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A Randomized Controlled Trial to Evaluate the Efficacy of Eranda Taila Paana as Add on Treament to Agni Karma in the Pain Management of Vatakantaka W.S.R. to Plantar Fasciitis

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ABSTRACT

Ayurveda, the science of life, which is an ancient healthcare system which is based on eternal principal of health life. The whole clinical approach of Ayurveda is based on prevention, promotive and curative aspect. Vatakantaka is that disorder, which interfere with the free locomotion of the individual resulting in hindrance to his daily activities. Acharya Sushrutha explain it under Vatavyadi1; & in due course, other authors like Vagbhata2, Yogarathnakara, Chakradatta3, Vangasena4 and Madhavakara5 also narrate the same. In Vatakantaka pain in the heel develops due to walking on uneven surfaces or excessive walking. Due to the Nidanas, Vata gets vitiated and reside at Gulpha Sandhi, produces the disease. Sushruta has mentioned different methods of management for different diseases. Here in the management of vatakantak, Acharya described, sneha, upanaha, agnikarma, bandhana and unmardana. Keeping in view of the many draw backs of modern methods of managements, a comparative clinical trial is aimed at the evaluation of the efficacy of Agnikarma alone and Agnikarma with Erandataila paana in Vatakantaka w.s.r to Plantar fascitis with an intention to promote an effective, economical and simple treatment with no adverse effects.

KEYWORDS: *Agnikarma, Erandataila Paana, Vatakantaka, Plantar fasciitis*

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INTRODUCTION

The great Indian surgeon "Sushruta" (800 BC) known as father of Surgery has described, Vatakantaka in Vatavyadhi Nidhana. While walking when the foot is placed unevenly on the ground, Vata dosa gets localized in khuda (ankle) and aggravated and produce pain in heel known as Vatakantaka[5]. Acharya Vaghbata described that severe aching pain is perceived when the foot is kept in unusual posture or when the local area is fatigued due to excess function, Vata dosa get aggravated and localized in the Ankle joint and heel. It is called as Vatakantaka[6]. Disease like Calcaneal Knob, Bursitis, Bony Spur, Paget's, Osteomyelitis, and Plantar Fasciitis presents with heel pain. Among these Vatakantaka can be correlated with Plantar Fasciitis. Patients with Plantar fasciitis commonly presents with symptoms like stabbing thorny type of pain in heel that occurs with first steps in the morning which usually decreases after walking for some distance and re-occur after prolonged period of rest. Plantar fasciitis can be diagnosed usually on the basis of history and physical examination alone. Plantar Fasciitis is more commonly seen in athletes, overweight persons, dancers and people who wear shoes with inadequate support. It can be also seen as degenerative changes by growing age. It is estimated that 1 in 10 people will develop Planter Fasciitis in their lifetime. Incidence occurs between 40 and 60 years of age[7]. It can be managed with treatment like Physiotherapy, Stretching exercises, Shoe inserts, non-steroidal anti-inflammatory drugs, Steroid injections. Surgically it can be managed by plantar fascia release based on requirement[8]. Acharya

Sushruta in agnikarma vidhi adhyaya mentioned that agnikarma can done in condition like, very severe pain in twak (skin), mamsa (muscle), sira (vein), snayu (ligament), asthi (bone), sandhi (joint) and other treatment modalities like oleation, poultice bandaging for management of Vatakantaka. Vatakantaka is a Snayu Asthi Sandhi Ashrit Vyadhi (Disease of tendon, bone and joint) and painful condition. According to the above reference, Agnikarma is used in this case to assess its efficacy in relieving pain in Vatakantaka.

Source of Collection of Data

Screening, Selection and Registration of 40 cases randomly from the OPD and IPD of Shalya Tantra Unit, R.P.K Ayurvedic Hospital, based upon Inclusive and Exclusive Criteria.

Objectives Of The Study

1. To evaluate the efficacy of Eranda Taila Paana with Agnikarma in the pain management of Vatakantaka w.s.r. to Plantar Fasciitis.
2. To Compare the efficacy of ErandaTaila Paana with Agnikarma and Agnikarma alone in the pain management of Vatakantaka w.s.r. to Plantar Fasciitis.

MATERIALS AND METHODS

40 Patients suffering from Vatakantaka were selected by Diagnostic, Inclusive and Exclusive criteria taken for the study from SDM trust's ayurvedic hospital and divided into two groups each comprising of 20 by simple randomization technique. Group-A (control Group) were subjected for Agnikarma with Panchaloha Shalaka and Group-B (trial group) with Madhuchist. Irrespective of their sex, religion, socioeconomic status etc. Each patient was selected for the trial after voluntary consent. The effect of treatment was assessed based on subjective and objective criteria before and after treatment.

Study design - Randomized Controlled trial.

Diagnostic criteria

The diagnosis will be based on signs and symptoms of Vatakantaka and Plantar Fasciitis

- Stabbing pain at bottom of heel.
- The pain is usually the worst with the first few steps after awakening.
- Windlasstest: A Windlass is the tightening of a rope or a cable. The plantar fascia stimulates a cable attached to the calcaneus and the metatarsal phalangeal joints. Heel pain reproduced with passive dorsiflexion of the toes.

Inclusion criteria

1. Patients of either gender within the age group of 20- 60 years.
2. Diagnosed cases of Plantar Fasciitis with or without Calcanealspur.
3. Plantar Fasciitis with unilateral or bilateral presentation.

Exclusion criteria

1. Patients contra-indicated for Agnikarma.
2. History of trauma or fracture of affected site.
3. Patients who received corticosteroid injection, Plate rich plasma or Botox, ExtraShock Wave Therapy.
4. Patient who underwent surgery (Plantar fasciotomy, Calcaneal osteotomy)
5. Patient suffering from systemic diseases like Diabetes Mellitus, Hypertension, HIV, HBsAg, Tuberculosis, Osteomyelitis, Leprosy.

Intervention

Control Group (Group A): Agnikarma with Panchaloha Shalaka

Trial Group (Group B): ErandaTaila Paana and Agnikarma with Panchaloha Shalaka

Sl. No.	Group	Procedure	Treatment Duration[9]
1.	A	Agnikarma	0, 7th, 14th, 21st day
2.	B	Eranda Taila Paana and Agnikarma	0, 7th, 14th, 21st day

Treatment Duration: 21 days (4 sittings)

Follow Up: 28th day

Total Study Duration: 28 days

PROCEDURE

Group A: Agnikarma

PurvaKarma

- Patient advised to take Pichhila anna before procedure.
- Patient will be taken in supine position, maximum tenderness will be located at the heel region.

PradhanaKarma

- With the help of red hot Panchadhatu Shalaka, Samyak Bindu Dagdha's will be made at the maximum tender point and heel region.

PaschatKarma:-

- Application Madhu and Ghrita at the site of Agnikarma and dressing will be done.
- Patient will be advised to avoid water contact for 24hours and application of Madhu and Ghrita twice a day till next sitting.

Group B: Eranda Taila Paana and Agnikarma

- **Moorchita Eranda Taila Paana:** Dose - 30ml[10]
- Anupana – Warm Water
- The patient will be allowedto take only warm water throughout the day.
- Light and liquid warm diet will be advised after getting the symptoms of *Samyak Virechana.*
- ***Agnikarma*:** *Next day the patient will be follwoed for agnikarma*
- *The same procedure (Moorchita Eranda Talia Paana & Agnikarma) will be repeated in every sitting.*

Assessment Parameters

Subjective parameter

- Pain (Visual Analouge Scale)

Objective parameter

- Tenderness

Grading and Grouping

Grading and grouping to the assessment criteria and measurement scale concerned to each item categorically differentiated the findings among the assessment in the clinical study.

1. Pain (Ruk)

Pain will be assessed on the basis of visual analogue scale.

SYMPTOM	GRADINGS		
Pain	0	0	No Pain
	1	1 – 3	Mild
	2	4 – 6	Moderate
	3	7 – 10	Severe

2. Tenderness (Sparshahishnutha)

SYMPTOM	GRADINGS	
Tenderness	0	No Tenderness
	1	Mild Tenderness (Pain on deep pressure)
	2	Moderate Tenderness (Pain on slight pressure)
	3	Severe Tenderness (Pain on Touch)

Investigations

X – Ray -Ankle joint [AP/Lateral view].

OBSERVATIONS AND RESULTS

In this study total 40 patients of Vatakantaka were selected and randomly assigned in two groups namely Group A and Group B with 20 patients each. Each patient was observed thoroughly and noted. The observations were recorded and necessary charts and graphs were made.

Distribution of Patients Based on Age

Table1: Distribution of patients according to Age (Years)

Age Group	Group A		Group B		Total	
	N	%	N	%	N	%
18-20 Years	1	5.00%	0	0.00%	1	2.50%
21-30 Years	6	30.00%	4	20.00%	10	25.00%
31-40 Years	3	15.00%	6	30.00%	9	22.50%
41-50 Years	6	30.00%	6	30.00%	12	30.00%
51-60 Years	4	20.00%	4	20.00%	8	20.00%
TOTAL	20	100.00%	20	100.00%	40	100.00%

Distribution of Patients Based on Gender

Table 2: Distribution of patients according to Gender

Sex	Group A		Group B		Total	
	N	%	N	%	N	%
Male	12	60.00%	12	60.00%	24	60.00%
Female	8	40.00%	8	40.00%	16	40.00%
TOTAL	20	100.00%	20	100.00%	40	100.00%

Distribution of Patients Based on Religion

Table 3: Distribution of patients according to Religion

Religion	Group A		Group B		Total	
	N	%	N	%	N	%
Hindu	17	85.00%	19	95.00%	36	90.00%
Muslim	3	15.00%	1	5.00%	4	10.00%
TOTAL	20	100.00%	20	100.00%	40	100.00%

DISTRIBUTION OF PATIENTS BASED ON OCCUPATION

Table: 4 Distribution of Patients Based on Occupation:

Occupation	Group A		Group B		Total	
	N	%	N	%	N	%
Business	2	10.00%	2	10.00%	4	10.00%
Driver	1	5.00%	0	0.00%	1	2.50%
Farmer	1	5.00%	4	20.00%	5	12.50%
Housewife	4	20.00%	3	15.00%	7	17.50%
Labour	0	0.00%	3	15.00%	3	7.50%
Service	4	20.00%	4	20.00%	8	20.00%
Student	6	30.00%	2	10.00%	8	20.00%
Other	2	10.00%	2	10.00%	4	10.00%
TOTAL	20	100.00%	20	100.00%	40	100.00%

DISTRIBUTION OF PATIENTS BASED ON DIET:

Table: 5 Distribution of Patients Based on Diet

Diet	Group A		Group B		Total	
	N	%	N	%	N	%
Mixed	16	80.00%	19	95.00%	35	87.50%
Veg	4	20.00%	1	5.00%	5	12.50%
TOTAL	20	100.00%	20	100.00%	40	100.00%

OVERALL RESULT :

Table: 6 Effect on Pain by Using Wilcoxon Signed Rank Test

Pain		Mean	Median	SD	SE	Wilcoxon W	P-Value	% Effect	Result
Group A	BT	3.80	3.00	1.40	0.31	-3.967[b]	0.0000728	94.74	Sig
	AT	0.20	0.00	0.41	0.09				
Group B	BT	4.20	4.00	0.89	0.20	-4.003[b]	0.0000626	98.81	Sig
	AT	0.05	0.00	0.22	0.05				

Table No.7 Effect on Tenderness by Using Wilcoxon Signed Rank Test

Tenderness		Mean	Median	SD	SE	Wilcoxon W	P-Value	% Effect	Result
Group A	BT	1.60	1.50	0.68	0.15	-4.008[b]	0.0000612	100.00	Sig
	AT	0.00	0.00	0.00	0.00				
Group B	BT	1.80	2.00	0.62	0.14	-4.035[b]	0.0000547	100.00	Sig
	AT	0.00	0.00	0.00	0.00				

Table No. 8 comparison between Group A and Group B by using Mann Whitney U test.

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value
Pain	Group A	20	16.90	338.00	128.000	0.041
	Group B	20	24.10	482.00		
	Total	40				
Tenderness	GroupA	20	18.70	374.00	164.000	0.279
	Group B	20	22.30	446.00		
	Total	40				

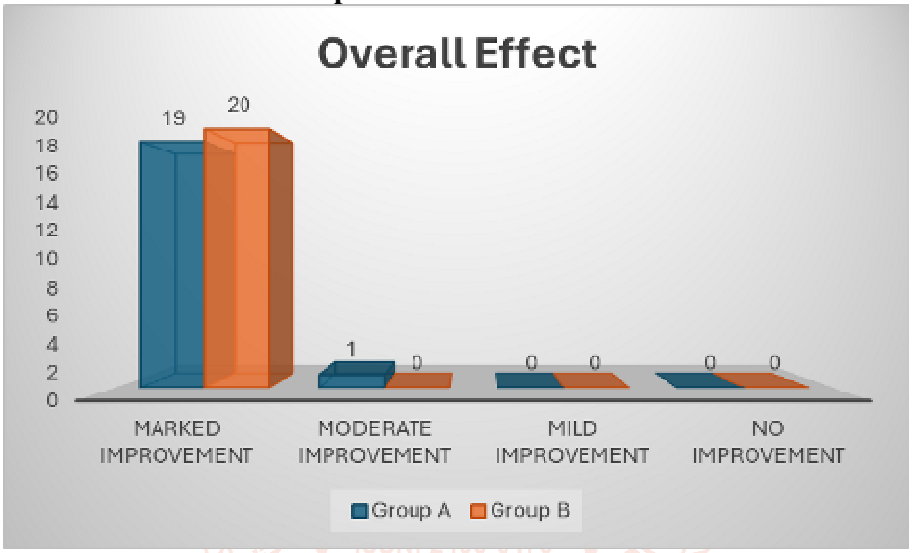
- Mann Whitney U Test is carried out for comparison between Group A and Group B. From below table, we can observe that, P-Value is greater than 0.05. Hence, we can conclude that, there is no significant difference between Group A and Group B.

- Mann Whitney U Test is carried out for comparison between Group A and Group B. From below table, we can observe that, P-Value is less than 0.05. Hence, we can conclude that, there is significant difference between Group A and Group B.
- Further, we can observe that, mean rank for Group B is greater than Group A. Hence, we can conclude that, effect observed in Group B is better than Group A.

Table No: 9 Overall effect

Overall Effect	Group A		Group B	
	N	%	N	%
Marked Improvement	19	95.00%	20	100.00%
Moderate Improvement	1	5.00%	0	0.00%
Mild Improvement	0	0.00%	0	0.00%
No Improvement	0	0.00%	0	0.00%
TOTAL	20	100.00%	20	100.00%

Graph No. 1 Overall Effect



Discussion

Discussion on Disease

Vatakantaka is predominantly caused by vitiation of Vata associated with Kapha in heal and cause pain, stiffness, and Shotha. In both the sciences, the commonly seen factor causing the disease is more pressure over the arch of the foot leading to the stretching and inflammation of plantar fascia. The main symptom it is defined as sharp pain on the plantar surface of the heel. Sharp pain in the heel is Group something like pin pricking. The word Kantaka correlates with thorn, and in Vatakantaka there is thorny pain in the heel. So, based on above factors it is appropriate to correlate Vatakantaka to Plantar fasciitis.

Discussion on Agnikarma

Agnikarma is an important Anushastra karma (para surgical procedure) elaborately described in the Sushruta samhita. While elaborating the benefits of this procedure, Sushruta mentioned that it is easy to perform, effective in many incurable diseases and which has no reoccurrence of the diseases, including severe pain in Asthi (bones) and Sandhi (joints) Pradesh. Agnikarma is indicated as one of the best treatment of pain in diseases of Asthi (bones), Snayu (tendons) and Sandhi (joints). It cures diseases with no recurrence[12.] Ushna (hot) Guna (property) of Agnikarma acts on Sheeta (cold) Guna of Vata Dosha helping in relieving in pain and stiffness. Agnikarma improves blood circulation at local site. There occurs softening of tissue and relaxation of muscles due to heat application relieving stiffness. Therapeutic heat stimulates the lateral spinothalamic tract, leading to stimulation of descending pain inhibitory fibers, causing release of endogenous opiod peptide, which blocks the transmission of pain[13.]

Probable Mode of Action of Agnikarma

- Shalaka made into red hot and placed on the skin to made Samyak Dagdha Bindhuvat Vrana by which heat transferred to local site. The Ushna, Tikshna, Laghu, Sukshma, Vyavayi, Vikashi and Ashukari properties of Agni helps to remove the Srotavarodha (obstruction of channels), pacifies the vitiated Vata Kapha Dosha and maintains their equilibrium thus break the Samprapti (pathology).

- By inducing heat to ankle joint causes vasodilatation which increases blood circulation, leading to increased blood flow to the ankle and also increase the venous return which flush away the metabolic waste from ankle. It will decrease pressure on nerve ending and there by decrease the pain and also enhances the natural process of repair.
- By inducing heat will improve local metabolism. This will increase the demand of oxygen and nutrients to the tissue which will enhance the natural process of healing
- Lateral spinothalamic tract (ascending neurons)[14] are the pathway for conduction of pain and temperature, pressure by ventral spinothalam ic tract. When perception of pressure and temperature factors is increased, pain perception is reduced because only stronger sensation one can felt by brain.
- By inducing heat cause irritation of sensory nerve endings, which relives pain by counter irritation.

Discussion on Eranda Taila Paana

Eranda having the Madhura, Katu, Kashaya rasa with Snigdha, Suksma Guna, is of Usana virya so it does Kapha Vatahara & Recana. Eranda taila is useful in curing Vatakantaka it subsides the pain of heel and ankle joint and it have the Shothahar, Shulahara properties.

Eranda taila acts as snigdha virechaka thereby reducing the rooksha guna of vata dosha and by its virechaka property helps in eliminating the other samsrushta doshas along with vata dosha.

CONCLUSION

- Both the methods of treatment proved to be effective in the management of Vatakantaka. But comparatively Agnikarma had slight better results.
- As both Agnikarma and Eranda Taila Paana were showing the significant results, the difference of effectiveness between these groups was not significant.
- The procedures in both the groups i.e., “Agnikarma” and “Eranda Taila Paana” which was simple, economical, and did not require hospitalization and it could be carried out at OPD level itself.

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