



Case Study

AYURVEDIC APPROACH IN THE MANAGEMENT OF DEEP VEIN THROMBOSIS (DVT): A CASE STUDY

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ABSTRACT

Venous Thrombosis (VT) of deep vein is a life-threatening condition. Deep vein thrombosis also known as Phlebothrombosis is a semisolid clot in vein which has got high tendency to develop pulmonary embolism and sudden death. It has an incidence of 1 per 1000 annually in adult population and is the third most common vascular disease, after Ischemic heart disease (IHD). DVT occurs most commonly in the lower extremities. The superficial femoral and popliteal veins in the thighs and the posterior tibial and peroneal veins in the calves are most commonly affected. Conventional treatment for DVT has some reported limitations and often requires expensive hospitalization. The present case study deals with a 49-year-old male, with a known history of heart attack 3 months before and lies in hospital bed for several days without sufficiently moving his legs, who noticed weakness, pain and swelling of bilateral lower limbs after discharge from hospital. In Doppler sonography it was found to have thrombosis of anterior and posterior tibial veins of right and left lower limbs. In Ayurveda the disease is not mentioned as it is but it can be correlated to *Gambhira-vatarakta*, *Siragata-vata* etc. This case study is about management of DVT with multi-modality treatment in the form of *Panchakarma* procedures such as *Rooksha sweda*, *Rooksha vasti*, *Upanaha*, *Jaloukavacharana*, *Kashaya dhara*, *Kashaya vasti*, *Ksheeravasti* along with oral medications. Treatment shown remarkable result especially in reducing swelling, pain and weakness. Assessment was done on the basis of signs and symptoms and doppler sonography. Venous doppler study showed normal superficial and deep venous system on both sides.

INTRODUCTION

Deep Vein Thrombosis also known as phlebothrombosis is a semisolid clot in the vein which has got high tendency to develop pulmonary embolism and sudden death (Sriram Bhat, 2016). It is the 3rd most common vascular disease after IHD & Stroke. The mechanism underlying DVT, known as Virchows triad, are venous stasis, hypercoagulability, and endothelial injury. It is more commonly found in the legs but may occur in the arms or the abdomen.

The femoral and popliteal veins in the thighs and the posterior tibial and peroneal veins in the calves are most commonly affected. Risk factors of DVT include Inheriting a blood-clotting disorder, prolonged bed rest such as during a long hospital stay, or paralysis, injury to veins or surgery, pregnancy, obesity, birth control pills (oral contraceptives) or hormone replacement therapy, smoking, cancer, heart failure, sitting for long periods of time, such as when driving or flying.

Conventional treatment for DVT has some reported limitations and often requires expensive hospitalization. In Ayurveda DVT can be correlated with *Raktavruttha vata*, *Raktagatavata*, *Siragatavata* etc. Various *Panchakarma* procedures and internal medicines were adopted in the present case study which gives a promising result especially in reducing swelling and pain.

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MATERIALS AND METHODS

Case Description

A known diabetic (since 6yrs), dyslipidemic (since 4½yrs), & hypertensive (since 4yrs) patient aged 49yrs was asymptomatic around 3 months back when he experienced breathing difficulties following which he had an episode of heart attack. He was taken to Medical College, Trivandrum and done angioplasty and was kept in ICU for few days. He has to lie in hospital bed for several days without sufficiently moving his legs. After recovery, he noticed weakness, tenderness and subcutaneous edema on leg which is of pitting in nature and stiffness of calf muscles (lt>rt) after discharge from hospital and was afraid to walk.

Pain is persistent and cramp-like aching in nature on bilateral calf muscles (lt>rt) which get worsen on walking and long standing but doesn't subside with rest also. He got a mild relief in pain on elevating the lower limbs. But swelling doesn't subside when the leg is elevated for an hour or overnight. On touch, there is localized rise in temperature on both lower limbs (lt>rt).

So patient came in OP of Govt. Ayurveda College, Poojappura, TVM for better treatment. In Doppler sonography it was found to have thrombosis of anterior and posterior tibial veins of right and left lower limbs. Hence, he was admitted for further management.

Echocardiography report showed Fair LV Systolic dysfunction, RWMA+, Grade I Diastolic dysfunction, Mild MR, No PAH, No clot/effusion. Lower limb venous doppler showed, bilateral thrombosis of anterior and posterior tibial veins (16/04/2019).

Negative family history of stroke, diabetes, hypertension, dyslipidemia and cardio-vascular pathology found. At the time of examination patient's vital functions were normal and patient was conscious, and oriented. Patient was able to walk with support. On general examination edema was found on b/l ankle joint and distal third of leg which is pitting in nature (lt>rt). Patient was non-smoker, nonalcoholic, and not having allergy to any drug or food item.

History of Past Illness

Patient had a history of Myocardial Infarction since 3 months, Hypertension since 4 years, Dyslipidemia, since 4 1/2 years and Type 2 DM since 6 years.

Personal History

- Diet: Mixed
- Habit: Nothing specific
- Bowel: Hard stools passes once in a day
- Allergy: Nil
- Appetite: Normal
- Micturition: Clear urine passing 4-6 times a day and thrice at night
- Addiction: Tea (5-6 cups a day)
- Sleep: Disturbed due to pain, Day sleep- 4-5hrs

Table 1: General Examination

Stature	Medium
Built	Moderate
Gait	Antalgic
Weight	68 Kg
Height	170 cm
BMI	23.53 kg/m ²
Stature	Medium
Built	Moderate
Pallor	Absent
Clubbing	Absent
Lymph adenopathy	Absent
Icterus	Absent
Cyanosis	Absent
Edema third of leg which is pitting in nature (lt>rt)	Present on b/l ankle joint and distal

Table 2 : Local examination

Right leg	Left leg
Swelling + (circumference-40 cm)	Swelling ++ (circumference-42 cm)
Redness +	Redness +
Local temperature↑	Local temperature↑
Itching- Absent	Itching- Absent
Tenderness ++	Tenderness +++

Physical Tests

Homan's sign- positive

Bancroft's sign- positive

Diagnosis

Diagnosis of DVT is made, if venous USG is positive (Kesieme et al., 2011). Assessment was done on the basis of signs and symptoms and Doppler sonography. Total two assessments were taken, pretreatment (baseline) and post treatment (after 9 weeks completion of treatment).

Table 3: Investigation Reports

Date	Name of Investigation	Results
16/4/2019	Right lower limb venous Doppler	PTV appears collapsed, with no significant flow ATV appears dilated with no significant flow
	Left lower limb venous Doppler	PTV appears collapsed, with no significant flow ATV at above ankle level appears collapsed with no significant flow Rest of the ATV appears compressible with reduced flow
17/4/2019	Hb	10.7g%
	TRBC	3.5million/cmm
	TWBC	6890cells/cmm
	ESR	83mm/1 st hr
	FBS	326mg/dl
	PPBS	450mg/dl
	HbA1c	9 %
	Total Cholesterol	236 mg/dl
	LDL	140 mg/dl
	HDL	32mg/dl
	Triglyceride	180mg/dl
	Urea	37mg%
Creatinine	1.5mg%	
14/5/2019	FBS	295mg/dl
	PPBS	369mg/dl
13/6/2019	FBS	144mg/dl
	PPBS	199mg/dl
	Total Cholesterol	224mg/dl
	LDL	108 mg/dl
	HDL	38mg/dl
08/8/2019	Both lower limbs venous Doppler	Normal superficial and deep venous system on both sides. No evidence of deep vein thrombosis on both sides.

Treatment**Table 4: Intervention Internal Medicines**

Date	Medicine	Dose
17/4/2019 - 14/5/2019	<i>Punarnavadi Kashayam</i>	90ml tds B/F
	Cap. <i>Shilajith</i>	1-0-1 A/F
	<i>Dhanwantharam gulika</i>	2-0-2 A/F
	<i>Parthalsunadi gulika</i> with ginger juice	1-0-1 A/F
	<i>Prabhakara vati</i>	1-0-1 A/F
15/5/2019 - 13/6/2019	<i>Sahacharadi Kashayam</i>	90ml tds B/F
	Cap. Thrombex	1-0-1 A/F
	<i>Parthalsunadi gulika</i> with ginger juice	1-0-1 A/F
	<i>Sivagulika</i> with cold water	½-0- ½ B/F

14/6/2019 - 22/6/2019	<i>Sahacharadi Kashayam</i>	90ml tds B/F
	Cap. Thrombex	1-0-1 A/F
	<i>Parthalsunadi gulika</i> with ginger juice	1-0-1 A/F
	<i>Sivagulika</i> with cold water	½-0- ½ B/F
	Tab. <i>Manasamitram</i> with milk	0-0-2

Table 5: Procedures

Date	Procedure	Medicine used
17/4/2019 - 23/4/2019	<i>Rooksha sweda</i>	<i>Kottamchukkadi choornam</i>
	<i>Upanaha sweda</i>	<i>Kottamchukkadi choornam</i> <i>Dhanyamlam</i> <i>Panchamla tailam</i> <i>Saindhava</i> -5gm <i>Jambeera swarasa</i> <i>Kalyana kshara</i> - 1 pinch
24/4/2019	<i>Jaloukavacharana</i> on left lower limb	
25/4/2019 – 1/5/2019	<i>Rooksha vasti</i>	<i>Makshika</i> - 120ml <i>Saindhava</i> -15gm <i>Vaiswanara choornam</i> -30gm <i>Sahacharadi kwatham</i> - 300ml
2/5/2019 – 8/5/2019	<i>Kadikizhi</i>	<i>Kolakulathadi choornam</i>
9/5/2019	<i>Jaloukavacharana</i> on right lower limb	
10/5/2019 – 16/5/2019	<i>Guluchyadi Kashaya dhara</i>	
17/5/2019 – 24/5/2019	<i>Yogavasti</i>	<i>Makshika</i> - 120ml <i>Saindhava</i> -15gm <i>Thikthakam ghrtam</i> -120ml <i>Sahacharadi tailam</i> -120ml <i>Avipathi choornam</i> - 30gm Tab. <i>Kaisora guggulu</i> (2) <i>Mahamanjishtadi kashayam</i> -480ml
25/5/2019 - 31/5/2019	<i>Jaladhara</i> (On forehead)	
1/6/2019 – 7/6/2019	PPS	<i>Sahacharadi taila</i> + <i>Vatasini taila</i>
8/6/2019 – 14/6/2019	<i>Guluchyadi ksheera vasthi</i>	<i>Makshika</i> - 120ml <i>Gugguluthikthakam ghrtam</i> -120ml <i>Madhuyashtyadi mezhupakam</i> -120ml <i>Guluchyadi Ksheerakashayam</i> -240ml
15/6/2019 -21/6/2019	SPS	<i>Vatasini taila</i>

OBSERVATION AND RESULT**Pain**

Total treatment period was nine weeks. On the basis of Visual Analogue Scale (VAS), patient was assessed weekly. Pain gradation was as follows:

0-1	No pain
2-3	Mild pain
4-5	Uncomfortable
6-7	Distressing
8-9	Intense
10	Worst possible

As we observed in VAS, before treatment pain grade was 8, after *Rooksha swedam*, and *Upanaham* pain grade came down to 7, after 1st *Jaloukavacharana* on left lower limb and further completion of *Rooksha vasti* & *Kadikizhi* pain grade came down to 5 on left lower limb and 6 on right lower limb, after *Jaloukavacharana* on right

lower limb and *Kashaya dhara* & *Yoga vasti*, pain grade came down to 4 on b/l lower limb. Then after PPS, *Ksheera vasti* and SPS pain grade came down to 3, 2 and 1 respectively.

Swelling

Before treatment patient was having swelling on both leg which later subside after treatment.

Swelling	Before treatment circumference	After treatment circumference
Right leg	40 cm	38 cm
Left leg	42 cm	38 cm

Redness

Before treatment the patient was having redness and raised local temperature which is relatively decreased after this treatment.

DISCUSSION

Deep Vein Thrombosis or DVT is the most common type of venous thrombosis. The thrombus can limit blood flow through the vein, causing swelling and pain. The treatments mainly aim to prevent Pulmonary Embolism. Other goals of treatment include preventing the clot from becoming larger, preventing new blood clots formation, preventing long term complications and reducing its recurrence. Modern treatment of DVT includes bed rest, elevation of legs, elastic stockings and use of drugs like heparin, coumarin, derivatives (warfarin), fibrinolytic drugs (streptokinase) and aspirin etc.

In Ayurveda there is no direct correlation of this disease, but causes, signs and symptoms of DVT resemble various complications in Ayurveda. as going through the *Lakshanas* mentioned by *Susruta*, *Caraka* and *Vagbhata Acharya*, we can correlate this to *Raktavruta vata*, *Raktagata vata* and *Gambhira vatarakta*. This is caused due to the imbalance in *Vata*, *pitta doshas* and *Rakta dhatu*. In *Raktavruta vata* Acharya *Susruta* mentioned the symptoms of pricking pain, hyperaesthesia and numbness of the affected area (*Srikanta Murthy*, 2010). Another condition called *Raktagata vata*, in which *Vagbhata* has mentioned there is severe pain, warmth, and redness. Considering the *Nidana* of *Vatarakta*, *Abhighata* (trauma), *Achankramanasheelinam* (sedentary period) etc. are mentioned by *Charaka* and *Vagbhata Acharya*. In this case, patient had a history of heart attack and lie in hospital bed for several days without sufficiently moving his legs.

Various *Panchakarma* procedures and internal medicines were adopted in the present case study which gives a promising result especially in reducing swelling and pain. As DVT is a *Siragata roga*, we can adopt *Upanaha* in its management. Administering *Swedana* in the form of *Upanaha* over the affected area can help to get relief from inflammation and pain. *Upanaha* reduces the inflammation by modifying secretion of various inflammatory mediators. It also relaxes local musculature by physical effect of heat and thereby reduces pain and increase the rate of trans-

dermal drug delivery (*Akhil et al.*, 2020). As these are basically *Raktapradoshaja vikaras*, so *Jaloukavacharana* is preferred. Leeches possess biologically active compounds in their secretions, especially in their saliva. An enzyme in their saliva called *hirudin* is a powerful anticoagulant. Recent researches on leech saliva unveiled the presence of a variety of bioactive peptides and proteins involving antithrombin, antiplatelet, factor Xa inhibitors, antibacterial and others. Thus, *Jaloukavacharana* helps in lysis of thrombus. Clinical studies revealed that it can reduce blood coagulability with an anti-inflammatory effect in patients (*Baskova et al.*, 1997).

Kashaya dhara is highly effective in reducing the pain. It also promotes fat metabolism and eases the muscle. *Kashaya dhara* is considered as best *Vatakapha samaka*, *Sothahara*, *Shoolahara*, and *Balya*. This helps in vasodilation also. The pharmacological action of the medicine and the temperature which is maintained during the treatment act as a counter irritant which is the thermal stimulus and it may help in reducing pain sensation and itching sensation.

Considering *Yogavasti*, *Sahacharadi taila* was preferred, as it has *Raktaprasadhana* and *Raktashodhaka* property (*Harishastri Paradakar*, 1998). *Sahachara* (*Barleria prionitis* L.) is rich in tannins, saponins, glycosides, phenolic acids, phytosterols, and terpene. It exhibits antibacterial, anti-inflammatory, and antihypertensive activities (*Singh et al.*, 2017). *Gugguluthikthaka ghrita* possesses blood purifying and anti-inflammatory properties. It is *Kapha-vatahara*, *Chedaniya* and *Lekhaniya* (*Tripathi*, 1999). *Mahamanjishtadi kwatha* used for *Kashaya vasti* supports the blood purification which contributes to healthy blood circulation and skin health. Procedure wise *Vasti* aids in accomplishing the task of *Srotoshodhana*. It removes the *Srotorodha* with the help of *Madhu* and *Saindhava*. *Madhu* added in *Vasti* scrapes out the *Doshas* which are producing *Upalepa* in the *Srotus* by *Lekhana karma*. *Saindhava lavana* destroys *Avarodha* and carries the drug to minute parts with its *Sukshma guna*. As *Vasti* is the important *Chikitsa* in *Vatarakta* and *Guduchi* is having the property of *Shonitavibandha nashini* (*Yadavji Trikamji Acharya*, 2009) *Guduchyadi ksheera vasti* was preferred. *Guduchyadi gana* is having *Pittahara* and *Dahaghna* property (*Harishastri Paradakar Vaidya*,

1998). To avoid *Karshana*, or corrosive action of *Kashaya*, *Snigdha*, *Seetha gunayuktha ksheera* is used to get *Pittahara* and *Raktha prasada* effect and *Oushadha prayoga* is through *Vasti* which does the *Vatanulomana*.

The three major goals of conventional medicines are: i). thrombus to resolve, ii). minimize the chance of PE and iii). to prevent recurrence and post thrombotic syndrome.

Modern medicinal therapy has some reported limitations, namely, i). the anticoagulant does not act on existing clot, rather it prevents further coagulation, ii). use of heparin in medical patients does not change risk of death or pulmonary embolism, though its use decreases risk of DVTs; it also increases risk of major bleeding (Alikhan et al., 2014), iii). regular blood tests is essential; iv). risk of bleeding doubles with VKA treatment and is contraindicated in pregnant woman (Hyers et al., 2001). Hence systematic Ayurvedic treatment with oral administration of suitable medicines has given promising result.

CONCLUSION

In the present case multi-modality treatment in the form of *Panchakarma* procedures such as *Rooksha sweda*, *Rooksha vasti*, *Upanaha*, *Jaloukavacharana*, *Kashaya dhara*, *Kashaya vasti*, PPS, *Ksheeravasti*, SPS along with oral medications is found to be effective. Treatment showed remarkable result especially in reducing swelling, pain, redness and weakness. Assessment was done on the basis of signs and symptoms and doppler sonography. Venous doppler study showed normal superficial and deep venous system on both sides.

Present study findings can't generalize and further long term follow up studies with large samples are required for better results.

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