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A Comparative Clinical Study of *Yogabasti* with *Dhanwantaram Taila, Dashamooladi Kwatha* and *Trayodasanga Guggulu* in the Management of *Gridhrasi* with special reference to Lumbar Radiculopathy

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ABSTRACT

Pain in the low back is an often encountered musculoskeletal disorder in clinical practice. It is one of the primary reasons for disability in the developed and developing world and accounts for billions of dollars in healthcare costs annually. Different epidemiological studies show various degrees of incidence of pain in the low back region. However, it is found to be anywhere between 5% to more than 30% with a lifetime prevalence of 60% to 90%. Occurrence of pain in the low back is mostly self limited and restore without intervention. Approximately 50% of cases will restore within one to two weeks and, 90% of cases will resolve in 6 to 12 weeks. A pain of radiating nature associated with other symptoms is radiculopathy. It is a very painful condition and it happens due to the compression or inflammation of spinal nerves. Lumbo-sacral radiculopathy is a term used for describing a pain syndrome caused by compression, impingement or irritation of spinal nerve roots in the lumbo-sacral area. Here, the impinged nerve gives pain, numbness, weakness and tingling sensation. In the present day to-day life, a packed schedule in work and social parts of life exerts us continuously and extensively. Effects of sitting for long hours in bad postures coupled with travelling in bumpy roads and sports activities create undue pressure over the spine, which ultimately puts pressure over lumbo-sacral area due to its anatomic lordotic curvature. *Gridhrasi* is a *vedana* or *shula pradhana vatavydhi*. Due to this intense pain the way the patient walks or his/her gait also changes. It interferes with the functional ability of low back and lower limbs. Sciatica commonly has a 13 percentage to 40 percentage of incidence in one's life time. However, annually in Sciatica patients episodic incidence varies anywhere between 1 to 6 percentage. The utility of *Basti chikitsa* is well praised by different *acharyas* for advocating *gridhrasi's* cure. *Basti* which includes both *nirooha* and *anuvasana* are having definite properties and action for the alleviation of *vata*. As *gridhrasi* is *vata pradhana vyadhi*, *Yoga Basti* will help to manage the disease effectively.

KEYWORDS Low back pain, Lumbo-sacral radiculopathy, *Gridhrasi*, *Yoga Basti*, *Vatavydhi*

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INTRODUCTION

The back is a complex structure serving weight bearing and locomotor functions. It provides major support of body structures and transmission of loading forces through the sacroiliac joints to the legs.

The functional unit of lumbo-sacral area is composed of two zygophyseal joints and intervertebral disc which are respectively present posteriorly and anteriorly. The disc has 2 two parts, annulus fibrosus externally and, nucleous pulposus internally. All these structures are found in a network and stabilized throughout the spine by ligaments[1].

Due to radiculopathy most of the persons miss workdays and it is one of the cause for the impairment. Lumbar radiculopathy is the fifth common most reason for physician visits, which affects nearly 60%-80% of people throughout their life time.

Low back pain is one of the major musculoskeletal disorders, which has plagued humans since we emerged from the quadruped to the upright bipedal position. [2].

The disease *gridhrasi*, is described under the heading of *vatavyadhi*. The disease is named because of the typical walking style of the patient, which resembles with the bird vulture that is legs become stiff and slightly curved towards the normal side. The disease is listed under the heading of *nanatmaja vatavyadhi.* This disease develops due to aggravation and vitiation of *vata* only. i.e. *nanatmaja vatavyadhi*. Still while mentioning the diseases, the disease *gridhrasi* has been classified into two types 1. *Vata* dominant 2. *Vata-kapha* dominant[3,9].

As per the different concept of Ayurveda, due to more intake of *vata vardhaka ahara, vihara*, *vata* gets vitiated and this vitiated *vata* alone or *vata* with kapha gets seated over *gridhrasi nadi* subsequently it causes a disease named as *gridhrasi*. *Gridhrasi* is such a *ruja pradhana vatavyadhi*. In *gridhrasi* severe shooting and radiating pain characteristically radiates from *sphika* (gluteal region), *kati pradesha* (lumbo-sacral area) to *pada* (foot)[4,5].

AIMS AND OBJECTIVES

- To assess the efficacy of *yogavasti* with *Dhanwantara taila* and *dasamuladi kwatha* in the treatment of *gridhrasi*.
- To assess the efficacy of *yogavasti* with *Dhanwantara taila* and *Dasamuladi kwatha* and *Trayodasanga guggulu* in the treatment of *gridhrasi*.
- Comparative evaluation of *yogabasti* alone and *yogabasti* with *trayodasanga guggulu* in the treatment of *gridhrasi*.

- To study the etiopathogenesis of *gridhrasi* with relation to lumbo-sacral radiculopathy.

PLAN OF STUDY:

After clinical diagnosis, total 100 patients of *gridhrasi* were aimlessly divided into two groups of 50 patients each.

Group-A	*Yoga basti*
Group-B	*Yoga basti* and *Trayodashanga guggulu*

Yoga *basti* was performed as per the textual reference i.e., 7 days of abhyanga and nadisweda followed by anuvasana vasti (5) and niruha *basti* (3).

MATERIALS AND METHODS

BRIEF RESEARCH PLAN

- Type of study-Interventional
- Purpose-treatment
- Masking-open label, randomized
- Control-not controlled
- Timing-prospective
- End point-clinical safety
- No. of Groups-Two
- Sample size-100 patients (50 patients in each group**)**

Treatment Period - 15 days

Patients of *gridhrasi* consulting the Out-Patient Department and In-Patient Department of *Kayachikitsa* department of SJSAC&H , Chennai were selected. Criteria for diagnosis were evaluated on the basis of clinical presentations i.e. signs and symptoms described in the Ayurvedic and modern text with the following criteria.

1. Presence of *stambha(stiffness), ruk(pain), toda(numbness),* and *spandana(tingling sensation)* in the *sphik(gluteal region), kati(lumbo-sacral area), uru(thigh), janu(popliteal fossa), jangha(calf muscle)* and *pada(plantar region).*
2. Pain along the distribution of sciatic nerve.
3. Routine clinical tests like SLR, EHL, FHL, ankle jerk, sensory test and slump test were carried out.
4. Adults of either sex, aged above 18 years and below 60 years with intense or lingering low back pain with the classical features of *gridhrasi* were included.

Routine hematological tests like Hb%, TLC, DC, Erythrocyte SedimentationRate, performed to exclude the possibility of any other disease and for the differential diagnosis of other related orthopedic disorders also.

Inclusion criteria

- Diagnosed case of vataja/ *vatakaphaja gridhrasi.*
- Patients between 18-60 years of either male/female/third gender.
- Duration of less than three years and without any physical deformity.
- Pain along the distribution of sciatic nerve

Exclusion criteria

Contra-indicated cases for ***basti chikitsa*.**

- Surgical indicaitons where neurological defects are present.
- Fractures of pelvis and femur
- Post spinal surgery
- Inflammatory spine diseases
- Pregnancy
- Renal failure
- Cardiac failure
- Malignancies
- Type I diabete Mellitus
- 'tuberculosis of spine
- Piriformis syndrome
- Neoplasms of spine

POSOLOGY:

GROUP-A

50 patients were received *yogavasti* which includes 7 days of *snehana* with *Dhanwantari taila* and *swedana karma* was carried out with *nadi sweda.*

After that procedures of *yogavasti* was executed. *Anuvasana vasti* with *Dhanwantari taila* was given on 8^{th}, 9^{th}, 11^{th}, 13^{th} and 15^{th} day. *Niruha basti* with *dasamuladi kwatha* was given on 10^{th}, 12^{th} and 14^{th} day.

GROUP-B

All the 50 patients were managed with *trayodasanga guggulu* with above mentioned procedures which was followed for group – A

Trayodasanga guggulu 1000 mg/day (2 tablets twice a day – 1 tablet=250 mg each for a period of 15 days)

ROLAND MORRIS DISABILITY QUESTIONNAIRE:

Roland Morris disability questionnaire (RMDQ) was first published in 1983; it is drafted to assess self-related physical derangements caused due to low back pain. The RMDQ is most applicable to patients suffering from mild to moderate disability due to intense or lingering low back pain. In total, 24 questionnaires are available. The patient is instructed to select a statement which applies to him/her on that particular day which makes the follow up possible.

ABERDEEN BACK PAIN SCALE:

Aberdeen low back pain disability scale is a self filled, disease exclusive questionnaire to measure results in patients with low back pain. The scale comprises 19 criteria of how the pain affects daily activities such as those related to personal care, walking, sitting, standing, exercising, household work, resting, bending and sleep. It contains questions on pain relieving factors, pain aggravating factors, distribution of symptoms and the influence of pain on function. Each question has multiple responses and every response has a scale of points ranging from 0 to 5. The minimum and maximum possible outcome score ranges from 0 to 100. Higher grades of

Aberdeen Back pain Scale suggests better health.

IMPORTANCE OF BASTI:

LOCAL EFFECT:

Basti which was administered through the anal route subsequently reached into the *pakwasaya* and evacuates the faecal matter, gas and flatulence accumulated over there. This is the local action of *basti* by which it removes *mala* and *apanavayu*. In this process all the *dosas*, i.e. *vata, pitta and kapha* are expelled from anal canal, which is the seat of *apana vayu*, and *basti* pacifies *aggravated vayu*. It also establishes physiological equilibrium of the three *dosas*[7,8].

SYSTEMIC EFFECT:

The *basti* which is administered via the anus goes to the organs of lower abdomen i.e., sigmoid colon and descending colon. *Basti* acts on the aggravated *dosas* which are already clinging *at kati, prustha* and *kostha*. By this all the three *dosas* have maintained equilibrium mainly vata dosa which is the primary factor for the genesis of *gridhrasi.*

All these benefits of *basti* are attained by its *vata* alleviating property. Basti is considered to be the front runner among the *panchakarmas* in relation to the treatment of *vatavyadhis* and it is mentioned as *Ardhachikitsa* among the treatments for *vata vyadhis* (diseases caused by the aggravation of vata). The *basti, which was* administered in the anal canal and subsequently *basti dravyas* reached in the site of action i.e. *pakwasaya* and established its benefits on the mind the whole body.[6]

DRUG REVIEW:

Tayodasanga Guggulu is selected as it is useful for Gridhrasi. This is described in the chapter of *Vatavyadhi chikitsa* of *Bhaisajya Ratnavalli*. This drug is helpful not only for *Gridhrasi*, but also *for Katigraha, Hanugraha, Janushula,Asthisandhishula, Bahu,Pristhashula, Hridgraha, Yonidusha, Asthibhanga and Khanjavata. Trayodashang Guggulu* (also spelled as *trayodasanga guggul*) is a *guggulu* based herbal formulation. It strengthens the nerves, bones, joints, muscles and ligaments. It is effective in all types of diseases related to nervous system and musculoskeletal system[11].

Ingredients in *Dasamula Kashayam* pacify *Kapha* and *Vata* Aggravation but may aggravate *Pitta Dosha*[11].

Dhanwantaram taila pacifies *Vata A*ggravation and acts as a nervine tonic, neuroprotective, analgesic, anti-inflammatory, anti-arthritic and Anti-paralytic. Its oral intake helps in treating a wide range of neurological disorders and diseases of the musculoskeletal system. Internal use of *Dhanwantaram taila* acts on

the nerves, muscles, bones, joints, ligaments, tendons and connective tissues and its external application provides a sense of relief in pain, numbness, and swelling. It provides strength to the muscles and joints[12]

STUDY DESIGN:

Total 100 patients were selected randomly from the Out-Patient and In-Patient Departments of Sri Jayendra Saraswathi Ayurveda College & Hospital with above mentioned inclusion and exclusion criteria and they were separated into 2 categories of 50 patients each. *Prakriti* analysis was done for each patient before the trial. It was an open clinical trial of 100 patients of either sex, aged above 18yrs and below 60 years with history of intense or lingering low back pain associated with radiating pain.

Group-A were subjected to *abhyanga* with *dhanwantaram taila* and *yoga basti* by administering *dhanwantaram taila and dasamuladi kwatha.*

Group-B were subjected to *trayodasanga guggulu* and of *yoga basti* by administrating *dhanwantaram taila and dasamuladi kwatha*

Panchakarma Treatment Schedule for GROUP-A &GROUP-B

DAY	PROCEDURE
1st DAY	*ABHYANGA,NADISWEDA*
2nd DAY	*ABHYANGA,NADISWEDA*
3rd DAY	*ABHYANGA,NADISWEDA*
4th DAY	*ABHYANGA,NADISWEDA*
5th DAY	*ABHYANGA,NADISWEDA*
6th DAY	*ABHYANGA,NADISWEDA*
7th DAY	*ABHYANGA,NADISWEDA*
8th DAY	*SNEHA BASTI*
9th DAY	*SNEHA BASTI*
10th DAY	*NIRUHA BASTI*
11th DAY	*SNEHA BASTI*
12th DAY	*NIRUHA BASTI*
13th DAY	*SNEHA BASTI*
14th DAY	*NIRUHA BASTI*
15th DAY	*SNEHA BASTI*

CRITERIA FOR ASSESSMENT:-

Before admission all patients were examined and assessed. The changes were observed in signs and symptoms by using proper clinical methods.The scores given to each clinical feature and clinical test is illustrated below.

SUBJECTIVE PARAMETERS

***STAMBHA*(stiffness):-**

No stiffness	**0**
Occasionally for 5-10 minutes	**1**
Every day for 10-30 minutes	**2**
Every day for 30-60 minutes	**3**
Every day for more than 1 hour	**4**

RUK

No pain	**0**
Occasional pain	**1**
Mild pain(but no difficulty in walking)	**2**
Moderate pain (slight difficulty in walking)	**3**
Severe pain(severe pain during walking)	**4**

***TODA*(pricking sensation):-**

Absent	**0**
Occasional pricking sensation	**1**
Mild degree of pricking sensation	**2**
Moderate degree of pricking sensation	**3**
Severe degree of pricking sensation	**4**

***SPANDANA*(twitching pain):-**

No spandana	**0**
Occasionally for 5-10 minutes	**1**
Every day for 10-30 minutes	**2**
Every day for 30-60 minutes	**3**
Every day for more than 1 hour	**4**

OBJECTIVE PARAMETERS

WALKING TIME – To cover 21 meters

Grades	Time
Grade 0	0 to 20 seconds
Grade 1	Up to 21-30 seconds
Grade 2	Up to 31-40 seconds.
Grade 3	Up to 41-50 seconds.
Grade 4	Up to 51-60 seconds.

VISUAL ANALOGUE SCALE:-

0	1	2	3	4	5	6	7	8	9	10

GRADE	SCORE
Grade 0	0
Grade 1	1-2
Grade 2	3-4
Grade 3	5-6
Grade 4	7-8
Grade 5	9-10

STRAIGHT LEG RAISING TEST (SLR)

RANGE OF MOVEMENT	GRADE
0 Degree-30 Degrees	3
30 Degrees-60	2
> 60 Degrees<70 Degrees	1
>70 Degrees Or Negative	0

EXTENSOR HALLUCIS LONGUS POWER TEST

Description	GRADE
Movement possible against some resistance by the physician (sometimes this is further subdivided into 4^-/5, 4/5, and 4^+/5)	4
Movement possible against force of gravity, but not against resistance given by the physician	3
Movement possible, but not against the force of gravity (the joint is tested in the horizontal plane)	2
Flickering of muscles , but movement is not there	1
No contraction	0

FLEXOR HALLUCIS LONGUS POWER TEST

Description	GRADE
Movement possible against minimal resistance by the physician (sometimes further subdivided into 4^-/5, 4/5, and 4^+/5)	4
Movement possible against the force of gravity, but not against resistance offered by the physician	3
Movement is possible, but not against the force of gravity (the joint is tested in the horizontal plane)	2
Flickering of muscles is present, but movement is not seen	1
No contraction	0

SENSORY LOSS

Description	GRADE
Anaesthesia and numbness in the affected leg	4
Paraesthesia and numbness in the affected leg	3
Hyposthesia and numbness in the affected leg	2
Hyposthesia and numbness of the affected leg only a localized area	1
No sensory deficit seen	0

OBSERVATIONS

With reference to Table no.1 and Table no.2 following points are observed and summarized below.

- *Stambha* – Before treatment in Group-A the mean was 3.34 and after treatment mean was 0.38, reduction percentage was 88.6, significant at the point of <0.0001. In Group-B before treatment the mean was 3.60 and after treatment mean was 0.24, reduction percentage was 93.3, which was highly significant at the point of <0.0001.
- *Ruk* – Before treatment in Group-A the mean was 3.64 and after treatment mean was 0.5, reduction percentage was 86.2, significant at the point of <0.0001. In Group-B before treatment the mean was 3.64 and after treatment mean was 0.2, eduction percentage was 94.5, which was highly significant at the point of <0.0001.

ASSESSMENT PARAMETERS:

For clinical assessment the Roland-Morris low back pain and disability questionnaire & Aberdeen back pain scale is taken as reference for the result and analysis.

Table 1 Statistics showing the result of GROUP-A

Sl .No	Symptoms	Mean		Mean Difference	Df	S.D	.E.M	T	p	Remarks
		B.T	A.T							
1.	Stambha	3.34	.38	2.960	49	.880	.124	23.793	.000	extremely significant
2.	Ruk	3.64	.5	3.140	49	.729	.103	30.469	.000	extremely significant
3.	Toda	3.74	.52	3.220	49	.708	.100	32.148	.000	extremely significant
4.	Spandana	3.70	.66	3.040	49	.755	.107	28.477	.000	extremely significant
5.	Walking time	1.60	3.30	-1.700	49	.886	.125	-13.561	.000	extremely significant
6.	Visual analogue scale	4.06	.98	3.080	49	.877	.124	24.836	.000	extremely significant
7.	Movement of lumbar spine	2.36	3.66	-1.3	49	.839	.119	-10.955	.000	extremely significant
8.	SLR	2.48	.32	2.160	49	.792	.112	19.290	.000	extremely significant
9.	EHL	2.28	3.06	-.780	49	.954	.135	-5.782	.000	extremely significant
10.	FHL	1.38	2.92	-1.540	49	.646	.091	-16.868	.000	extremely significant
11.	Sensory loss	2.56	.30	2.260	49	.694	.098	23.017	.000	extremely significant
12.	RMDQ	12.4	7.4	5.000	49	1.738	.246	20.343	.000	extremely significant
13.	ABPS	41.12	25.7	15.420	49	4.682	.662	23.288	.000	extremely significant
14.	Hb%	13.06	13.07	-.014	49	.04046	.00572	-2.447	.018	significant
15.	TLC	7366	7420	-54	49	118.16	16.711	-3.231	.002	very significant
16.	ESR	13.9	13.52	.380	49	1.727	.174	2.190	.033	significant
17.	FBS	86.44	88.28	-1.840	49	3.976	.562	-3.272	.002	very significant
18.	PPBS	112.04	108.44	3.6	49	16.650	2.355	1.529	.133	not significant

ABBREVIATIONS USED:
1. SLR-Straight Leg Raising test 2.EHL-Extensor Halluces Longus 3. FHL- Flexor Halluces Longus, 4.Hb – Haemoglobin, 5. RMDQ- **Roland Morris Disability Questionnaire, 6.** ABPS- **Aberdeen Back Pain Scale,** 7.TLC- Total Leukocyte Count, 8.ESR- Erythrocyte Sedimentation Rate, 9.FBS-Fasting Blood Sugar, 10.PPBS – Post-Prandial Blood Sugar

- Toda – Before treatment in Group-A the mean was 3.74 and after treatment mean was 0.52, reduction percentage was 86.09, significant at the point of <0.0001. In Group-B before treatment the mean was 3.70and after treatment mean was 0.32, reduction percentage was 91.3 , which was highly significant at the point of <0.0001 .

Table 2 Statistics showing the result of GROUP-B

Sl .No	Symptoms	Mean		Mean Difference	Df	S.D	S.E. M	T	p	Remarks
		B.T	A.T							
1.	Stambha	3.60	.24	3.360	49	.693	.098	34.293	.000	extremely significant
2.	Ruk	3.64	.20	3.440	49	.644	.091	37.773	.000	extremely significant
3.	Toda	3.70	.32	3.380	49	.667	.094	35.848	.000	extremely significant
4.	Spandana	3.72	.38	3.340	49	.688	.097	34.308	.000	extremely significant
5.	Walking time	1.40	3.08	-1.680	49	.621	.088	-19.138	.000	extremely significant
6.	Visual analogue scale	3.74	.44	3.300	49	.789	.112	29.577	.000	extremely significant
7.	Movement of lumbar spine	1.64	4.58	-2.940	49	.818	.116	-25.402	.000	extremely significant
8.	Slr	2.46	.26	2.200	49	.833	.118	18.675	.000	extremely significant
9.	Ehl	2.26	3.28	-1.020	49	.979	.138	-7.366	.000	extremely significant
10.	Fhl	1.42	3.16	-1.740	49	.853	.121	-14.431	.000	extremely significant
11.	Sensory loss	2.86	.28	2.580	49	.906	.128	20.146	.000	extremely significant
12.	RMDQ	12.5	3.44	9.060	49	1.812	.256	35.362	.000	extremely significant
13.	ABPS	40.04	13.92	26.120	49	6.684	.945	27.632	.000	extremely significant
14.	Hb%	13.138	13.1744	-.036	49	.10645	.015	-2.391	.021	significant
15.	TLC	7132	7152	-20	49	137.024	19.3	-1.032	.307	not significant
16.	ESR	13.86	11.98	1.880	49	1.848	.261	7.195	.000	extremely significant
17.	FBS	86.40	85.84	.560	49	1.656	.234	2.392	.021	significant
18.	PPBS	110.60	108.96	1.640	49	4.154	.587	2.792	.007	very significant

- *Spandan* – Before treatment in Group-A the mean was 3.70 and after treatment mean was 0.66, reduction percentage was 82.1, significant at the point of <0.0001. In Group-B before treatment the mean was 3.72 and after treatment mean was 0.38, reduction percentage was 89.7, which was highly significant at the point of <0.0001

- Walking Time – Before treatment in Group-A the mean was 1.60 and after treatment mean is 3.30, reduction percentage was 51.5, significant at the point of <0.0001. In Group-B before treatment the mean was 1.40 and after treatment mean was 3.08, reduction percentage was 54.5, which was highly significant at the point of <0.0001.

- VAS – Before treatment in Group-A the mean was 4.06 and after treatment mean was 0.98, reduction percentage was 75.8, significant at the point of <0.0001. In Group-B before treatment the mean was 3.74 and after treatment mean was 0.44, reduction percentage is 88.2, which was highly significant at the point of <0.0001.
- Movement of LS spine – Before treatment in Group-A the mean was 2.36 and after treatment mean was 3.66, reduction percentage was 35.5, significant at the point of <0.0001. In Group-B before treatment the mean was 1.64 and after treatment mean was 4.58, reduction percentage was 64.1, which was highly significant at the point of <0.0001

- FHL – Before treatment in Group-A the mean was 1.38 and after treatment mean was 2.92, reduction percentage was 52.7, significant at the point of <0.0001. In Group-B before treatment the mean was 1.42 and after treatment mean was 3.16, reduction percentage was 55.06 , which was highly significant at the point of <0.0001
- Sensory loss – Before treatment in Group-A the mean was 2.56 and after treatment mean is 0.30, reduction percentage was 88.2, significant at the point of <0.0001. In Group-B before treatment the mean was 2.86 and after treatment mean was 0.28, reduction percentage is 90.2, which was highly significant at the point of <0.0001.
- SLR – Before treatment in Group-A the mean was 2.48 and after treatment mean was 0.32, reduction percentage was 87.09, significant at the point of <0.0001. In Group-B before treatment the mean was 2.46 and after treatment mean was 0.26, reduction percentage is 89.4, which was highly significant at the point of <0.0001.
- EHL – Before treatment in Group-A the mean was 2.28 and after treatment mean was 3.06, reduction percentage was 25.49, significant at the point of <0.0001. In Group-B before treatment the mean was 2.26 and after treatment mean was 3.28, reduction percentage is 31.09, which was highly significant at the point of <0.0001
- RMDQ – Before treatment in Group-A the mean was 12.4 and after treatment mean is 7.4, reduction percentage was 40.3, significant at the point of <0.0001. In Group-B before treatment the mean was 12.5 and after treatment mean was 3.44, reduction percentage was 72.4, which was highly significant at the point of <0.0001.
- ABPS – Before treatment in Group-A the mean was 41.12 and after treatment

mean was 25.7, reduction percentage was 37.5, highly significant at the point of <0.0001. In Group-B before treatment the mean was 40.04 and after treatment mean was 13.92, reduction percentage was 65.2, which was highly significant at the point of <0.0001

- Hb – Before treatment in Group-A the mean was 13.06 and after treatment mean was 13.07, reduction percentage was 0.1, not significant at the point of <0.018. In Group-B before treatment the mean was 13.138 and after treatment mean was 13.174, reduction percentage is 0.2, which was not significant at the point of <0.021
- TLC – Before treatment in Group-A the mean was 7366 and after treatment mean was 7420, reduction percentage was 0.7, not significant at the point of <0.002. In Group-B before treatment the mean was 7132 and after treatment mean was 7152 reduction percentage is 0.2 , which was not significant at the point of <0.307 .
- ESR – Before treatment in Group-A the mean was 13.9 and after treatment mean was 13.52, reduction percentage was 2.7, not significant at the point of <0.033. In Group-B before treatment the mean was 13.86 and after treatment mean was 11.98, reduction percentage was 13.5, which is highly significant at the point of <0.0001.
- FBS – Before treatment in Group-A the mean was 86.44 and after treatment mean was 88.28, reduction percentage was 2.08, not significant at the point of <0.002. In Group-B before treatment the mean was 86.40 and after treatment mean was 85.84, reduction percentage was 0.6, which was not significant at the point of <0.021.
- PPBS – Before treatment in Group-A the mean was 112.04 and after treatment mean was 108.44, reduction percentage was 3.2, not significant at the point of <0.133. In Group-B before treatment the mean was 110.60 and after treatment mean was 108.96, reduction percentage was 1.48, which was not significant at the point of <0.007.

DISCUSSION

After observing the above subjective and objective parameters, the effect of the therapy has been classified as cured, moderately responded, mild response and no response

- **Group A: -** Among 50 patients i.e.8 were not having any relief, 9 were having mild relief, 12 were having moderate relief, 14 were having marked relief and 7 patients cured from *gridhrasi.*
- **Group B: -** Among 50 patients i.e.3 were not having any relief, 10 were having

mild relief, 14 were having moderate relief, 15 were having marked relief and 8 patients cured from *gridhrasi.*

- **Overall: -** Out of 100 patients, 11 were not having any relief, 19 were having mild relief, 26 were having moderate relief, 29 were having marked relief and 15 patients cured from *gridhrasi.*

CONCLUSION

- The conclusion is an essence of whole study. The following points can be concluded based on the results, observations and through discussion in the present context.
- *Gridhrasi* is a crippling disorder commonly seen in clinical practice. *Gridhrasi* affects a large group of people of the society. It can be compared with lumbar radiculopathy described in modern medical science. Lumbar radiculopathy occurs due to the impingement or compression of sciatic nerve. Though the modern medicine has both medicinal and surgical approach towards this disease but usually, the patient suffers from recurrence, neurological deficit and also having many complications.
- *Gridhrasi* is mentioned under *nanatmaja vata vyadhis* which are 80 in number. *Vata dosha* is the primary causative factor in the formation of *gridhrasi.* Especially *vyana and apana vayu*, occasionally *kapha* is the *anubandha dosha in gridhrasi*. Observations on this study supported that most of the patients were having *vataprakopa hetus* like poor posture and unaccustomed activities.
- Observations showed a close resemblance to the epidemiology of disease in terms of age (31-50 yrs of age group) which is the *parihani kala* (Sh.pu.6/19) and *dhatukshaya* and *ativyayama* occurs which lead to aggravation of *vata* and ultimately *gridhrasi.* According to the modern science, in this age group, degenerative changes occur which initiates the compression, degeneration of the lumbo-sacral spinal segments and ultimately lumbar radiculopathy.
- To exactly evaluate the changes, one should carry out MRI, CT-scan of LS spine etc, in radiological investigation.
- Study sample should be large
- *Basti* is said to be the primary and best treatment for all types of *vataja vikaras*. *Yogabasti* which includes both *anuvasana and nirooha vasti* was selected for the management of *gridhrasi. Trayodasanga guggulu* which

is described in the *Bhaisajya Ratnavali vatavyadhi prakarana* was inferred to be very effective drug for *shamana* therapy of *gridhrasi*. *Basti* is proved as it works on *pakwashaya* which is *the utthara sthana of vata dosha*. *Basti* first works *on pakwashaya* then it shows *sarbadaihika karma* by its *virya* and expels out the vitiated *doshas*. The role of *dashamoola, dhanwantara taila and trayodasanga guggulu on vata and kaphaja anubandha gridhrasi* are established.

- There were no adverse drug reactions are not observed during the study which is really a great benefit to the patients rather than modern medical science.
- Comparison of overall effect observed in patients of both the groups showed that Group-B i.e. *trayodasanga guggulu* with *matravasti* offered better result. Though the Group-A i.e. only *shodhana* therapy showed good effect on *gridhrasi b*ut Group-B is proved better statistically and symptomatologically.
- The present study showed highly significant results but the study was conducted with *Trayodasanga guggulu* and *Yogabasti.* There are other formulations like *Mahayogaraja guggulu*, *Simhanada guggulu*, can be considered with *Karmavasti* or *Kalabasti.*
- The present thesis is presented with the hope that the observations and the results widen the scope for further research and advancement in this field of Ayurvedic medicine for the betterment of mankind.

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