (91.66%), followed by involvement of wrist in 83.33%, knee in 79.16%, elbow in 62.50%, hip in 58.33%, shoulder in 54.16%, ankle in 50%, neck joint in 45.83%, Distal Inter-Phalangeal (DIP) joint and Meta-Carpals (MC) each in 41.66%, inter-phalangeal joint of fingers in 37.50%, and jaw in 4.16% of the patients.

Comparative effect of *Shiva Guggulu* and *Simhanada Guggulu* on cardinal symptoms of *Amavata*

Effect of therapy on *Sandhishoola*, *Sandhishotha*, *Sandhigraha* and *Sparshasahyata* with the treatment of trial drugs is provided at [table 4], [table 5], [table 6], [table 7], [table 8], [table 9], [table 10], [table 11], [table 12], [table 13], [table 14].

Functional assessment

In group A, the mean score of grip strength was 1.14 before treatment, which was reduced to 0.57 after treatment, with 50% relief. It was statistically insignificant. The mean score of grip strength in group B was 2.4 before treatment, which was reduced to 1.5 after treatment, with 37.5% relief. It was statistically highly significant.

Before treatment, the mean score of walking time in group A was 2, which was reduced to 1 after treatment, with 50% relief. It was statistically insignificant. The mean score of walking time in group B was 1.75 before treatment, which was reduced to 0.75 after treatment, with 45.71% relief. It was statistically significant.

In group A, the mean score of foot pressure was 1 before treatment, which was decreased to 0.66 after treatment, with 33.33% relief. It was statistically insignificant. The mean score of foot pressure in group B was 2.3 before treatment, which was decreased to 1.4 after treatment with, 39.13% relief. It was statistically highly significant.

In group A, the mean score of general functional capacity was 1.33 before treatment, which was reduced to 0.66 after treatment, with 50% relief. It was statistically highly significant. The mean score of general functional capacity in group B was 1.66 before treatment, which was reduced to 0.66 after treatment, with 60% relief and was statistically insignificant.

In group A, the mean score of the degree of disease activity was 1.75 before treatment, which was reduced to 1 after treatment, with 42.85% relief. It was statistically highly significant. The mean score of the degree of disease activity in group B was 1.5 before treatment, which was reduced to 0.75 after treatment, with 50% relief. It was statistically significant.

Regarding ESR value, the mean scores before treatment in A and B groups were 54.5 and 55.2, respectively, and they were reduced to 45.3 and 40.1, respectively, after treatment. Group A percentage relief was 16.88%, while in group B it was 27.35%.

An apparent difference in improvement of all the cardinal symptoms was observed with the treatment. On comparing Group B proved to be better than Group A. Statistically highly significant difference was found in the improvement of *Sandhigraha* and statistically significant difference was found in the improvement of *Sandhishoola* and *Sparshasahyata* by *Simhanada Guggulu* than *Shiva Guggulu*, whereas insignificant difference was observed in the improvement of *Sandhishotha*. So, from the obtained data it may be inferred that group B is more effective than group A.

Table 4: Effect of group A in *Sandhishoola*

Cardinal features	n	Mean BT	Mean AT	% of relief	x	SD	SE	t	P
DIP(Lt)	5	1.8	0.6	66.66	1.2	0.45	0.2	6	<0.01
Rt	6	1.33	0.5	62.5	0.83	0.41	0.17	5	<0.01
PIP(Lt)	7	1.43	0.57	60.0	0.86	0.38	0.14	6	<0.001
Rt	8	1.63	0.38	70.33	1.14	0.38	0.14	8	<0.001
MC(Lt)	4	2.75	1.0	63.63	1.75	0.5	0.25	7	<0.01
Rt	4	2.25	1.5	33.33	0.75	0.5	0.25	3	>0.05
MT(Lt)	2	1.5	0.0	100	1.5	0.70	0.25	3	<0.05
Rt	1	2.0	1.0	50	1.0	-	-	-	1
Wrist((Lt)	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Rt	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Elbow(Lt)	2	1.5	0.5	66.66	1.0	1.4	1.0	1	>0.05
Rt	2	1.0	0.5	50	0.5	0.70	0.5	1	>0.05
Shoulder(Lt)	4	1.25	0.5	30	0.38	0.52	0.18	2.04	>0.05
Rt	3	1.33	0.67	50	0.67	0.58	0.33	2.00	>0.05
Ankle(Lt)	6	1.67	0.67	60	1.0	0.00	0.0	-	-
Rt	5	1.6	0.6	62.5	1.0	0.71	0.32	3.16	>0.05
Knee(Lt)	8	2.0	0.75	62.5	1.25	0.46	0.16	7.64	<0.001
Rt	8	2.0	0.75	62.5	1.25	0.46	0.16	7.64	<0.001
Hip(Lt)	3	1.67	0.67	60	1.0	1.0	0.58	1.7	>0.05
Rt	2	1.0	0.5	50	0.5	0.71	0.5	1.0	>0.05
Neck(Lt)	3	1.33	0.67	50	0.67	0.58	0.33	2.0	>0.05
Jaw(Lt)	1	1.0	0.0	100	-	-	-	-	-

Table 5: Effect of group A in Sandhishotha table 4: Effect of group A in Sandhishoola

Cardinal features	n	Mean BT	Mean AT	% of relief	x	SD	SE	t	P
DIP(Lt)	5	1.5	0.5	66.66	1	0.63	0.25	3.87	<0.05
Rt	4	1.23	0.5	60.0	0.75	0.5	0.25	3	<0.05
PIP(Lt)	5	1.6	0.6	62.25	1.00	0.70	0.31	3.16	<0.05
Rt	5	1.6	0.6	62,25	1.00	0.0	0.0	-	-
MC(Lt)	2	1.5	1.0	3.333	.5	0.70	0.5	1	<0.05
Rt	2	1.5	0.5	66.66	1.0	0	0.0	-	-
MT(Lt)	2	2.0	1.0	100	1.5	0.70	0.25	3	<0.05
Rt	2	1.5	0.5	50	1.0	-	-	-	-
Wrist((Lt)	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Rt	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Elbow(Lt)	2	1.5	0.5	66.66	1.0	1.4	1.0	1	>0.05
Rt	2	1.0	0.5	50	0.5	0.70	0.5	1	>0.05
Shoulder(Lt)	4	1.25	0.5	30	0.38	0.52	0.18	2.04	>0.05
Rt	3	1.33	0.67	50	0.67	0.58	0.33	2.00	>0.05
Ankle(Lt)	6	1.67	0.67	60	1.0	0.00	0.0	-	-
Rt	5	1.6	0.6	62.5	1.0	0.71	0.32	3.16	>0.05
Knee(Lt)	8	1.75	0.37	78.57	1.25	0.46	0.16	7.64	<0.001
Rt	8	2.0	0.75	66.66	1.25	0.46	0.16	7.64	<0.001
Hip(Lt)	3	1.67	0.67	78.57	1.0	1.0	0.58	7.51	<0.001
Rt	4	1.75	0.5	71.42	0.5	0.71	0.5	1.0	>0.05
Neck(Lt)	3	1.33	0.67	50	0.67	0.58	0.33	2.0	>0.05
Jaw(Lt)	1	1.0	0.0	100	-	-	-	-	-

Table 6: Effect of group A in sandhigraha

Cardinal features	n	Mean BT	Mean AT	% of relief	x	SD	SE	t	P
DIP(Lt)	5	1.4	0.6	57.14	0.8	0.45	0.2	4.00	<0.05
Rt	3	1.66	0.66	60.0	1	1	0.57	1.73	<0.05
PIP(Lt)	7	1.6	0.6	62.25	1.00	0.70	0.31	3.16	<0.05
Rt	7	1.6	0.6	62,25	1.00	0.0	0.0	-	-
MC(Lt)	2	1.5	1.0	3.333	.5	0.70	0.5	1	<0.05
Rt	2	1.5	0.5	66.66	1.0	0	0.0	-	-
MT(Lt)	2	2.0	1.0	100	1.5	0.70	0.25	3	<0.05
Rt	2	1.5	0.5	50	1.0	-	-	-	-
Wrist((Lt)	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Rt	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Elbow(Lt)	2	1.5	0.5	66.66	1.0	1.4	1.0	1	>0.05
Rt	2	1.0	0.5	50	0.5	0.70	0.5	1	>0.05
Shoulder(Lt)	4	1.25	0.5	30	0.38	0.52	0.18	2.04	>0.05
Rt	3	1.33	0.67	50	0.67	0.58	0.33	2.00	>0.05
Ankle(Lt)	6	1.67	0.67	60	1.0	0.00	0.0	-	-
Rt	5	1.6	0.6	62.5	1.0	0.71	0.32	3.16	>0.05
Knee(Lt)	5	1.75	0.37	66.67	1.25	0.46	0.16	7.64	<0.001
Rt	5	2.0	0.75	63.64	1.25	0.46	0.16	7.64	<0.001
Hip(Lt)	3	1.67	0.67	78.57	1.0	1.0	0.58	7.51	<0.01
Rt	4	1.75	0.5	71.42	0.5	0.71	0.5	1.0	>0.01
Neck(Lt)	3	1.33	0.67	50	0.67	0.58	0.33	2.0	>0.05
Jaw(Lt)	1	1.0	0.0	100	-	-	-	-	-

DISCUSSION

Maximum numbers of patients had involvement of *Kaphavridhi* and *Prakopa*, followed by *Vata Vriddhi* and *Prakopa*, *Dosha* and *Dushti* of *Rasavaha*, *Asthivaha*, *Majjavaha*, *Purishvaha* and *Annavaha Srotas*, which is in accordance with the main *Srotas* involved in the *Amavata Roga Samprapti*. A maximum number of patients (41.66%) belonged to the age group of 41-50 y, which shows its predominance in middle-age group. In this stage of life, *Vyadhikshmatwa* gradually decreases, and accumulation of *Dosha* occurs, particularly *Vata Dosha* which acts as the major predisposing factor for this disease process. Thus, this age group is more prone for this disease. This data is slightly in accordance with the modern findings that the onset is most frequent during the fourth and fifth decades of life, with 80% of all patients developing the disease of age between 35 and 50 y. The majority of the patients (91.66%) were females, which clearly shows the predominance of the disease in females. Textual

reference also reflects the predominance of rheumatoid arthritis in females. The nature of the household work especially after taking meal, which is one of the causative factors mentioned in the Ayurvedic text, may be the responsible factor of *Amavata*. In this present study, data show that maximum (70.83%) patients were RA negative, and 29.16% were RA positive. The presence of RA factor does not establish the diagnosis for RA, but it can be of prognostic significance because patients with high titers tend to have more severe and progressive disease with extraarticular manifestation.

Regarding the joint wise relief, *Simhanada Guggulu* showed better results than *Shiva Guggulu*. In both the groups, none of the patients were found to be completely cured because of the short duration course of therapy as well as chronic nature of the disease. In group A, marked improvement in 30% and moderate improvement in 70% of patients was observed, whereas, in group B, 40% of patients showed marked improvement and moderate improvement was seen in 60%.

Table 7: Effect of group A in *sparshasahyata*

Cardinal features	n	Mean BT	Mean AT	% of relief	x	SD	SE	t	P
DIP(Lt)	5	1.4	0.6	57.14	0.8	0.45	0.2	4.00	<0.05
Rt	10	2.3	0.8	65.22	1.5	0.71	0.22	6.71	<0.001
PIP(Lt)	7	1.6	0.6	62.25	1.00	0.70	0.31	3.16	<0.05
Rt	7	1.6	0.6	62,25	1.00	0.0	0.0	-	-
MC(Lt)	2	1.5	1.0	3.333	.5	0.70	0.5	1	<0.05
Rt	2	1.5	0.5	66.66	1.0	0	0.0	-	-
MT(Lt)	2	2.0	1.0	100	1.5	0.70	0.25	3	<0.05
Rt	2	1.5	0.5	50	1.0	-	-	-	-
Wrist((Lt)	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Rt	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Elbow(Lt)	2	1.5	0.5	66.66	1.0	1.4	1.0	1	>0.05
Rt	2	1.0	0.5	50	0.5	0.70	0.5	1	>0.05
Shoulder(Lt)	4	1.25	0.5	30	0.38	0.52	0.18	2.04	>0.05
Rt	3	1.33	0.67	50	0.67	0.58	0.33	2.00	>0.05
Ankle(Lt)	6	1.67	0.67	60	1.0	0.00	0.0	-	-
Rt	5	1.6	0.6	62.5	1.0	0.71	0.32	3.16	>0.05
Knee(Lt)	5	1.75	0.37	66.67	1.25	0.46	0.16	7.64	<0.001
Rt	5	2.0	0.75	63.64	1.25	0.46	0.16	7.64	<0.001
Hip(Lt)	3	1.67	0.67	78.57	1.0	1.0	0.58	7.51	<0.01
Rt	4	1.75	0.5	71.42	0.5	0.71	0.5	1.0	>0.01
Neck(Lt)	3	1.33	0.67	50	0.67	0.58	0.33	2.0	>0.05
Jaw(Lt)	1	1.0	0.0	100	-	-	-	-	-

Table 8: Effect of group B in *sandhishoola*

Cardinal features	n	Mean BT	Mean AT	% of relief	x	SD	SE	t	P
DIP(Lt)	5	1.8	0.6	66.66	1.2	0.45	0.2	6	<0.01
Rt	6	1.33	0.5	62.5	0.83	0.41	0.17	5	<0.01
PIP(Lt)	10	2.1	0.8	61.90	1.3	0.67	0.21	6.09	<0.001
Rt	10	1.9	0.07	63.33	1.2	0.78	0.24	4.88	<0.001
MC(Lt)	4	2.75	1.0	63.63	1.75	0.5	0.25	7	<0.01
Rt	4	2.25	1.5	33.33	0.75	0.5	0.25	3	>0.05
MT(Lt)	2	1.5	0.0	100	1.5	0.70	0.25	3	<0.05
Rt	1	2.0	1.0	50	1.0	-	-	-	-
Wrist((Lt)	7	2.14	0.85	60	1.28	0.48	0.18	6.9	<0.001
Rt	7	2.14	0.85	60	1.28	0.48	0.18	6.9	<0.001
Elbow(Lt)	2	1.5	0.5	66.66	1.0	1.4	1.0	1	>0.05
Rt	2	1.0	0.5	50	0.5	0.70	0.5	1	>0.05
Shoulder(Lt)	4	1.25	0.5	30	0.38	0.52	0.18	2.04	>0.05
Rt	3	1.33	0.67	50	0.67	0.58	0.33	2.00	>0.05
Ankle(Lt)	7	2.28	0.71	68.75	1.57	0.53	0.20	7.77	<0.001
Rt	7	2.14	0.57	73.33	1.57	0.53	0.20	7.77	<0.001
Knee(Lt)	8	2.0	0.75	62.5	1.25	0.46	0.16	7.64	<0.01
Rt	8	2.0	0.75	62.5	1.25	0.46	0.16	7.64	<0.01
Hip(Lt)	3	1.67	0.67	60	1.0	1.0	0.58	1.7	>0.05
Rt	2	1.0	0.5	50	0.5	0.71	0.5	1.0	>0.05
Neck(Lt)	3	1.33	0.67	50	0.67	0.58	0.33	2.0	>0.05
Jaw(Lt)	1	1.0	0.0	100	-	-	-	-	-

Probable mode of action of *Simhanada Guggulu* in *Amavata*

Both the trial drugs have *Katu*, *Tikta Rasa*, *Laghu*, *Ruksha Guna*, *Ushna Virya*, *Katu Vipaka Vedanasthapana*, *Deepana-Pachana*, *Rasayana* and *Medhya Karma* hence, it has *Vatakaphashamaka*, *Amapachaka*, *Srotoshodhaka* properties which helps in breaking the pathogenesis of *Amavata*. Specially *Tikta* and *Katu Rasa* present in *Simhanada Guggulu* possess the antagonistic properties to that of *Ama* and *Kapha* which are the chief causative factors in this disease. Because of their *Agnivridhikara* property, they increase digestive power, which also digests *Amarasa* and reduces the excessive production of *Kapha* and also removes the obstruction of the *Srotas*. Because of *Ushna Virya*, it also alleviates vitiated *Vata*. *Katu Rasa* helps in *Agni Deepana Pachana Karma* of *Ushna Virya*, *Katu Rasa* and *Kaphahara Karma* of *Ruksha*, *Laghu Guna*, and *Ushna Virya*

Amadosha Pachana occurs. *Lekhana Karma* of *Laghu Guna* and *Tikta Rasa* removes the adhered *Dosha* from the *Dushita Srotas*.

The *Ushna* properties of *Simhanada Guggulu* do not allow the *Ama* to linger at the site of pathogenesis and to create *Srotorodha*. It reduces *Srotorodha* and pain. It also has the antagonistic action of *Sheeta* and *Ruksha Guna* of *Vata*. Thus, it controls *Ama* and *Vata* together and minimizes the process of pathogenesis. After *Srotovivronoti Karma* of *Katu Rasa* and *Agnideepana*, *Srotovishodhana Karma* by *Tikta Rasa*, *Lekhana* action *Srotosodhana* occurs. This leads to the assimilation of undigested and immature *Amarasa*. By virtue of *Shoshana* and *Pachana* property of *Katu*, *Tikta Rasa*, and *Ushna Virya*, it absorbs excessive *Dravta* which leads to *Samyaka Yuktamagni*. Due to *Ushna Virya* and *Katu Vipaka* of *Simhanad Guggulu*, *Vatashamana* occurs. After *Samyaka Yuktamagni* and *Vatasamana Amavata*, *Vyadhi shaman* occurs.

Table 9: Effect of group B in sandhishotha

Cardinal features	n	Mean BT	Mean AT	% of relief	x	SD	SE	t	P
DIP(Lt)	5	1.5	0.5	66.66	1	0.63	0.25	3.87	<0.05
Rt	4	1.23	0.5	60.0	0.75	0.5	0.25	3	<0.05
PIP(Lt)	9	1.66	0.55	66.66	1.10	0.33	0.11	10.00	<0.001
Rt	5	1.6	0.6	62.25	1.00	0.0	0.0	-	-
MC(Lt)	2	1.5	1.0	3.333	.5	0.70	0.5	1	<0.05
Rt	2	1.5	0.5	66.66	1.0	0	0.0	-	-
MT(Lt)	2	2.0	1.0	100	1.5	0.70	0.25	3	<0.05
Rt	2	1.5	0.5	50	1.0	-	-	-	-
Wrist((Lt)	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Rt	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Elbow(Lt)	2	1.5	0.5	66.66	1.0	1.4	1.0	1	>0.05
Rt	2	1.0	0.5	50	0.5	0.70	0.5	1	>0.05
Shoulder(Lt)	4	1.25	0.5	30	0.38	0.52	0.18	2.04	>0.05
Rt	3	1.33	0.67	50	0.67	0.58	0.33	2.00	>0.05
Ankle(Lt)	7	2.28	0.71	68.75	1.31	0.53	0.20	7.78	<0.001
Rt	7	2.14	0.85	60.00	1.28	0.48	0.18	6.97	<0.001
Knee(Lt)	10	2.0	0.8	60.00	1.2	0.63	0.2	6.0	<0.001
Rt	10	1.9	0.8	57.68	1.1	0.31	0.1	11.0	<0.001
Hip(Lt)	3	1.67	0.67	78.57	1.0	1.0	0.58	7.51	<0.001
Rt	4	1.75	0.5	71.42	0.5	0.71	0.5	1.0	>0.05
Neck(Lt)	3	1.33	0.67	50	0.67	0.58	0.33	2.0	>0.05
Jaw(Lt)	1	1.0	0.0	100	-	-	-	-	-

Table 10: Effect of group B in sandhigraha

Cardinal features	n	Mean BT	Mean AT	% of relief	x	SD	SE	t	P
DIP(Lt)	5	1.5	0.5	66.66	1	0.63	0.25	3.87	<0.05
Rt	4	1.23	0.5	60.0	0.75	0.5	0.25	3	<0.05
PIP(Lt)	10	2.0	0.8	60.00	1.2	0.42	0.13	9.0	<0.001
Rt	10	1.9	0.7	63.15	1.2	0.42	0.13	9.0	<0.001
MC(Lt)	2	1.5	1.0	3.333	.5	0.70	0.5	1	<0.05
Rt	2	1.5	0.5	66.66	1.0	0	0.0	-	-
MT(Lt)	2	2.0	1.0	100	1.5	0.70	0.25	3	<0.05
Rt	2	1.5	0.5	50	1.0	-	-	-	-
Wrist((Lt)	7	1.85	0.7	61.53	1.14	0.69	0.26	4.38	<0.01
Rt	7	1.85	0.7	61.53	1.14	0.33	0.14	8	<0.001
Elbow(Lt)	2	1.5	0.5	66.66	1.0	1.4	1.0	1	>0.05
Rt	2	1.0	0.5	50	0.5	0.70	0.5	1	>0.05
Shoulder(Lt)	4	1.25	0.5	30	0.38	0.52	0.18	2.04	>0.05
Rt	3	1.33	0.67	50	0.67	0.58	0.33	2.00	>0.05
Ankle(Lt)	6	1.67	0.67	60	1.0	0.00	0.0	-	-
Rt	5	1.6	0.6	62.5	1.0	0.71	0.32	3.16	>0.05
Knee(Lt)	10	2.0	0.8	60.00	1.2	0.42	0.13	9.00	<0.001
Rt	10	2.0	0.9	55.00	1.1	0.31	0.1	11.00	<0.001
Hip(Lt)	3	1.67	0.67	78.57	1.0	1.0	0.58	7.51	<0.001
Rt	4	1.75	0.5	71.42	0.5	0.71	0.5	1.0	>0.05
Neck(Lt)	3	1.33	0.67	50	0.67	0.58	0.33	2.0	>0.05
Jaw(Lt)	1	1.0	0.0	100	-	-	-	-	-

Table 11: Effect of group B in sparshashayata

Cardinal features	n	Mean BT	Mean AT	% of relief	x	SD	SE	t	P
DIP(Lt)	4	1.4	0.6	57.14	0.8	0.45	0.2	4.00	<0.05
Rt	4	1.66	0.66	60.0	1	1	0.57	1.73	<0.05
PIP(Lt)	7	2.0	0.7	64.25	1.20	0.50	0.17	6.97	<0.001
Rt	7	1.71	0.6	66.25	1.10	0.40	0.10	8	<0.001
MC(Lt)	2	1.5	1.0	3.333	.5	0.70	0.5	1	<0.05
Rt	2	1.5	0.5	66.66	1.0	0	0.0	-	-
MT(Lt)	2	2.0	1.0	100	1.5	0.70	0.25	3	<0.05
Rt	2	1.5	0.5	50	1.0	-	-	-	-
Wrist((Lt)	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01
Rt	6	1.0	0.17	83.33	.83	0.40	0.17	5	<0.01

Elbow(Lt)	2	1.5	0.5	66.66	1.0	1.4	1.0	1	>0.05
Rt	2	1.0	0.5	50	0.5	0.70	0.5	1	>0.05
Shoulder(Lt)	4	1.25	0.5	30	0.38	0.52	0.18	2.04	>0.05
Rt	3	1.33	0.67	50	0.67	0.58	0.33	2.00	>0.05
Ankle(Lt)	7	2.17	0.7	66	1.4	0.53	0.20	7.07	<0.001
Rt	6	2.33	0.8	64	1.5	0.51	0.22	6.70	<0.001
Knee(Lt)	9	1.75	0.37	66.67	1.25	0.46	0.16	7.64	<0.001
Rt	9	2.0	0.75	63.64	1.25	0.46	0.16	7.64	<0.001
Hip(Lt)	3	1.67	0.67	78.57	1.0	1.0	0.58	7.51	<0.01
Rt	4	1.75	0.5	71.42	0.5	0.71	0.5	1.0	>0.01
Neck(Lt)	3	1.33	0.67	50	0.67	0.58	0.33	2.0	>0.05
Jaw(Lt)	1	1.0	0.0	100	-	-	-	-	-

Table 12: Percentage effect of therapy on cardinal symptoms

Symptoms	Shiva Guggulu % of relief	Simhanada guggulu % of relief
Sandhishoola	68.53	71.23
Sandhishotha	68.35	71.0
Sandhigraha	68.11	70.87
Sparshasahyata	66.02	68.01

Table 13: Overall effects of Shiva Guggulu and Simhanada Guggulu in patients of Amavata

Effect	Group A		Group B	
	No of Pt.	%	No of Pt.	%
Complete Remission(100%)	0	0	0	0
Mark improvement(76-99%)	3	30	4	40
Moderate improvement(51-75%)	7	70	6	60
Mild improvement (25-50%)	0	0	0	0
Unchanged (<25%)	0	0	0	0

Table 14: Comparative effect of both groups in patients of Amavata (by unpaired t-test)

Chief complaints	Mean±SEM group A	Mean±SEM group B	% Change	t	P
Sandhishoola	0.675±0.070	1.067±0.088	36.32↓	3.45	<0.01
Sandhishotha	0.517±0.059	0.717±0.086	27.89↓	1.91	>0.05
Sandhigraha	0.508±0.066	0.908±0.070	44.05↓	4.12	<0.001
Sparshasahyata	0.358±0.059	0.658±0.108	45.59↓	2.43	<0.05

CONCLUSION

It was observed from the treatment that *Simhanada Guggulu* provided comparatively better relief in cardinal signs and symptoms of Amavata.

CONFLICT OF INTERESTS

Declare none

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