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A clinical study to effect of *Dhanyamla Parisheka* in Rheumatoid Arthritis

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ABSTRACT

Background: *Bahirparimarjana Chikitsa* is one of two modes of treatment explained in Ayurvedic medical science. *Doshas* move from internal *Koshta* to *Shaakha* during disease pathology or *Roga Samprapti*. *Swedana* is considered one such treatment protocol to bring *Doshas* from *Shaakha* to *Koshta*. *Parisheka* is a method of *Swedana* by pouring medicated water or oil over the body. *Dhanyamla Parisheka* is a *Rooksha* inducing *Parisheka Sweda*. *Amavata* is a disease with predominant *Kapha* and *Vata Dosh*. Its *Vyaktha Sthana* is predominantly *Sandhi* with severe pain and swelling. Treatment of *Amavata* includes *Rooksha Swedana*. Symptoms of rheumatoid arthritis largely correlate with the symptoms present in *Amavata*. Global prevalence rates of Rheumatoid Arthritis with genetic associations in India is 0.1-0.4%. **Methods:** In this study, 50 patients diagnosed with Rheumatoid arthritis were selected and subjected for *Dhanyamla Parisheka*. This study involves estimation of Rheumatoid factor, C-reactive protein and Anti streptolysin O titre levels before treatment and after follow-up period and evaluation of pain, swelling, tenderness and range of movement of joints involved in the subjects before and after *Dhanyamla Parisheka* for 7 days. The results are suggestive of effect of the *Dhanyamla Parisheka*. **Results:** There was statistically significant reduction in Rheumatoid arthritis score in the subjects. **Interpretation:** *Dhanyamla Parisheka* is an effective *Bahirparimarjana Chikitsa* in subjects with rheumatoid arthritis.

Key words: *Parisheka Swedana*, *Dhanyamla Parisheka*, *Amavata*, *Rheumatoid Arthritis*

INTRODUCTION

Generally *Swedana* therapy^[1] cannot be directly considered as a *Panchakarma* procedure. It comes under the *Poorvakarmas* of *Panchakarma* procedures.^[2] These *Poorvakarmas* play important role

in achieving *Upasthitha Dosh Avastha*^[3] and as *Lakshnika Chikitsa*.^[4]

In diseases such as *Amavata*^[5] the severity of the symptoms draws a patient towards modern medicine for relief in symptoms to achieve basic daily activities. *Rooksha Sweda*^[6] is one of the foremost *Bahirparimarjana Chikitsa*^[7] in *Amavata*. With similar aim to develop better compliability and preparation for further *Panchakarma* procedures *Dhanyamla Parisheka*,^[8] a type of *Rooksha Parisheka Sweda* is chosen in cases diagnosed of rheumatoid arthritis by haematological examinations^[9] and diagnostic criteria^[10] for rheumatoid arthritis.

The study was done on patients of rheumatoid arthritis with the aim to evaluate the effect of *Dhanyamla Parisheka* in rheumatoid arthritis under the consideration of correlation to *Amavata*.

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MATERIALS AND METHODS

Source of the data

In the study, 50 patients diagnosed as Rheumatoid arthritis were taken from IPD/OPD of Shri Dharmasthala Manjunatheswara Ayurveda Hospital, Udupi.

Method of collection of the data

Screening

Subjects screened at outpatient department of *Panchakarma* in Shri Dharmasthala Manjunatheswara Ayurveda Hospital, Udupi.

Diagnostic criteria

1987 ACR Revised criteria

- Morning stiffness in and around joints for at least 1 hour.
- Soft tissue joint swelling observed by physician at least 3 joint groups (R or L: MCP, PIP, wrist, elbow, knee, ankle, MTP).
- Arthritis of hand joints (MCP, PIP or wrist).
- Symmetrical swelling of one joint area in (2) above.
- Rheumatoid nodule.
- Positive Serum Rheumatoid factor.
- Radiograph changes on wrist/hands: erosions or juxta-articular osteoporosis.
- For classification purposes, a patient shall be said to have rheumatoid arthritis if he/she has satisfied at least four of these seven criteria. Criteria 1 through 4 must have been present for at least 6 weeks. Patients with two clinical diagnoses are not excluded. Radiograph is not taken if first four criteria's are present.

Inclusion criteria

- Diagnosed cases of Rheumatoid arthritis
- Patients aged between 18-70 years.
- Patients consenting to undergo the procedure for a period of 7 days.

Exclusion criteria

- Patients with systemic illness.
- All connective tissue disorders other than Rheumatoid arthritis.
- Patients not consenting for In Patient admission and follow-up consultation.

Ethical clearance and CTRI registration

- Ethics clearance certificate was obtained from institutional ethics committee.
- Trial was registered and completed in www.ctri.gov.in under CTRI no. CTRI/2021/04/042426

Sample size

- 50 patients diagnosed of Rheumatoid Arthritis were selected.
- A detailed proforma prepared considering the points pertaining to signs, symptoms and examinations as for Rheumatoid arthritis to confirm the diagnosis.

Study design

This is an open label clinical study with pre-test and post-test design where in 50 patients diagnosed of Rheumatoid Arthritis of either gender was selected based on diagnostic and inclusion criteria.

Interventions

Poorva Karma

- Erythrocyte sedimentation rate, Rheumatoid factor, C-reactive proteins and Anti Streptolysin – O titre will be checked prior to treatment as per requirement.
- Patient made to lie down in supine position on the *Dhroni*.
- Gauze tied around the head in order to cover the eyes.
- Ears should be plugged with gauze.
- Patient is explained the procedure and instructed duration of procedure and not to sleep during the procedure.

Pradhana Karma

- Warm *Dhanyamla* is poured with *Khindi* by two masseurs on either side of the *Dhroni*.
- Temperature of *Dhanyamla* should be around 42°C.
- Parisheka* should be at a medium pace and from a height of 6-12 cm for a duration of 30 minutes.
- Fresh *Dhanyamla* used everyday from the *Dhanyamla* instrument at Shri Dharmasthala Manjunatheshwara Ayurvedic Hospital, Panchakarma Department, Udupi.
- Swedana*: *Dhanyamla Parisheka* was done for 7 days. *Swedana* was assessed based on *Samyak Swinna Lakshanas* such as *Sweda Pradhurbhava*, *Sheetha Vyuparama*, *Shoola Vyuparama*, *Sthamba Nigraha*, *Gaurava Nigraha*, *Mardavata* of *Twacha*.

Paschat Karma

- Rub the *Dhanyamla* on body with soft cloth after treatment.
- Cover body with clothes soon after.
- Parameters: Pain, Swelling, Stiffness, Tenderness and range of movement of multiple joints recorded after treatment period.
- Erythrocyte sedimentation rate, Rheumatoid factor, C-reactive proteins and Anti Streptolysin – O titre will be checked after follow-up treatment.

RESULTS

Symptomatic variables were observed before and after treatment

Table 1: Mean before treatment and after treatment of symptomatic variables.

SN	Symptomatic variables	Before treatment (Mean)	After treatment (Mean)	Reduction Percentage
1.	Pain	6.2	2.1	66.12%
2.	Swelling	0.82	0.2	77.5%
3.	Tenderness	0.8	0.3	62.5%

4.	Morning stiffness	3.2	0.86	73.125%
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The mean and reduction percentage shows gross reduction in the symptomatic variables considered, which are also practically major hurdle in ayurvedic management of rheumatoid arthritis. Pain variable mean difference between mean before treatment and after treatment showed 66.12% reduction. Swelling variable mean difference before and after treatment showed 77.5% reduction. Tenderness in multiple joints variable mean difference before and after treatment showed 62.5% reduction. Morning stiffness in multiple joints variable mean difference before and after treatment showed 73.125% reduction in symptoms.

Table 2: Statistical analysis of symptom parameters in subjects.

Parameter	Negative ranks			Positive Ranks			Tie	Z value	P value	Interpretation
	N	M	S	N	M	SR				
Pain BT-AT	_____			4	25	12	1	-	0.00	Highly significant
Swelling BT-AT	_____			2	14	40	2	-	0.00	Highly significant
Tenderness BT-AT	_____			2	11	25	2	-	0.00	Highly significant
Morning stiffness BT-AT	_____			4	24	11	3	-	0.00	Highly significant

1. Pain

The results for the parameter of pain shows highly significant interpretation ($p < 0.00$) with wilcoxon

signed rank test – Z value (-6.165). *Dhanyamla Parisheka Swedana* showed significant reduction in pain in multiple joints of the body.

2. Swelling

The results for the parameter of swelling shows highly significant interpretation ($p < 0.00$) with wilcoxon signed rank test – Z value (-5.209). *Dhanyamla Parisheka Swedana* showed significant reduction in swelling in multiple joints of the body.

3. Tenderness

The results for the parameter of tenderness shows highly significant interpretation ($p < 0.00$) with wilcoxon signed rank test – Z value (-4.690). *Dhanyamla Parisheka Swedana* showed significant reduction in tenderness in multiple joints of the body.

4. Morning stiffness

The results for the parameter of swelling shows highly significant interpretation ($p < 0.00$) with wilcoxon signed rank test – Z value (-6.009). *Dhanyamla Parisheka Swedana* showed significant reduction in Morning stiffness in multiple joints of the body.

Haematological variables were observed before treatment and after follow-up

Table 6: Mean before treatment and after follow-up of haematological variables

SN	Haematological variables	Before treatment (mean)	After treatment (mean)	Reduction percentage
1.	RA Factor	76.4960	31.364	58.99%
2.	ESR	70.84	52.40	26.03%
3.	CRP	28.88	6.932	75.99%
4.	ASO Titre	155.65	105.36	32.30%

The mean of haematological values before and after follow-up of treatment showed gross reduction of values. The rheumatoid arthritis factor values reduction between before treatment and after follow-up is 58.99%. The Erythrocyte sedimentation rate values reduction between before and after follow-up is 26.03%. The C Reactive protein values reduction between before and after follow-up is 75.99%. The Anti

Streptolysin O titre values reduction between before and after follow-up is 32.30%.

1. RA factor

The results for the haematological parameter of RA factor shows highly significant interpretation ($p < 0.00$) with Paired t test – t value (6.909). *Dhanyamla Parisheka Swedana* showed significant reduction in RA factor.

2. Erythrocyte sedimentation rate

The results for the haematological parameter of Erythrocyte sedimentation rate shows highly significant interpretation ($p < 0.00$) with Paired t test – t value (4.551). *Dhanyamla Parisheka Swedana* showed significant reduction in Erythrocyte sedimentation rate.

3. C-Reactive proteins

The results for the haematological parameter of C reactive proteins shows highly significant interpretation ($p < 0.00$) with Paired t test – t value (5.052). *Dhanyamla Parisheka Swedana* showed significant reduction in C reactive proteins.

4. Anti streptolysin – O titre

The results for the haematological parameter of Anti streptolysin-o titre shows significant interpretation ($p < 0.05$) with Paired t test – t value (6.909). *Dhanyamla Parisheka Swedana* showed significant reduction in Anti streptolysin-o titre.

Rheumatoid scoring based on 1987 ACR criteria

RA score above or equal to 6 is considered definite Rheumatoid arthritis subject. The mean shows gross reduction from definite RA 8.6 to non RA 4.8 by the end of course of treatment and follow up.

Table 12: Statistical analysis of RA score before treatment and after follow up.

Parameter	Negative ranks			Positive Ranks			Tie	Z value	P value	Interpretation
	N	M	S	N	MR	SR				
RA Score	4	22	9	4	50	9	6	-5.841	0.00	Highly significant

BT - AFU									
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The results for the parameter of RA score shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test – z value (-5.841). *Dhanyamla Parisheka Swedana* showed highly significant reduction in RA score.

Table 7: Statistical analysis of Haematological values before treatment and after follow-up.

Parameters	Mean	N	SD	SEM	Mean difference	%	T	P value	Interpretation
RA factor before treatment	76.496	50	58.19	8.22	45.132	58.99%	6.909	0.000	Highly significant
RA factor after treatment	31.364	50	34.93	4.94					
ESR factor before treatment	70.84	50	35.40	5.00	18.44	26.03%	4.551	0.000	Highly significant
ESR factor after treatment	52.40	50	29.53	4.17					

CRP before treatment	28.88	50	36.060	5.09	21.95	75.99%	5.052	0.000	Highly significant
CRP after treatment	6.93	50	12.444	1.759					
ASO titre before treatment	155.65	50	268.07	37.91	50.29	32.30%	2.072	0.044	Significant
ASO titre after treatment	105.36	50	217.17	30.71					

Range of movement

Range of movement reduction of more than 50% of normal range of movement considered abnormal in the study. The following joints assessed at before treatment and after course of treatment with the help of goniometer. Following are the joints with their respective normal range of movement (flexion):

1. Lumbar spine (60°)
2. Cervical spine (90°)
3. Hip joint (125°)
4. Shoulder joint (180°)
5. Knee joint (135°)
6. Ankle joint (15°)
7. Elbow joint (130°)
8. Wrist joint (70°)
9. Metacarpophalangeal joints (90°)
10. Metatarsophalangeal joints (70°)

1) Lumbar spine

The results for the parameter of Range of movement of Lumbar spine (low back) shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test - z value (-4.000). *Dhanyamla Parisheka Swedana* showed highly significant improvement in range of movement of lumbar spine.

2) Cervical spine

The results for the parameter of Range of movement of cervical spine (neck) shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test - z value (-3.162). *Dhanyamla Parisheka Swedana* showed highly significant improvement in range of movement of cervical spine (neck).

3) Shoulder joint

The results for the parameter of Range of movement of shoulder joint shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test - z value (-5.477). *Dhanyamla Parisheka Swedana* showed highly significant improvement in range of movement of Shoulder joint.

4) Hip joint

The results for the parameter of Range of movement of Hip joint shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test - z value (-4.000). *Dhanyamla Parisheka Swedana* showed highly significant improvement in range of movement of Hip joint.

5) Knee joint

The results for the parameter of Range of movement of Knee joint shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test - z value (-4.025). *Dhanyamla Parisheka Swedana* showed highly significant improvement in range of movement of Knee joint.

6) Elbow joint

The results for the parameter of Range of movement of elbow joint shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test - z value (-5.292). *Dhanyamla Parisheka Swedana* showed highly

significant improvement in range of movement of Elbow joint.

7) Ankle joint

The results for the parameter of Range of movement of Ankle joint shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test - z value (-3.162). *Dhanyamla Parisheka Swedana* showed highly significant improvement in range of movement of Ankle joint.

8) Wrist joint

The results for the parameter of Range of movement of wrist joint shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test - z value (-5.385). *Dhanyamla Parisheka Swedana* showed highly significant improvement in range of movement of wrist joint.

Meta carpopalangeal joints

The results for the parameter of Range of movement of Metacarpophalangeal joints (first digit) shows highly significant interpretation ($p < 0.00$) with Wilcoxon signed rank test - z value (-5.196). *Dhanyamla Parisheka Swedana* showed highly significant improvement in range of movement of Meta carpopalangeal joints.

9) Meta tarsophalangeal joints

The results for the parameter of Range of movement of Meta tarsophalangeal joints shows highly significant interpretation ($p < 0.05$) with Wilcoxon signed rank test - z value (-2.828). *Dhanyamla Parisheka Swedana* showed significant improvement in range of movement of Meta tarsophalangeal joints.

Table 13: Statistical analysis of range of movement.

Parameter	Negative ranks			Positive Ranks			Tie	Z value	P value	Interpretation
	N	MR	SR	N	MR	SR				
Range of movement -				16	8.5	136	34	-4.000	0.000	Highly significant

Lumbar spine										
Range of movement – Cervical spine	_____	10	5.5	55	40	-3.162	0.00		Highly significant	
Range of movement- Shoulder joint	_____	30	15.50	465	20	-5.477	0.00		Highly significant	
Range of movement- Hip joint	_____	16	8.5	136	34	-4.000	0.00		Highly significant	
Range of movement- Knee joint	1 10.5 10.5	19	10.50	195	30	-4.025	0.00		Highly significant	
Range of movement- Elbow joint	_____	28	14.50	406	22	-5.292	0.00		Highly significant	
Range of movement- Ankl	_____	26	13.50	351	24	-3.162	0.00		Highly significant	

e joint									
Range of movement- Wrist joint	_____	29	15	435	21	-5.385	0.00		Highly significant
Range of movement- Metacarpophalangeal joints	_____	27	14	378	23	-5.196	0.00		Highly significant
Range of movement- Metatarsophalangeal joints	_____	8	4.5	36	42	-2.828	0.005		Significant

DISCUSSION

The assessment of *Dhanyamla Parisheka Swedana* is based on *Samyak Swinna Lakshanas*,^[11] its effect in rheumatoid arthritis is evaluated by the parameters of pain, stiffness, swelling, tenderness and range of movement in multiple joints and haematological parameters such as Erythrocyte sedimentation rate, Rheumatoid arthritis factor, C reactive proteins and Anti Streptolysin – O titre.

Rheumatoid arthritis is a chronic inflammatory^[12] disease with probable autoimmune origin, presents with symptoms such as morning stiffness, pain, swelling, tenderness and reduced range of movement in multiple joints. These symptoms mostly correlate with symptoms of *Amavata*. *Swedana* is of two types

Rooksha and Snigdha types.^[13] In case of *Amavata*, *Rooksha Sweda* is the choice of *Swedana*.^[14]

Parisheka Sweda comes under *Drava Sweda* according to *Sushruta Samhitha* where its told to be useful in *Pittotkrushta Avastha* thus considered useful in inflammatory condition, *Dhanyamla* is the drug used for *Parisheka Sweda* which by nature is *Ushna Rooksha* thus causing *Vata Kaphahara*^[15] action and also effective *Amahara*. In whole the *Swedana* action of bringing *Dosha* back from *Shaakha* to *Koshta*. This may be the reason for evident reduction in symptoms of pain, swelling, morning stiffness, tenderness and improved range of movement in multiple joints.

Though we find significant reduction in haematological values, we cannot attribute it singly to *Dhanyamla Parisheka Swedana* treatment.

CONCLUSION

Amavata is a *Vyadhi* where *Kapha* and *Vata* are predominantly involved. In *Amavata* mainly *Kapha Sthana* like *Sandhi* is affected. *Rooksha Swedana* is considered as the prime *Bahirparimarjana Chikitsa* for *Amavata*. *Dhanyamla Parisheka* is one such *Rooksha Swedana* procedure.

The present study aimed to evaluate effect of *Dhanyamla Parisheka* in Rheumatoid arthritis, which was performed keeping in mind most patients struggle to perform daily activities due to the disorder. Patients require symptomatic relief for better compliability in taking treatments and performing daily activities that the *Panchakarma* procedure of *Dhanyamla Parisheka* for 7 days suffices as per the relief in symptomatic variables. This can have significant improvement on regular follow-up and prompt treatment in a chronic disorder. The symptomatic parameters show improvement subjectively and statistically as well without causing any adverse effects. Further scope of research can be towards multicentre study of the same with greater sample size.

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