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Research Article

CLINICAL STUDY ON BALA KORANDA TAILA MATRA VASTI AND ERANDASAPTAKA KASHAYA IN THE MANAGEMENT OF GRIDRASI

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ABSTRACT

Gridrasi has been explained under Vatavyadhiin number of Ayurvedic authentic texts. It resembles with Sciatica explained in modern medicine.It is a pain pre dominant common disease. Pain in the lower back that radiates towards legs and disability of moving related joints of the body are the main clinical manifestations. According to the Ayurvedic textual references BalaKorandataila(BKT) was recommended in the management of Gridasi. Erandasaptaka kashaya(ESK) is also vatashamana decoction effective in low back pains. It has virechana property as well. In Gridrasi chikitsasiddhanta, it is mentioned performing Shodhana such as Virekaprior to do the Vasti, is helpful, to get maximum benefit of Vasti. In contrast Vasti is considered as best strategy to manage Vatavyadhi. Therefore both procedural as well as the medicinal effect of Vasti should be beneficial here. ESK for 28 days along with BKT matravasti for first 14 days were used for Gridrasi patients within this study. Present study was planned to evaluate the efficacy of selected therapeutic measure regarding its pain relieving property and ability to ease the joint moving. Positive level of Straight leg raising test and vertebral column movement were assessed as objective parameters while pain, stiffness, pricking pain stretching pain, heaviness, drowsiness, etc. were evaluated as subjective parameters. Data were collected and recorded before the trial, weekly within the trial and weekly within last two weeks follows up after the trial. Number of symptoms and signs were showed significant improvement by the end of the treatment.

Keywords: Gridrasi, Sciatica, pain, joint mobility, Vireka,Vasti, Bala koranda taila, Erandasaptaka kashaya.

INTRODUCTION

Gridrasi comes under 80 nanatmajavatavyadhi which originate definitely with predominance of vata vitiation. The cardinal signs and symptoms of Gridrasi are Stamba (stiffness), Ruk (pain), Toda (pricking sensation) Muhuspanda (twitching time to time))in the spik (hip and/or buttock), kati (lumber area), Uru (thigh), janu (knee), janga (calf) and pada (foot)[1] as well as sakthiksepanigraha[2] (restricted lifting of the leg). In kaphanubandhata additionally Tandra (drowsiness), Gaurava(Heaviness), Arochaka(loss of apetite) are present[3]

According to the manifestation this resembles with Sciatica explained in modern medicine. Sciatica is a benign syndrome characterized specially by pain beginning in the lumbar region and spreading down the back of one lower limb to the ankle (Brain and Brainster's clinical neurology) along the distribution of the sciatic nerve. Anything that compress or irritates the sciatic nerve or its roots can cause radiating pain along the leg limiting the normal mobility of the joints of the leg and vertebral column in lower back. Usually the working force is affected. Daily routine and the overall life of the patient are disturbed.

The life style of the people has changed considerably with the time. As the advancement of busy professional and social life, improper sitting postures in work places, continuous and over exertion, jerky movements during travelling and other exercises etc. act as common factors, which created unnecessary pressure on the spine. This produces low back pain and its linked problems like Sciatica as most common disorder generally in most productive period of life. The disease Sciatica makes the people incapable of their daily routine due to pain. According to the journal of orthopedics, the lifetime incidence of low backache is 50%-70% with the incidence of sciatica is more than 40%[4].

Therefore It is important to find a herbal solution to relieve the pain, and restore the functional disability which given therapeutic benefits to the body avoiding the detrimental effects of the commonly used analgesics.

Ayurveda emphasized that vasti is the best strategy to manage Vata vyadhi. Sara sankshepa says the Bala koranda taila is good for Gridrasi[5]. Therefore logical inference can be drawn procedural as well as the medicinal effect of bala koranda taila vasti must have considerable effect on kevalavatavyadhi. Suppling further evidence to prove this fact Bhelasamhita mentioned Balataila as well as koranda/sahacharataila are very good in the management of Gridrasi[6].

According to the sharangadhara Erandasaptaka kashaya is an effective decoction for the ailments of lower back[7]. Erandasaptaka kashaya with its anupana has vatashamana as well as good virecana (laxative) effect. According to the Gridrasicikitsa sutra, to obtain maximum benefits of Vasti, in the management of Gridrasiis needed to performVamana or Vireka prior to the Vasti[8]. Therefore, Erandasaptaka kashaya along with bala koranda taila vasti should be more beneficial more than single use of one of them. Matravasti was selected due to its convenient usage possibility even daily. It has no strict restrictions to follow according to the differences of gender, age etc. Based on these facts Bala koranda taila matravasti along with Erandasaptaka kashaya were planned to assess in the management of gridrasi for the present study.

MATERIALS AND METHODS

The study was carried out as an open trial clinical experimental design .The patients are selected from the OPD clinics of ayurveda teaching hospital Borella and Ayurveda research institute Navinne.Non-probability sampling framework was used by drawing a convenient, purposive and snowball samples due to absence of separately listed population for Gridrasi/Sciatica in both hospitals. The total number of 30 patients, whose diagnosis is confirmed, in either sex was included in the clinical trial. The diagnosis was done with the classical symptoms with the sign named positive straight leg raising (SLR) test.ESK was prepared in the hospital pharmacy and BKT was prepared in the pharmacy of the institute of indigenous medicine with the following ingredients.

Ingredients of the Bala Koranda Taila according to Sarasankshepa

Drava part

For kashaya Bala (*Sidaalnifolia*) and Koranda (*Barleriaprionitis*)100 palam(4800g) with 64 water neli reducing upto16 neli (reducing up to ¼) (1 neliappr.=1L)

Cow's milk16neli

Oil

Sesame oil /Tilataila (Seed oil of *Sesamumindicum)* 04 neli

Kalka dravya

24 in number (23 herbs + Saindavalavana/Rock salt) ½ palam(24g) in each

In proportion kalka, oil, and drava part approximately 1:8:64 in this special oil according to the sarasankshepa deviating from usualltailaparibhasha. The normal ratio of *kalkadravya*(Paste), *Taila*(oil) and *Drava part* (Liquid) according to the tailaparibhasha (Accepted procedure of preparing a oil) is 1:4:16. Therefore the amount of kalkadravya is very less in comparatively other two portions. Further there are 24 drugs in this kalka so that very less amount in each According to the above facts we can consider Bala, Koranda, Tilataila, and Cow's milk, are the main ingredients of the Bala koranda taila.

12 times amount of oil than above were prepared to complete the study with sneha karma as purva karma and72ml matravasti in each for 30 patients within 14 days as once per day in the evening, but 2 withdrawal were there while 28 were completed.

Ingredients of Erandasaptaka kashaya (Sha/Ma/Kha/88-89)[5]

Erandumul (roots of, *Ricinuscommunis*)
Belimul (roots of *Aeglemarmelos*)
Elabatumul (roots of *Solanumindicum*)
Katuwelbatu (whole plant of *Solanumvirginianum* L)
Nasnaranmul (roots of *Citrus madurensis*Lour.)
Polpala (whole plant of *Aervalanata*)
Gokatumul (root of *Tribuluscistoides* L)
Anupana yavkaralunu /Yavaksara (mainly K salts)
Erandutel/Erandataila (Castor oil)
Sahindalunu/Saindhavalavana (Rock salt/mainly Nacl)
Perunkayam/Hingu (*Ferula asafetida)*

Amountwas prepared as enough to drink kashayas for 30 patients for 28 days as twice a day as well as for Nadiswedain purva karma for first 14 days.

Anupanamatra

According to Sharangadhara while using more than one Anupana their amount should be as follows;

Hingu - ½ masha (0.5g)
Lavana - 1 masha (1g)
Taila – 4 times as lavana (4ml)

Therefore these amounts of anupana can be used with half patha(120ml) of decoction at a time

There are 37 varieties of drugs including cow's milk, 32 herbs 2 oils & 2 lavanas. Except these there were 11 herbs were used in tilatailamurchcha. Murccha procedure was performed only to enhance the quality of Tilataila.

General objective

To evaluate the effect of ofBala koranda taila matravasti along with Erandasaptaka kashaya in the management of Gridrasi(sciatica)

Specific objectives

To evaluate the pain reliving property of the test drugs

To investigatethe improvement of the mobility of the related joints in Gridrasi patients.

Data analysis

Collected data was analyzed by using quantitative techniques using paired t test.

Mean comparison for straight leg raising test(SLR test) was used and the significance of mean difference will be tested by 95% confidence level. Vertebral column movementalso analyzed in same way asObjective parameters

Grading scale was used to analyze the pain (Ruk) by using Visual analogue scale (VAS) and presence or absence of pricking pain(Toda), twitching, stretching pain, drowsiness, anorexia, , heaviness, numbness, etc. which mentioned in Ayurvedic texts also considered.

Inclusion criteria

1. Patients in the age group 30-60 years of both sexes
2. Patients with the classical symptoms of Gridrasisuch as stamba,ruk,toda,spanda, from gluteal area & radiating

towards foot sometimes along with other symptoms like tandra, gaurawa, arochaka with positive SLR test.
3. Patients suffering from Gridrasi for 6 months to 2 years
4. Patients who willing to participate for the study and not having any physical or psychological disturbances to give their consent to participate.

Exclusion criteria

1. Patients below 30 years and above 60 years
2. Gridrasi caused due to severe trauma to spine or gluteal region.
3. patients who had Known diagnosis of other complicated systemic disorders such as Renal failure, Severe asthma, Heart diseases, uncontrolled Diabetes mellitus, Hepatic disorders, TB, Carcinoma RA, Osteo arthritis.
4. Patients who are advised to go for a surgical intervention without any exception
5. Known cases of increase serum Ca,P, Uric acid, Alkaline phosphate, in suspected hyperparathyroidism, malignancy osteoporosis.
6. Pregnant, lactating or women who are suffering from PID
7. Patients who are presently undergoing any other treatments for the Gridrasi/Sciatica

Planned withdrawal criteria

1. If the clinician found that the patient was in need of or better served with other treatment
2. If exclusion criteria were met during study period
3. If the clinical condition go significantly worse according to the judgment of the clinician.
4. If the patient were withdraw with their own consent.

At the end of the study period, few patients were referred to the relevant clinics who wish to continue or whoidentified, as further treatment was required. There were two patients who withdraw against medical advices due to unavoidable personal issues of their families.

Full blood count and Urine full report was taken before, while and after the treatment in aim to exclude if blood physiology changes were seen. X-ray of the lumber sacral area (AP & lateral view) was seen prior to thetrial in aim to exclude if there were complicated fractures

Ethical approval was taken from ethical review board of the Institute of indigenous medicine, university of Colombo. Patient informationwere given and written consent were obtained prior to undertaking any study related procedures, after the investigator had verbally explained the purpose, procedures, potential hazards, and benefits of the study. The participant were informed about their right to withdraw from the study at any timeRaw materials were identified to establish their authenticity at Bandaranayake Memorial Ayurveda Research Institute (BMARI), Navinna, Maharagama. Sri Lanka.

These patients were given Erandasaptaka kashaya(ESK) 120ml with the four recommended anupanain recommended amountstwice a day half an hour before meal for 28 days along with 72 ml of Balakorandataila(BKT) asmatravasti for first 14 days. Vasti was performed following BKT abhyanga and ESK nadisweda on low back, legs and lower abdomen as purva karma (prepreparatory procedures) of vasti karma. It was given once per day, in the evening, afteroil was anointed around the anus and the end part of the red rubber catheter. The catheter was connected to a syringeand removed air bubble pushing some oil out. Then the enema was given to the patient who kept in left lateral position. Patients were advised to be in the same position for a minute and made aware them that it is better ifthe vasti is there forfew hours. Though matravasti had no strict rules and regulations to follow as pariharyakala, patients were advised for avoiding either hunger, full stomach,heavy,fatty, meals, consumption of cold water, and exercise. Changes of signs & symptoms were recorded weekly,using the previously prepared pro forma for the clinical evaluation.

Score sheet

A) Ruk (Pain)(VAS)

Grade 0	-	No pain	-	Scale reading 0
Grade 1	-	Mild pain	-	Scale reading >0-3
Grade 2	-	Moderate pain	-	Scale reading >3-6
Grade 3	-	Severe pain	-	Scale reading >6-10

B) Sthambha (Stiffness)

Grade 0 - No stiffness

Grade 1

with up to 25% impairment in the range of movement of joint. (Patient can perform daily routine work without any difficulty)

Grade 2- with 25-50% impairment in the range of movement of joints. (Pt. has mild to moderate difficulty in performing daily routine.)

Grade 3 -with 50-75% impairment in the range of the movement of joints (Pt. has moderate to severe difficulty in performing daily routine.)

Grade 4-with more than 75% impairment in the range of movements of the joints.

(Patient unable to perform daily routine)

C) Toda (Pricking pain) Grade 0 - Absent
Grade 1 - Present

D) Spandana(Twitching) Grade 0 -Absent
Grade 1 -Present

E) Ayama(Stretching pain)Grade 0 - Absent
Grade 1 - Present

F) Tandra(Drowsiness) Grade 0 - Absent
Grade 1 - Present

G) Gowrava(Heaviness) Grade 0 - Absent - No heaviness
Grade 1 - Mild - Occasionally
Grade 2 - Moderate - Daily or high in frequency but not persistent
Grade 3 - Severe - persistent

H) Aruchi(Tastelessness) Grade 0 - Absent
Grade 1 - Present

I)Suptata(Numbness) Grade 0 - Absent
Grade 1 - Present

J) Shosha(Wasting) Grade 0 - Absent
Grade 1 - Present

K) Vibandha(Constipation)Grade 0 - Absent
Grade 1 - Present

L) Daha(Burning sensation) Grade 0 - Absent
Grade 1 - Present

Straight leg raising test **(SLR** Test) is assessed as positive at 0 to 80 degrees with pain, Negative at >80 degrees without pain

Grade

$>80^0$ easily without pain 0

$>60^0$-80^0 difficulty with pain 1
$>40^0$-60^0 2
$>20^0$- $40^0$3
$< 20^0$4

Vertebral column movement Flexion

- Patient's attempt to touch the toes by fingers goes beyond the level of ankles without bending knees with ease→ 0
- Patient's attempt to touch the toes by fingers goes up to the level of ankles without bending knees difficulty →1
- Patient's attempt to touch the toes by fingers extends only up to the level in between below the knees and above the ankles without bending knees → 2
- Patient's attempt to touch the toes by fingers extends only up to the knee joint or above without bending knees → 3

Extension

- Ability to touch a level since 3 inches above the back of the knee to back of the knee easily → 0
- Attempts to touch the back of the knee extends only up to a level since 5 inches above the back of the knee to more than 3 inches above the back of the knee with difficulty or pain → 1
- Attempt to touch back of the knee extends only up to a level since 7 inches above the back of the knee to more than 5 inches above the back of the knee with difficulty or pain → 2
- Attempt to touch back of the knee is impossible even above that level → 3

Right & left lateral bending

- Ability to touch lateral aspect of the knee easily without bending the knee → 0
- Ability to touch lateral aspect of the knee without bending the knee but with difficulty or pain → 1
- Ability to touch only up to the level 2 inches above the lateral aspect of the knee without bending knees, it also with difficulty or pain → 2
- Inability to touch a level even >2 inches above the lateral aspect of the knee, or inability to do lateral bending at all without bending knees even with difficulty or pain → 3

Rotation

- Ability to rotate the body 90^0 towards right or left lateral side with ease → 0
- $>60^0$-90^0→ 1 with difficulty
- $>30^0$ to 60^0 with difficulty → 2
- Up to 30^0 or unable to rotate the body → 3

Assessment of subjective and objective parameters was done recording the changes of those symptoms and signs weekly.

RESULTS AND OBSERVATION

Subjective parameters

Pain (Ruk) is the main feature of Gridrasi. It was the main subjective parameter of the present study. Following tables show the variability of the pain before and after the trial period and after the follow up.

Table 1: Ruk (pain) before treatments

Sr. No.	Grade of pain	No.of pt.s	Percentage
1	Grade 1	0	0%
2	Grade 2	1	3.6%
3	Grade 3	27	96.4%
4	Total	28	100%

Table: 2 Ruk (pain) after 28 days trial period

Sr. No.	Grade of pain	No.of pt.s	Percentage
1	Grade 0	9	32.1%
2	Grade 1	17	60.7%
3	Grade 2	1	3.6%
4	Grade 3	1	3.6%
5	Total	28	100%

Table 3: Ruk (pain) after 42 days (at the end of 14 days follow up without medicine after the trial period)

Sr. No.	Grade of pain	No. of pt.s	Percentage
1	Grade 0	9	32.1%
2	Grade 1	14	50%
3	Grade 2	4	14.3%
4	Grade 3	1	3.6%
5	Total	28	100%

Table 4: Statistical outcome of the study before and after 28 days of treatment

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Ruk(Pain)	2.960	0.790	2.179	0.723	0.137	15.948	27	0.000*

Table 5: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Ruk	0.790	0.890	0.107	0.315	0.060	1.800	2	0.083

Above table shows statistically highly significance reduction of the pain after the trial period. As a percentage the improvement was 73.6% But after the next 14 days follow up which kept without treatments, the mean value of the pain had been slightly increased but it was not significant. From the state of the pain level by the end of the trial period had been increased by 13.5%. Longer follow up is needed to get definite idea regarding the stability improvement.

Table 6: Stabdata (stiffness) before treatments

Sr. No.	Grade of Stiffness	No. of pt.s	Percentage
1	Grade 1	4	14.3%
2	Grade 2	5	17.8%
3	Grade 3	6	21.4%
4	Grade 4	2	7.1%
5	Absence	11	39.3%
6	Total	28	100%

Table 7: Stabdata (stiffness) after 28 days trial period

Sr. No.	Grade of stiffness	No. of pt.s	Percentag
1	Grade 0	7	25%
2	Grade 1	7	25%
3	Grade 2	3	10.7%
4	Absence	11	39.3%
5	Total	28	100%

After the treatment period changes observed in the patients concerning the stiffness they experienced was indicated in the above table

Table 8: Stabdata (stiffness) after 42 days (after 14 days no medicine follow up after the trial period)

Sr. No.	Grade of stiffness	No. of pt.s	Percentage
1	Grade 0	7	25%
2	Grade 1	9	32.1%
3	Grade 2	1	3.6%
4	Absence	11	39.3%
5	Total	28	100%

The differences observed at the end of next 14 days follow up without medicine were recorded as above.

Table 9: Statistical outcome of the study before and after treatment (Before & 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Sthabdata	2.350	0.760	1.588	0.712	0.173	9.194	16	0.000*

In above table it was seen the patients had got considerable relief from the stiffness that they were experienced at the beginning by the end of the trial. The improvement was highly significance statistically. According to the mean change the improvement percentage was 67.6%.

Table 10: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Sthabdata	0.760	0.650	0.118	0.332	0.081	1.461	16	0.163

According to the above table the stiffness had been reducing further within the last 14 days follow up. Even though it was a progressive improvement just 15.5% as a percentage and not statistically signified.

Table 11: Toda (pricking pain) before treatments

Sr. No.	Grade of pricking pain	No. of pt.s	Percentage
1	Absence	15	53.6%
2	Grade 1	13	46.4%
3	Total	28	100%

Table 12: Toda (pricking pain) after 28 days trial period and after 42 days follow up

Sr. No.	Grade of pricking pain	No. of pt.s	Percentage
1	Absence	15	53.6%
2	Grade 0	13	46.4%
3	Total	28	100%

Table 13: Statistical outcome of the study before and after treatment (Before & 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Toda	1.000	0.000	1.000	0.000	0.000	-	-	-

Table 14: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Group	Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
		AT	AF						
B	Toda	0.000	0.000	0.000	0.000	0.000	-	-	-

100% progress had been got and kept it up stable.

Table 15: Spandana (Twitching) before treatments

Sr. No.	Grade of twitching	No. of pt.s	Percentage
1	Absence	18	64.3%
2	Grade 1	10	35.7%
3	Total	28	100%

Table 16: Spandana (Twitching) after the 28 days trial period

Sr. No.	Grade of twitching	No. of pt.s	Percentage
1	Absence	18	64.3%
2	Grade 0	10	35.7%
3	Total	28	100%

Table 17: Spandana (Twitching) after 42 days follow up

Sr. No.	Grade of twitching	No. of pt.s	Percentage
1	Absence	18	64.3%
2	Grade 0	9	32.1%

3	Grade 1	1	3.6%
4	Total	28	100%

Table 18: Statistical outcome of the study before and after treatment (Before & after 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Spandana	1.000	0.000	1.000	0.000	0.000	-	-	-

Table 19: Statistical outcome of the study in after treatment and follow-up (since 28 days to 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Spandana	0.000	0.100	0.1	0.316	0.100	1.000	9	0.343

Table 20: Ayama (stretching pain) before the treatments

Sr. No.	Grade of stretching pain	No. of pt.s	Percentage
1	Absence	19	67.8%
2	Grade 1	9	32.1%
3	Total	28	100%

Table 21: Ayama (stretching pain) after 28 days trial period and after 42 days follow up

Sr. No.	Grade of stretching pain	No. of pt.s	Percentage
1	Absence	19	67.8%
2	Grade 0	9	32.1%
3	Total	28	100%

Table 22: Statistical outcome of the study before and after treatment (Before & after 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Ayama	1.000	0.000	1.000	0.000	0.000	-	-	-

Table 23: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Ayama	0.000	0.000	0.000	0.000	0.000	-	-	-

Table 24: Tandra (Drowsiness) before treatments

Sr. No.	Grade of drowsiness	No. of pt.s	Percentage
1	Absence	17	60.7%
2	Grade 1	11	39.3%
3	Total	28	100%

Table 25: Tandra (Drowsiness) after 28 days trial period and after 42 days follow up

Sr. No.	Grade of drowsiness	No. of pt.s	Percentage
1	Absence	17	60.7%
2	Grade 0	11	39.3%
4	Total	28	100%

Table 26: Statistical outcome of the study before and after treatment (Before & after 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Thandra	1.000	0.000	1.000	0.000	0.000	-	-	-

The improvement as a percentage was 100% but the drowsiness was observed only in 20.8% of the total patients at the beginning.

Table 27: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Thandra	0.000	0.000	0.000	0.000	0.000	-	-	-

The improvement which showed at the end of trial period was constantly kept up within next 14 days follow up.

Table 28: Gaurawa (Heaviness) before treatments

Sr. No.	Grade of heaviness	No. of pt.s	Percentage
1	Absence	22	78.6%
2	Grade 1	4	14.3%
3	Grade 2	2	7.1%
4	Total	28	100%

Table 29: Gaurawa (Heaviness) after 28 days trial period and after 42 days trial period

Sr. No.	Grade of heaviness	No. of pt.s	Percentage
1	Absence	22	78.6%
2	Grade 0	6	21.4%
3	Grade 1	0	0%
4	Grade 2	0	0%
5	Total	28	100%

Table 30: Statistical outcome of the study before and after treatment (Before & after 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Gourava	1.330	0.000	1.330	0.516	0.211	6.325	5	0.001*

The table showed that the improvement of the feeling of heaviness had been highly significant by the end of trial period. As a percentage it was 100% improvement. But this symptom was presence only in less number of people as a percentage of the total it was 21.4%.

Table 31: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Gourava	0.000	0.000	0.000	0.000	0.000	-	-	-

The improvement which showed at the end of trial period was constantly kept up within next 14 days follow up.

Table 32: Aruchi (Tastelessness) before treatments

Sr. No.	Grade of tastelessness	No. of pt.s	Percentage
1	Absence	23	82.1%
2	Grade 1	5	17.9%
3	Total	28	100%

Table 33: Aruchi (Tastelessness) after 28 days trial period and after 42 days follow up

Sr. No.	Grade of tastelessness	No. of pt.s	Percentage
1	Absence	23	82.1%
2	Grade 0	5	17.9%
3	Total	28	100%

Table 34: Statistical outcome of the study before and after treatment (Before & 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Aruchi	1.000	0.000	0.330	0.000	0.000	0.000	0	0

This symptom was presence only in 17.9% of the total patients. But all of them got relief.

Table 35: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Aruchi	0.000	0.000	0.000	0.000	0.000	-	-	-

No change was observed in the improvement they got at the end of the trial.

Table 36: Suptata (Numbness) before treatments

Sr. No.	Grade of numbness	No. of pt.s	Percentage
1	Absence	5	17.9%
2	Grade 1	23	82.1%
3	Total	28	100%

Table 37: Suptata (Numbness) after 28 days trial period

Sr. No.	Grade of numbness	No. of pt.s	Percentage
1	Absence	5	17.9%
2	Grade 0	20	71.4%
2	Grade 1	3	10.7%
3	Total	28	100%

Table 38: Suptata (Numbness) after 42 days follow up

Sr. No.	Grade of numbness	No. of pt.s	Percentage
1	Absence	5	17.9%
2	Grade 0	17	60.7%
2	Grade 1	6	21.4%
3	Total	28	100%

Table 39: Statistical outcome of the study before and after treatment (Before & 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Suptata	1.000	0.130	0.870	0.344	0.720	12.111	22	0.000*

82.1% patients were showed the symptom of numbness. Reduction of numbness was highly significance after the trial period. As a percentage the improvement was 87%.

Table 40: Statistical outcome of the study After treatment and follow-up (after 28 days and 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Suptata	0.131	0.260	0.130	0.344	0.072	1.817	22	0.083

Though this showed minute growing of the numbness since end of the trial by the end of the follow up but it was not significant.

Table 41: Shosha (wasting) in before treatments, after treatments, and after follow up was observed same results as follow.

Sr. No.	Grade of wasting	No. of pt.s	Percentage
1	Absence	26	92.9%
2	Grade 1	2	7.1%
3	Total	28	100%

Shosha was observed just 7.1% of the total. That was negligible percentage. And it also didn't show any improvement after the treatments or later than the follow up.

Table 42: Vibandha (constipation) before treatments

Sr. No	Grade of Constipation	No.ofpt.s	Percentage
1	Absence	11	39.3%
2	Grade 1	17	60.7%
3	Total	28	100%

Table 43: Vibandha after 28 days trial period and after 42 days follow up showed same results as follow

Sr. No.	Grade of Constipation	No. of pt.s	Percentage
1	Absence	11	39.3%
2	Grade 0	17	60.7%
3	Total	28	100%

Table 44: Statistical outcome of the study before and after treatment (Before & 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Vibandha	1.000	0.000	1.000	0.000	0.000	-	-	-

There were only 60.7% of the total patients who had constipation, by the end of trial period it was totally disappeared and didn't come back until end of the next two weeks no medicine follow up.

Table 45: Statistical outcome of the study after treatment and follow-up (after 28 days to 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Vibandha	0.000	0.000	0.000	0.000	0.000	-	-	-

The progress which got by the end of trial period was continuously kept up by the end of the follow up.

Table 46: Daha (Burning sensation) before treatments

Sr. No.	Grade of burning sensation	No. of pt.s	Percentage
1	Absence	24	85.7%
2	Grade 1	4	14.3%
3	Total	28	100%

Table 47: Burning sensation after 28 days trial period and after 42 days follow up were showed same results as follows

Sr. No.	Grade of burning sensation	No.of pt.s	Percentage
1	Absence	24	85.7%
2	Grade 0	4	14.3%
3	Total	28	100%

Burning sensation was observed just in 14.3% of patients,
and at the end of the treatment period all of them got relieved.

Table 48: Statistical outcome of the study before and after treatment (Before & 28 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Daha	1.000	0.000	1.000	0.000	0.000	-	-	-

Though there were fewer numbers of people showed this symptom by the end of the trial period the symptom was disappeared.

Table 49: Statistical outcome of the study after treatment and follow-up (after 28 days to 42 days)

Subjective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Daha	0.000	0.000	0.000	0.000	0.000	-	-	-

The symptom, Daha was not seen until finish the next 14 days follow up.
The improvement got at the treatment period had been kept up continuously.

Objective parameters

Assessment of SLRT

Table 50: SLR test right and left legs before treatments

Sr. No.	Grade of SLRT right/left leg	No. of legs	Percentage
1	Grade 2	3	8.6%
2	Grade 3	14	40%
3	Grade 4	18	51.4%

Table 51: SLR test right and left legs after 28 days trial period

Sr. No.	Grade of SLRT right/left leg	No. of legs	Percentage
1	Grade 0	6	17.1%
2	Grade 1	17	48.6%
3	Grade 2	11	31.4%
4	Grade 3	1	2.9%

Table 52: SLR test right and left legs after 42 days follow up

Sr. No.	Grade of SLRT right/left leg	No. of legs	Percentage
1	Grade 0	7	20%
2	Grade 1	16	45.7%
3	Grade 2	8	22.9%
4	Grade 3	4	11.4

Table 53: Statistical outcome of the study before and after treatment (Before & after 28 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
SLR Right Leg	3.210	1.050	2.158	0.834	0.191	11.275	18	0.000*
SLR Left Leg	3.690	1.380	2.312	0.946	0.237	9.773	15	0.000*

Above table indicated that leg raising ability of the patients had been increased by the end of trial period and the improvement was highly significant. As a percentage in right leg it was 67.2% while in left leg it was 62.6%.

Table 54: Statistical outcome of the study after treatment and follow-up (after 28 days and 42 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
SLR Right Leg	1.050	1.050	0.000	0.333	0.076	0.000	18	1.000
SLR Left Leg	1.380	1.500	0.125	0.342	0.085	1.464	15	0.164

By the end of follow up no change was indicated in the right leg since the level of improvement got at the end of trial period. In the left leg minute reduction of the relief was indicted but it was not significant.

Assessment of vertebral column movement

Table 55: Forward flexion before treatments

Sr. No.	Grade of forward flexion	No. of pt.s	Percentage
1	Grade 1	1	3.6%
2	Grade 2	9	32.1%
3	Grade 3	18	64.3%
4	Total	28	100%

Table 56: Forward flexion after 28 days trial period

Sr. No.	Grade of forward flexion	No. of pt.s	Percentage
1	Grade 0	4	14.3%
2	Grade 1	14	50%
3	Grade 2	10	35.7%
4	Total	28	100%

Table 57: Forward flexion after 42 days follows up

Sr. No.	Grade of forward flexion	No.ofpt.s	Percentage
1	Grade 0	7	25%
2	Grade 1	11	39.2%
3	Grade 2	10	35.7%
4	Total	28	100%

Table 58: Statistical outcome of the study before and after treatment (Before & after 28 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Forward Flexion Grade	2.610	1.210	1.393	0.629	0.119	11.720	27	0.000*

Improvement of the forward flexion by the end of the trial period was statistically highly significant. As a percentage it was 53.3%

Table 59: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Forward Flexion Grade	1.210	1.110	0.107	0.315	0.060	1.800	27	0.830

By the end of the follow up further improvement of the forward flexion since end of the trial was observed. It was 8.8% but not statistically significant.

Table 60: Right lateral flexion before treatments

Sr. No.	Grade of right lateral flexion	No. of pt.s	Percentage
1	Grade 0	0	0%
2	Grade 1	6	21.4%
3	Grade 2	14	50%
4	Grade 3	8	28.6%
5	Total	28	100%

Table 61: Right lateral flexion after 28 days trial period

Sr. No.	Grade of right lateral flexion	No. of pt.s	Percentage
1	Grade 0	14	50%
2	Grade 1	10	35.7%
3	Grade 2	4	14.3%
4	Total	28	100%

Table 62: Right lateral flexion after 42 days follows up

Sr. No.	Grade of right lateral flexion	No. of pt.s	Percentage
1	Grade 0	15	53.6%
2	Grade 1	10	35.7%
3	Grade 2	3	10.7%
4	Total	28	100%

Table 63: Statistical outcome of the study before and after treatment (Before & after 28 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Right Lateral flexion in Grade	2.070	0.640	1.429	0.790	0.149	9.567	27	0.000*

At the end of the treatment period right lateral flexion ability was improved. Statistically it was highly significant. As a percentage the improvement was 69%

Table 64: Statistical outcome of the study after treatment and follow-up (after 28 days to 42 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Right Lateral flexion in Grade	0.640	0.570	0.071	0.466	0.088	0.812	27	0.424

Until the end of next 14 days follow up it showed a progressive improvement though it is not significant. The improvement gained within the follow up was 11%.

Table 65: Left lateral flexion before treatments

Se. No	Grade of left lateral flexion	No. of pt.s	Percentage
1	Grade 0	0	0%
2	Grade 1	6	21.4%
3	Grade 2	13	46.4%
4	Grade 3	9	32.1%
5	Total	28	100%

Table 66: Left lateral flexion after 28 days trial period

Sr. No.	Grade of left lateral flexion	No. of pt.s	Percentage
1	Grade 0	11	39.3%
2	Grade 1	14	50%
3	Grade 2	3	10.7%
4	Grade 3	0	0%
5	Total	28	100%

Table 67: Left lateral flexion after 42 days follows up

Sr. No.	Grade of left lateral flexion	No. of pt.s	Percentage
1	Grade 0	14	50%
2	Grade 1	11	39.3%
3	Grade 2	3	10.7%
4	Grade 3	0	0%
5	Total	28	100%

Table 68: Statistical outcome of the study before and after treatment (Before & after 28 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Left Lateral flexion in Grade	2.110	0.710	1.393	0.916	0.173	8.042	27	0.000*

Left lateral flexion was showed highly significance improvement. it was 66% as a percentage.

Table 69: Statistical outcome of the study after treatment and follow-up (after 28 days to 42 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AT						
Left Lateral flexion in Grade	0.710	0.610	0.107	0.315	0.060	1.800	27	0.083

Even though it was not significant, by the end of next 14 days follow up, left lateral flexion had been showed further progress of the improvement which got at the end of the trial period. It was 15% as a percentage

Table 70: Extension before treatments

Sr. No.	Grade of extension	No. of pt.s	Percentage
1	Grade 1	0	0%
2	Grade 2	12	42.9%
3	Grade 3	16	57.1%
4	Total	28	100%

Table 71: Extension after 28 days trial period

Sr. No.	Grade of extension	No. of pt.s	Percentage
1	Grade 0	8	28.6%
2	Grade 1	6	21.4%
3	Grade 2	13	46.4%
4	Grade 3	1	3.6%
5	Total	28	100%

Table 72: Extension after 42 days follows up

Sr. No.	Grade of extension	No. of pt.s	Percentage
1	Grade 0	8	28.6%
2	Grade 1	8	28.6%
3	Grade 2	11	39.3%
4	Grade 3	1	3.6%
5	Total	28	100%

Table 73: Statistical outcome of the study before and after treatment (Before & 28 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Extension	2.570	1.250	1.321	0.819	0.155	8.538	27	0.000*

Extension was showed statistically highly significant reduction by the end of the treatment period. It was 51.4% improvement.

Table 74: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Extension	1.250	1.180	0.071	0.262	0.050	1.440	27	0.161

Though it is not significant by the end of the next 14 days follow up ability of backward bending was progressively improved. It was 5.68% improvement since end of the trial period.

Table 75: Rotation before treatments

Sr. No.	Grade of rotation	No. of pt.s	Percentage
1	Grade 0	1	3.6%
2	Grade 1	3	10.7%
3	Grade 2	18	64.3%
4	Grade 3	6	21.4%
5	Total	28	100%

Table 76: Rotation after 28 days trial period

Sr. No.	Grade of rotation	No. of pt.s	Percentage
1	Grade 0	15	53.6%
2	Grade 1	13	46.4%
3	Grade 2	0	0%
4	Total	28	100%

Table 77: Rotation after 42 days follows up

Sr. No.	Grade of rotation	No. of pt.s	Percentage
1	Grade 0	18	64.3%
2	Grade 1	10	35.7%
3	Grade 2	0	0%
4	Total	28	100%

Table 78: Statistical outcome of the study before and after treatment (Before & 28 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	BT	AT						
Rotation	2.040	0.460	1.571	0.573	0.108	14.518	27	0.000*

The improvement of the rotation was highly significant. It was 77% from the state at the beginning.

Table 79: Statistical outcome of the study after treatment and follow-up (28 days to 42 days)

Objective Parameter	Mean		Mean Difference	SD	SE	t Value	df	p
	AT	AF						
Rotation	0.460	0.360	0.107	0.315	0.060	1.800	27	0.083

Until the end of next 14 days follow up it showed progressive improvement though it is not much significant it was 23.3% as a percentage. Totally before treatment and after the last follow up improvement percentage was 82.4% in rotation.

DISCUSSION

Being a vatavyadhi, the management of Gridrasi includes samshamana and samshodhanachikitsa. If the disease is not responded with samshamana, samshodhana is encouraged. Keeping these principles in view of the management the Erandasaptaka kashaya and Bala koranda taila matravasti had been used to alleviate and confiscate vitiated vata.

The present study was carried out on 30 patients registered from the kayachikitsa clinics in two selected hospitals. 28 out of that were completed their treatment. Pain, difficulty in straight leg raising, and difficulty in vertebral column movement were presence in all most all the patients. Diagnosis was based on those. But it was clearly seen that it is difficult to seen almost all the symptoms mentioned in the classics in one patient.

The prime feature, pain (Ruk) in lumber sacral or gluteal region radiating towards the leg/s were presence in all cases. Highly significance ($p<0.000$) improvement was indicated in pain with the treatments.(Table No.1-5)

The stiffness was presence in 60.6% of patients from the total sample in various extents. But the effect was highly significance ($p<0.000$).(Table No. 6-10)

Though heaviness were presence just 21.4% of the total sample, the improvement was highly significance ($p<0.001$), the feeling of heaviness was disappeared since after the treatments until the end of last follow up. (Table No. 28-31)

The pricking pain was presence in 46.4% of the total. The symptom was disappeared by the end of treatments. (Table No.11-14)

Muscle twitching was presence in 35.8% in total sample. It also not remains in each patient of by the end of the treatment. Though it was disappeared by the end of last no medicine follow up 3.6% patients had been got it back in between after the treatments and last follows up. (Table No.15-19)

Stretching pain were presence in 32.2% of the total sample and get completely absence after the treatments. That improvement was kept up until the end of last no medicine follow up.(Table No 20-23)

Drowsiness was presence in 39.4% in total. it was totally disappeared by the end of the treatments and kept it up until the end of last follow up. (Table No.24-27)

Anorexia was presence in 17.8% of the total sample. It was not remaining after the treatments as well as by the end of the last follow up as well. (Table No.32-35)

Numbness was presence in 82.2% of the total sample. This was indicated highly significant improvement with the

treatments. They had showed 86.9% improvement at the end of the treatments but by the end of the follow up it was 73.9%. Though there is regaining tendency after stopping the treatments it was not significant ($p<0.083$)(Table No.36-40)

Muscle wasting was not observed in vast majority of the patients. It was seen in just 7.2% of the total. Within the limited time duration of the treatments or the follow up they had not been indicated any improvement. (Table No.41)

Constipation was presence in 60.8% of the total it was totally disappeared by the end of the treatment period and not presence again until the end of last follow up. (Table No 42-45)

Burning sensation were presence only in 14.2% of the total. This symptom was totally disappeared after the treatment and kept it up until end of the follow up. (Table No.46-49)

Objective parameters

The entire patient was showed difficulty in straight leg raising in various extent. It was indicated highly significance improvement ($p<0.000$) by the end of the treatments. They had been kept up that improvement stable until the end of last follow up. Approximately showed 65% improvement by the end of the treatment. Here it was taken considering both legs together. (Table No.50-54)

Vertebral column movement in Forward flexion, right lateral flexion , left lateral flexion, extension and rotation, patients had been showed highly significant improvement by the end of the treatments.($p<0.000$)

Improvement of the forward flexion by the end of the trial period was statistically highly significant. As a percentage it was 53.3%. By the end of the follow up further improvement of the forward flexion since end of the trial was observed. It was 8.8% but not statistically significant. (Table No. 55-59)

At the end of the treatment period right lateral flexion ability was improved, statistically it was highly significant. As a percentage the improvement was 69%. Until the end of next 14 days follow up it showed a progressive improvement though it is not significant. The improvement gained within the follow up was 11%.(Table No.60-64)

Left lateral flexion was showed highly significance improvement. It was 66% as a percentage by the end of the treatment period. Even though it was not significant, by the end of next 14 days follow up, left lateral flexion had been showed further progress of the improvement which got at the end of the trial period. It was 15% as a percentage. (Table No.65-69)

Extension was showed statistically highly significant improvement by the end of the treatment period. It was 51.4% improvement. Though it is not significant by the end of the next 14 days follow up ability of backward bending was progressively improved. It was 5.7% improvement since end of the trial period. (Table No.70-74)

The improvement of the rotation was highly significant. It was 77% from the state at the beginning. Until the end of next 14 days follow up it showed progressive improvement though it is not much significant it was 23.3% as a percentage.

Totally the improvement percentage in rotation before the trial started and after the last follow up irrespectively the changes happened by the end of the trial period was 82.4%. (Table No. 75-79)

CONCLUSION

Bala korandatailamatravasti along with Erandasaptakakashaya shows significant pain relieving property as well as the possibility to enhance vertebral column movement in Gridrasipatients. Further it had been given good relief in associated symptoms like numbness, constipation etc. Therefore it can be used effectively in the management of Gridrasi.

But present study was carried out with limited number of patients. Follow up period also was not longer. Modern investigations such as nerve conduction tests of legs, magnetic resonance imaging of the spine etc. were not performed as financial issues. Avoiding these limitations ifit was carried it out, probably it would be provided further scientific evidence regarding the connection between reliving symptoms and changes happened in pathogenesis with this treatment in modern point of view.

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