OPEN LABEL STUDY ASSESSING THE EFFICACY OF HARITAKI RASAYANA IN PATIENTS WITH VATARAKTA W. S.R TO MILD TO MODERATE PERIPHERAL ARTERY DISEASE

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ABSTRACT

Background: As a survey revealed, peripheral vascular disease of the lower extremity is an important cause of morbidity. This affects 10 million men and women in India over the age of 45 years, the incidence of the illness in general public greatly increases with advancing age and most particularly from 4th decade onwards. The highest prevalence of peripheral arterial disease is recorded in the 6th & 7th decades of life. **Objectives:** To assess the remission of symptoms & the change in the quality of life of patients suffering from *vata rakta* / ischemic limb disease after the course of *Haritaki Rasayana*. **Methodology:** The selected 20 participants were subjected to *Koshta shodhana* on 1st day with 20 ml of *eranda taila* added with 20ml of *Shuntikashaya*. From 2nd day to 30th day, 12 capsules *Haritaki Rasayana* was orally administered on empty stomach early morning with Luke warm water. Main outcome measures Pain-free walking distance (PWD); Color doppler ultrasound study for arterial circulation. **Result:** 20 patients diagnosed as *vatarakta* will be taken for study and treated with *Haritaki Rasayana*. The total result showed statistically significant. **Conclusion:** From all the assessment criteria pretest and posttest showed the *Haritaki Rasayana* is the ideal treatment regimen in patients suffering from *raktamargavarana vatarakta*. The total result showed statistically significant.

KEYWORDS: *Vatarakta*, Peripheral arterial disease*, Rakta margavarana, Haritaki Rasayana.*

INTRODUCTION

As the name itself specifies, *vatarakta* is a unique syndrome incorporating pleural clinical conditions with characteristic affliction of *vata dosha* and *rakta dhatu*. In an attempt of accomplishing comfortable living, people in the present era tend to adapt sedentary life style along with excess of nutritional intake. This imbalance in consumption of food and utilization energy forms the more serious *santarpana nidana* leading to the pathology of *margaavarana* / atherosclerosis. This presents in the extremities as the peripheral arterial disease. The illness of vatarakta is explained after the *vatavyadhi* in the literatures. As the name itself indicates, *vatarakta* is a unique syndrome incorporating pleural clinical conditions with characteristic affliction of *vata dosha* and *rakta dhatu*. In general, the *vatarakta* is a systemic disorder which is progressive in nature and typically affects the extremities. Mutual affliction and interrelated obstruction to the circulation of *vatadosha* and *rakta dhatu* is the unique pathology of *vatarakta*. Mechanical causes involving the extremities as well as sedentary life style has central role in the causation of the illness. Morbid accumulation of *kapha and medas* is the initial pathology in such condition. This may infiltrate the blood vessels leading to the *margavarana*. *Margavarana* in turn vitiates the *vata dosha* finally landing in the pathology of *vatarakta.*[1] This unique pathology of afflicted *vata dosha* and *rakta dhatu* reminds the etiopathogenesis of ischemic limb disease/peripheral arterial disease.

As revealed in a survey, peripheral vascular disease of the lower extremity is an important cause of morbidity. This affects 10 million men and women in India over the age of 45 years,[2] the incidence of the illness in general public greatly increases with advancing age and most particularly from 4th decade onwards. The highest prevalence of ischemic limb disease is recorded in the 6th & 7th decades of life.[3] More to add the disease may have acute, chronic, perpetuating and progressive course gradually spreading to the whole body. Progression of the illness beginning from the *purvarupa* stage into the *rupa* stage is unique in *vatarakta*. Anesthesia or hyperesthesia; anhidrosis or hyperhidrosis; dermal discoloration, skin eruptions and similar other symptoms are the premonitory symptoms of *vatarakta*.[4] This will then progress into rupa stage with joint symptoms is characteristic of *vata rakta*. Clinically it is categorized into *uttana* and *gambhira* types of *vatarakta*.[5] *Shodhana* including *raktamokshana*, *shamana,* and *rasayana* form the crux of the treatment. a balanced approach that pacifies the vata dosha and clears the morbidity of *kapha* and *medas* is rational. In this regard medication with *Haritaki Rasayana*[6] claimed to be effective in clearing the combination of pathological *kapha* and *medas* as well as vitiated *vata dosha*.

MATERIALS AND METHODS

OBJECTIVES OF THE STUDY

- To assess the remission of symptoms of *vata rakta* / ischemic limb disease in patients treated with course of *haritaki rasayana*.

- To assess the change in the quality of life of patients suffering from *vata rakta* / ischemic limb disease after the course of *haritaki rasayana*.

Source of data

20 patients diagnosed as vatarakta were taken for study from OPD and IPD of Sri Dharmasthala Manjunatheshwara Ayurveda Hospital Kuthpady, 574118. The Haritaki Rasayana is obtained from the SDM pharmacy, Kuthpady.

Method of collection of data

A special proforma was prepared incorporating all the clinical manifestation diagnostic criteria, inclusion/exclusion criteria and assessment criteria and with laboratory investigation finding of the margavaranajanya vatarakta/atherosclerosis. Complete clinical data is collected from all the selected patients as per this Performa. Results obtained is statically analyzed by adopting Wilcoxon signed rank test.

Design of the study

- ➤ **Study Type:**   - **Interventional**
- ➤ **Allocation:**   - **Non-randomized**
- ➤ **Endpoint Classification:** - **Efficacy Study**
- ➤ **Intervention Model:**   - **Single group assignment**
- ➤ **Masking:**   - **Open Label**
- ➤ **Primary Purpose:**   - **Treatment**

Interventions

- *Koshta shodhana* on day 1– oral administration of 20ml of *erandataila* added within 20 ml *shuntikashaya* during the early morning in empty stomach

- *Haritaki rasayan*a on day 2 to 30 – twelve 500 mg[7] capsules of aqueous extract of *haritaki rasayana in* empty stomach half an hour before breakfast with lukewarm water.

DURATION OF STUDY

- 30 days of intervention and 30 days of follow up period.

- Assessment - before and after the intervention.

DIAGNOSTIC CRITERIA

- Decreased or absent pulsations in dorsalis pedis, Tibialis Posterior or Popliteal Artery
- Symptoms suggestive of vatarakta / ischemic limb disease may be present that include numbness, calf intermittent claudication, hyporeflexia, hair loss, thickened nails, smooth and shiny skin, reduced skin temperature, and pallor or cyanosis.
- Ischemic limb disease diagnosed by Doppler ultrasound study for arterial circulation in the limbs.

INCLUSION CRITERIA

- Stages I to IV of Rutherford classification for peripheral arterial disease (PAD).
- PAD affecting femoral- popliteal circulation presenting with intermittent claudication of calf
- Ages Eligible for Study: 16 Years and above
- Genders Eligible for Study: Both
- Written informed consent

EXCLUSION CRITERIA

- Stages V & VI of Rutherford classification for peripheral arterial disease (PAD)
- PAD affecting aortoiliac circulation presenting with intermittent claudication of buttock, hip, thigh
- The patient with sever toxicity, progressive gangrenous changes in incite are excluded from study.
- Female intending to become pregnant and pregnant women.
- Involvement of all three Dosha in the pathology.
- Presence of upadrava.

ASSESSMENT CRITERIA

Assessment done based on primary & secondary outcome measures before, and after the treatment. & statistically analyzed by using Wilcoxon signed rank test.

Primary Outcome Measures

- Pain-free walking distance - [Time Frame: Day 0 to Day 30]

Patient is made to walk on comfortable on even surface 500 meter. the distance that causes claudication pain at thigh and calf Is noting this distance of inducing pain recorded on base line day "0" to after the treatment of 30dyas.

- Change from baseline in the Doppler ultrasound study for arterial circulation of ischemic limb.

Secondary Outcome Measures

Improvement from baseline in perfusion as measured by TcPO2 (Transcutaneous oxygen pressure) [Time Frame: Day 0 to Day 30]

Investigations

1) Blood investigations - TC, DC, ESR, HB%, RBS.
2) Radiological investigations (when necessary).
3) Lipid profile.

Assessment score
Table 1.

	Symptoms	Severity	Score
1.	**Pain**	➢ Nil	**0**
		➢ Not severe	**1**
		➢ Quite severe	**2**
		➢ Severe	**3**
		➢ Very severe	**4**
2.	**Sweating**	• Severe	**0**
		• Moderate	**1**
		• Mild	**2**
		• Absent	**3**
3.	**Skin discoloration**	○ Absent	**0**
		○ Mild	**1**
		○ Moderate	**2**
		○ Severe	**3**
4.	**Sensory loss**	• Absent	**0**
		• Mild	**1**
		• Moderate	**2**
		• Severe	**3**
5.	**Swelling**	➢ Absent	**0**
		➢ Mild swelling	**1**
		➢ Moderate swelling	**2**
		➢ Severe swelling	**3**

OBSERVATION

Out of 20 patients of *vatarakta*, maximum numbers of patients 10(50%) belongs to the age group of 61-70 years, 5(25%) patients belongs to the age group of 51-60 years, 3(15%) belongs to the age group of 71-80 years, and 2 (10%) of patients belongs to the age group of 41-50 years. 17(85%) of *vatarakta* were males, whereas 3(15%) patients were females. 17(85%) of patients belonged to Hindu religion, 3(15%) patients belonged to Muslim community and there were no any patients recorded in the Christian community. All 20 (100%) patients were married. The study revealed that most of the patients belongs to upper middle socio-economic status i.e.11(55%), and 8(40%), patients belonged to middle socio-economic status and 1(5%), patients belonged to the lower middle socio-economic status. 8(40%) of patients had high school education, 7(35%) patients were graduates, 3(15%) of patients had PUC education, 2(10%) patients had completed primary school. according to the occupation revealed that 8(40%) patients were retired, 4(20%) patients were employs, 3(15%) patients were business and other 3(15%) were agriculture and 2(10%) patients were housewife. 20(100%) patients were belonging mixed type of diets. 7(35%) of patients had no addictions, 6(30%) of patients had the smoking and alcoholic addiction, 5(25%) of patients had addiction of smoking, 1(5%) of patient had addiction of smoking, alcohol, and tobacco addiction, and 1(5%) patient had addiction of alcohol. all the patients taken for the study were having gradual onset of illness i.e. 20(100%). 9(45%) of patients had none of the associated illness, 6(35%) patients had DM&HTN, 5(25%) of patients had Diabetes Mellitus. All the patients belong to Dvandvaja Prakruti. Maximum 11(55%) patients are belongs to Vata Pitta Prakruti, 3(15%) of patients belong to Kapha Vata Prakruti, 3(15%) of patients belongs to the Kapha Pitta, 2(10%) of patients belongs to the Pitta Kapha Prakruti and 1(5%) of patients belongs to Vata Kapha Prakruti. maximum number of patients having 18(90%) Madyama Sara, 2(10%) belonged to Pravara Sara, none of the patients had Avara Sara. Madyama Samhanana 16(80%), 4(20%) of patients belongs to the Pravara Samhanana, 0(0%) none of the patients belongs to Avara Samhanana. 19(95%) of patients belonged to the Madyama Pramana, 1(5%) of patients belonged to the Pravara Pramana. 20(100%) belonged to the category of Madyama Satmya. None of them had Pravara or Avara Satmya. Majority of the 15(75%) of patients belonged to the Madyama Satwa,5(25%) of patients belongs to the Pravara Satwa and 0(0%) none of patients belonged to the Avara Satwa. 13(65%) of patients belonged to the Madyama Ahara shakti, 4(15%) of patients belonged to the Pravara Aharashakti and 3(15%) of patients belonged to Avara Ahara shakti. maximum patients had Avara Vyayama shakti 13(65%), 7(35) of patients belonged to Madyama Vyayama shakti

and 0(0%) none of the patients belonged to Pravara Vyayama shakti. 17 (85%) of patients belongs to Madyama Vaya and 3(15%) of patients belongs to vruddha. All the patients of 20(100%) taken for the study had Marga Samrodha as the principal sign was present. All the patients of 20 (100%) taken for the study had the symptoms of Ruk bhutva bhutva Nashyati. 11(55%) had the Sparshaajnatvam, whereas 9(45%) of them did not had the complaint of Sparshaajnatvam. 13(65%) patients belongs to the Sveda atyartam and 7(35%) patients did not had the Sveda atyartam. 17(85%) had Vaivarnya and 3(15%) did not had any color changes. 11(55%) of them had Shvayathu as the symptom and which was absent in the 9(45%).

RESULTS

➤ **Primary Outcome Measures**

1. Change in the pain-free walking distance in meters (PWD) [Time Frame: Day 0 to Day 30]: Before treatment the mean walking distance was 77.00 meters, after treatment with *Haritaki rasayana* the was 480.00 meters. The change that occurred after the treatment is greater than would be expected by chance; there is a statistically significant difference (P = <0.001).

2. Effect of *haritaki rasayana* on the on the arterial circulation of ischemic limb as evidenced by the arterial color doppler study

i. Effect of *haritaki rasayana* on blood circulation in common femoral artery

Before treatment the mean flow velocity of common femoral artery was 97.100, after treatment with *Haritaki rasayana* the it was 107.15. The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference (P = 0.040).

ii. Effect of *haritaki rasayana* on blood circulation in common peroneal artery

Before treatment the mean flow velocity of peroneal artery was 11.350, after treatment with *Haritaki rasayana* it increased 25. 050. This improvement after the treatment found to be statistically significant (p=0.008).

➢ **Secondary Outcome Measures**

i. Effect of treatment on transcutaneous oxygen pressure (TcPO2) [Time Frame: Day 0 to Day 30]

Before the treatment mean transcutaneous oxygen, pressure was 87. 800. after treatment with *Haritaki rasayana* mean transcutaneous oxygen pressure is 97.800. The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference ($P = <0.001$).

ii. Effect of treatment on Short Form (36) Health Survey quality of life score [SF 36]

Before the treatment quality of life score mean was 90.600, after treatment with *haritaki rasayana* for about 1 month the mean is 98.050. The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference ($P = <0.001$).

iii. Effect of *haritaki rasayana* on the symptom pain (ruk)

Before the treatment the severity of pain mean was 3.250, after treatment with *Haritaki rasayana* for about 1 month the mean is 0.300. The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference ($P = <0.001$).

vi. Effect of *haritaki rasayana* on the symptom Supti -

Before the treatment the mean value of Supti was 0.550, after treatment with *Haritaki rasayana* for about 1 month the mean is 0.0500. The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference ($P = 0.031$).

v. Effect of *haritaki rasayana* on the symptom Tvak Vaivarnya

Before the treatment the mean value of Tvak Vaivarnya was 1.600, after treatment with *Haritaki rasayana* for about 1 month the mean is 0.150. The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference ($P = <0.001$).

vi. Effect of *haritaki rasayana* on the symptom Swelling

Before the treatment the mean value of swelling was 0.800, after treatment with *Haritaki rasayana* for about 1 month the mean is 0.1000. The change that occurred with the treatment

is greater than would be expected by chance; there is a statistically significant difference (P = 0.016).

Change from baseline in the serum lipid profile [Time Frame: Day 0 to Day 30]

vi. Effect of *haritaki rasayana* on Serum Cholesterol

Before the treatment the mean value of serum cholesterol was 212.6, after treatment with *Haritaki rasayana* for about 1 month the mean is 191.4). The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.202).

viii. Effect of *haritaki rasayana* on Serum Triglyceride

Before the treatment the mean value of serum triglyceride was 161.9, after treatment with *Haritaki rasayana* for about 1 month the mean is 138.2. The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.058).

ix. Effect of *haritaki rasayana* on HDL

Before the treatment the mean value of HDL level was 51.700, after treatment with *Haritaki rasayana* for about 1 month the mean is 55.950. The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference (P = 0.033).

x. Effect of *haritaki rasayana* on LDL

Before the treatment the mean value of LDL level was 104.40, after treatment with Haritaki rasayana for about 1 month the mean is 101.70. The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.202).

xi. Effect of *haritaki rasayana* on VLDL

Before the treatment the mean value of LDL level was 36.550, after treatment with Haritaki rasayana for about 1 month the mean is 33.050. The change that occurred with the treatment is not great enough to exclude the possibility that it is due to chance (P = 0.441).

DISCUSION

20 patients suffering from *vatarakta* between the age group 61-70 years were subjected an open labelled clinical study with pretest and posttest design, treated with oral medication of twelve 500 mg capsules of aqueous extract of haritaki rasayana in empty stomach half an hour before breakfast with lukewarm water. Statistically significant improvement was seen in almost all parameters like primary outcome measure like pain free walking distance, Doppler

ultrasound study for arterial circulation of ischemic Limb and secondary outcome measures such as Short Form (36) Health Survey quality of life score, *Ruk*, *Supti*, *twak Vaivarnya*, swelling, even blood parameters showed minimal improvement after 30 days of treatment with *Haritaki rasayana*. 11 patients showed (100%) complete improvement, 7 patients showed (76-99%) good improvement, 2 patients showed (75%) of moderate improvement.

Among the diseases listed as *vatavyadi* the Illness *vatarakta* has gained prime importance in clinical practice due to its high prevalence in elderly, progressive perpetuation, severe complication and fatal outcome. In the literature it is highlights that the etiological factors lead to prime morbidity of *vata dosha* and *rakta dhatu*. To be more specific, hindrance of *rakta marga* or *raktavaha* Srotas is the leading pathology. The umbrella of *vatarakta* in parlance with conventional medicine incorporate many conditions related to extremities and mention a few are connective tissue disorders as well as peripheral vascular disorders.

Dietary habits and life style modalities play a major role in causation of *vatarakta*. Also, morbidity of *kapha* and *medas* can cause different other serious diseases in different system. Like *prameha*, *shonita dusti, hrudroga, and vatavyadi* etc. all are found to be due to incriminatory effect of *kapha* and *medas* in respective system. Hence forth the concept of *margavarana* in different parts of the body is emphasized in *charaka Samhita*.

Reduction in the level of lipid profile ensures arrest of the progressive *margavarana* atherosclerosis. Improvement in the velocity of blood flow as indicated in the arterial color doppler study proves improved circulation. Improvement in the perfusion of the tissues is shown by the transcutaneous oxygen pressure. These facts indicate that there is reversal in the diseases process. Corroborating the same, the reduction in clinical symptoms of illness that include increase in the pain free walking distance, reduction in the pain, *supti* and rectification of the skin color are recorded.

Reduction in intermittent claudication, rest ischemic pain etc. prove the reduction in the morbidity of *vata dosa* following the medication. Definite effect on pacifying the *vata dosa* and hence the reduction in severity of symptoms suggestive of morbidity of *vata dosa* in patients suffering from *vatarakta*.

Rectification of morbidity of *rakta dhatu*: morbidity of rakta dhatu in patients suffering from the *vatarakta* is indicated by symptoms like discoloration of the skin. Morbidity of *rakta*

dhatu is dependent upon the *margavarana*. Rectification of *margavarana* achieved by the medication definitely leads to reduction in the morbidity of *rakta dhatu*. The same is reflected in the present study.

Needless to say, the reduction in the lipid profile, improvement in the arterial blood follow, better perfusion of the tissues and remission of symptoms of vatarakta indicate that haritaki rasayana is the complete treatment of vatarakta. The treatment is administered for one month in the study, but the text advocates continuous medication through samvatsara. Therefore, the continuation of the medication for a longer duration will increase the amplitude or response and hence may be recommended accordingly. Since the medication has not shown any adverse symptoms in all the patients treated with haritaki rasayana it is proved to be safe regimen. The study is limited to the ischemic limb disease. At the same time the pathology of ischemic heart disease as well as ischemic stroke have similar pathology. As the medication is effective in margavarana and vatarakta, the same medication may be prescribed in these conditions expecting similar favorable response. In this regards this study paves way for many more study related to the margavarana and its sequel.

CONCLUSION

Due to santarpana nidana the morbid accumulation of kapha and medas in the rakta dhatu obliterates the raktavaha srotas with in the lower limb and manifests as vatarakta.

The whole concept of margavarana can be best explained by the pathogenesis of atherosclerosis and peripheral vascular diseases in modern parlance.

Haritaki rasayana significantly reduces the abnormal levels of lipid profile viz total cholesterol, triglycerides, LDL and VLDL. The HDL levels increase by the medication.

Haritaki clears the margavarana and improves the blood circulation. This is evidenced by the increase in the velocity of blood flow as shown by the color doppler studies in common femoral artery, common peroneal artery and Dorsalis pedis.

Improved circulation ensures perfusion. The statistically significant improvement in the transcutaneous oxygen pressure proves better perfusion of tissues by haritaki rasayana.

Definite remission of the symptoms like intermittent claudication, pain, numbness, discoloration, that are proved to be statistically significant indicates the therapeutic effect of haritaki rasayana in vatarakta.

The haritaki rasayana is effective and equally safe.

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