



Non-Ischemic Central Retinal Vein Occlusion (CRVO) and its Management using *Ayurvedic* Therapies: A Case Series

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ABSTRACT

Introduction: Central retinal vein occlusion (CRVO) may result in either blurring of vision in the non-ischemic variety or vision loss in the ischemic variety. The two varieties of CRVO are identifiable by distinctive fundus findings. Observation is the first line of management in non-ischemic CRVO, but this does not always produce desired results. Hence, options in complementary and alternative medicine, including *Ayurveda*, may be sought.

Case Series: Data about three patients of non-ischemic CRVO who underwent conventional management but got marginal relief of their symptoms are presented here. The patients were managed using specially-tailored *Ayurvedic* treatments such as oral medicines, purification procedures, and local therapies for both the eyes and head.

Results: Satisfactory results in visual acuity, posterior segment examination, and optical coherence tomography (OCT) were noted.

Conclusion: The main aim and challenge in management were to improve visual acuity while bringing back normal findings and maintaining the integrity of the retina by both fundus examination and OCT. The results obtained in this series indicate the potential of *Ayurvedic* treatments to manage non-ischemic CRVO.

Key Words: Case report, *Kriyakalpa*, *Panchakarma Therapy*, *Timira*

INTRODUCTION

CRVO, a major cause of vision impairment and blindness,¹ has a prevalence of 0.1-0.7 per cent in population-based studies.² Its division into ischemic and non-ischemic varieties, though arbitrary, is important as up to 2/3 of patients with the ischemic variety develop rubeosis iridis and neovascular glaucoma.³ In some cases, CRVO may be idiopathic. Diabetes mellitus as a cause for CRVO may be attributed to its association with cardiovascular risk factors such as hypertension; its inadequate control may predispose to CRVO either in the same or fellow eye.⁴

Ischemic and non-ischemic CRVO are differentiated based on cardinal signs and symptoms. Although the prognosis of

non-ischemic CRVO is good, its chances for progression into ischemic CRVO is 15% within 4 months and 34% within 3 years.⁵ As convincing evidence of conventional management that alters the natural course of CRVO does not exist,⁴ alternative options in the realms of complementary and alternative medicine (CAM), including *Ayurveda*, may be sought.^{6,7}

Methodology

A systematic review of data about three patients of non-ischemic CRVO, along with their specially-tailored *Ayurvedic* treatments, is described in this case series. Informed written consent was obtained from the patients for detailing their cases. The series was prepared as per the Case Report (CARE) guidelines to ensure transparency and efficiency in reporting.⁶

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Case 1

A 52-year-old non-diabetic and non-hypertensive female presented with a 7-month history of gradual blurring of vision associated with floaters in her right eye (OD). She consulted an ophthalmologist, who advised injection of anti-VEGF, which she denied. She was put under observation, but no results were obtained. She consulted Sreedhareeyam, where she was diagnosed with non-ischemic CRVO. Her immediate family members do not present with similar complaints. Personal history, review of systems, and vital signs were within normal limits.

Unaided distant visual acuity (DVA) was LogMAR 1 OD and LogMAR 0 OS (left eye) and near visual acuity (NVA) was N6 OU. Anterior segment examination in both eyes (OU) was within normal limits. Direct and consensual pupillary reflexes were sluggish OD and normal OS. Posterior segment examination OD was remarkable for tortuous blood vessels, cotton-wool spots, and a few haemorrhages in the superior and inferior quadrants (**Figure 1a**), while fundus examination OS showed normal findings. Optical coherence tomography (OCT) scanning OD demonstrated cystoid macular oedema (**Figure 1b**), while normal findings were demonstrated OS. Routine haematology, fasting blood glucose, and lipid profile showed normal findings. She was admitted for an eight-day course of inpatient treatment.

Both DVA and NVA were maintained at discharge. Fundus examination OD showed resolution of tortuous blood vessels, cotton-wool spots, and haemorrhages (**Figure 1c**). and OCT scanning showed resolution in the cystic lesions (**Figure 1d**). DVA improved to LogMAR 0.77 OD at one follow-up and was maintained at another follow-up. DVA of LogMAR 0.6 with pinhole acuity improving to LogMAR 0.5 was noted at a third follow-up.

Case 2

A 31-year-old non-diabetic and non-hypertensive female presented with a 1-month history of sudden blurring of vision OS. She consulted an ophthalmologist upon the initial starting of the symptom and was advised anti-VEGF injection. She took one course but got marginal relief. In October 2014 she consulted Sreedhareeyam. Her immediate family members do not present with similar complaints. Personal history, review of systems, and vital signs were within normal limits.

Unaided DVA was LogMAR was LogMAR 0 OD and LogMAR 0.78 OS, and NVA was N6 OD and N18 OS. Anterior segment examination OU (in both eyes) was within normal limits. Pupillary examination OU showed normal responses to both direct and consensual reflexes. Posterior segment examination OD showed normal findings, while tortuous blood vessels, haemorrhages, and cotton-wool spots were noted in the superior quadrant OS (**Figure 2a**). OCT scanning OD

was normal, while signs of macular oedema were observed OS (**Figure 2b**) She underwent 2 courses of inpatient treatment.

DVA at discharge after the first course of treatment was LogMAR 0 OD and LogMAR 0.5 OS. The same readings were reported at discharge after the second course of treatment. DVA at the first follow-up improved to LogMAR 0 OU and was maintained at a second follow-up. Posterior segment examination OS demonstrated resolution of haemorrhages, cotton-wool spots, and tortuosity of blood vessels (**Figure 2c**). OCT scanning OS showed complete absorption of the subretinal fluid and re-establishment of the foveal contour (**Figure 2d**).

Case 3

A 53-year-old diabetic and hypertensive male presented with a 1-month complaint of foggy vision and inability to see during the morning hours OS. He took some allopathic medicines for the same and got symptomatic relief. He developed the same symptoms later on in the month and came to Sreedhareeyam seeking further options. He is currently under Metformin (1000mg), Thyrox (75mg), and Ecosprin (1mg) for diabetes and hypertension. His immediate family members do not present with similar complaints. His personal history, review of systems, and vital signs were all within normal limits.

Unaided DVA was LogMAR 1 OU, aided DVA was LogMAR 0 OU, and NVA was N18 OD and N12 OS. Anterior segment examination OU was within normal limits. Pupillary examination OU showed normal responses to both direct and consensual reflexes. Posterior segment examination OD showed normal findings, while tortuous blood vessels, cotton-wool spots, and haemorrhages in the superior quadrant were noted OS. (**Figure 3a**) OCT scanning was normal OD and fluid collection at the macula was noted OS. He was managed on an outpatient basis and had five consultations (**Figure 3b**).

Unaided DVA at the second consultation improved to LogMAR 0.78 OU and was maintained at the subsequent consultations. Aided DVA was maintained at LogMAR 0 OU and NVA at N12 OD and N18 OS throughout the other consultations. Gradual reduction in haemorrhages, tortuous blood vessels, and cotton-wool spots was observed during the second, third, and fourth consultations (**Figure 3c,e,g**). OCT scanning showed a gradual reduction of macular oedema during the second and third consultations (**Figures 3d,f**). At the fourth consultation, OCT scanning was not done and posterior segment examination was by direct ophthalmoscopy. Complete absorption of subretinal fluid and re-appearance of the foveal contour was observed on OCT scanning at the fifth consultation. (**Figure 3h**).

Additional Information

The inpatient treatments consisted of *Ayurvedic* oral medicines (**Table 1**) and external therapies, which consisted of *Netra Kriyakalpa* (local ophthalmic therapies), treatments for the head, *Sodhana* (bio-purification) procedures, and *Jalaukavacarana* (leeching) (**Table 2**).

Medicines prescribed at discharge for all patients are indicated in **Tables 1 and 2**. Timeline of events for all cases is described in **Tables 3-5**.

All medicines, except Chimumco tablet, were manufactured at Sreedhareeyam Farmherbs India, Pvt. Ltd, the hospital's GMP-certified manufacturing unit. Chimumco Tablet was manufactured at J&J Dechane Laboratories, Hyderabad, Telangana State, India.⁸⁻¹⁰

DISCUSSION

The pathogenesis of CRVO is believed to follow Virchow's triad of thrombogenesis, including damage, stasis, and hyper-coagulability of the blood vessels.¹¹⁻¹³ External occlusion of the central retinal vein by the sclerotic central retinal artery; occlusion by inflammatory or degenerative primary diseases of the vessel wall; and hemodynamic disturbances produced by factors such as hypotension, arterial spasms, and blood dyscrasias constitute other pathogenic factors for primary thrombus formation and blood stagnation.¹⁵ These result in alteration in the vessel's rheology properties, which ultimately result in stasis, the formation of a thrombus, and occlusion.^{14,15}

The symptoms of the patients may be compared to *Timira* (blurring of vision), a *Drishtigata Roga* (disease of vision) explained by *Ayurveda*. *Timira* encompasses a range of symptoms starting from *Avyakta Rupa* (indistinct vision) to *Andhya* (blindness). Immediate and comprehensive management is warranted for *Timira* as it can progress to *Kaca* (diminished vision) and finally to *Linganasa* (complete blindness) if untreated. *Acarya Videha* explains that increased *Doshas* (humours) traverse the *Rupavaha Sira* (vessels of sight) and lodge in the innermost *Patala* (layer) of the *Netra* (eye) to cause *Timira*. *Susruta* explains *Timira* when the *Doshas* settle in the third *Patala*, while *Vagbhata* explains it when the *Doshas* settle in the second *Patala*.¹⁷

In these patients, *Acakshushya Ahara* and *Vihara* (diet and lifestyle that are detrimental to eye health) caused *Pitta* (bile) and *Kapha* (phlegm) *Doshas* (senses of humour) to increase. These factors caused *Rakta Dhatu* (blood tissue) to pathologically increase and lodge in the eye because of its *Asraya-Asrayi Bhava* (homologous relationship) with *Pitta*.

Mandagni (impaired gastric fire) and the resultant increase of the *Doshas* and *Rakta Dhatu* resulted in compromised delivery of vital nutrients to the eye due to *Sanga* (obstruction)

and *VimargaGamana* (diversion of flow to improper places) of the *Raktavaha Srotas* (channels transporting blood).

Oedema and tortuous blood vessels were a direct result of *Sanga* and *VimargaGamana*, in which the retinal blood vessels became pathologically affected and leak serum into the retina. Cotton-wool spots were caused by *Sanga* in the fact that the inadequate supply of nutrients caused by obstruction resulted in hypoxia, which leads to tissue infarction.

The oral medicines enhanced the *Jatharagni* (gastric fire) by *Ama Pacana* (digestion of toxic products), and thus helped to clear up the obstruction in the *Srotas* and allow nutrition to reach both the retina and the eye as a whole.

Virecana (therapeutic purgation) enabled absorption of the subretinal fluid and correction of vascular pathology by expelling morbid humour from the body and thus further opening the *Srotas* for delivery of essential nutrients. *Nasya* prevented excess *Kapha* from accumulating in the head.

Jalaukavacarana (leeching) expelled impure blood from the eye. This relieved the obstruction in the retinal blood vessels and absorbed sub-retinal fluid, thus enhancing circulation. Leech saliva has more than 100 bio-active substances that possess anaesthetic, anti-inflammatory, anti-coagulant, thrombolytic, anti-edematous, and blood-circulation-enhancing properties.¹⁷

Seka, *Netra Dhara*, *Pindi* and *Purampada* enabled more bio-availability of drugs, enhanced peripheral circulation, enabled faster elimination of toxins, and promoted vaso-dilation of the blood vessels. *Anjana* allowed minute particles to penetrate through the ocular barriers to reach the target tissue. Absorption of subretinal fluid and reconfiguration of the vascular network of the retina were the results of these treatments as their actions enabled essential nutrients to reach the target tissues.

Lepa (application of paste) to the forehead and *Tala* (application of paste on a cotton gauze) to the head facilitated vasodilation, which allowed faster absorption of toxins and resolution of oedema. *Takradhara* (pouring of medicated buttermilk) facilitated absorption of the subretinal fluid and cooling down of the body.

Samirapancakam Kvatha is indicated in *Raktaja* (blood-related) and *Pittaja* (*Pitta*-related) disorders. *OphthaCap* is indicated in disorders of the eye. Some of the key ingredients in these medicines, viz., *Tinospora cordifolia* Miers., *Terminalia chebula* Retz., *Terminalia bellerica* Linn., *Emblica Officinalis* Gaertn., *Azadirachta indica* A. Juss., *Adathoda vasica* Nees., and *Santalum album* Linn., manage both *Pitta* and *Rakta* by their blood-purifying and vision-promoting properties.

Chimumco is made from *Rheum emodi* Wall., *Picorrhiza kurroa* Royle ex. Benth., *Quercus infectoria* Oliv., *Cinnamo-*

mum zeylanicum Linn., *Digitalis purpurea* Linn., and alum ($KAl(SO_4)_2$). It is indicated in bleeding and vascular disorders due to the hemostatic property of its ingredients.^{16,17}

Darsana Eye Drops is made from *Vitex negundo* Linn., rock salt, and borax, and is indicated in *Timira*. *KasyapamKvatha*, prepared from *Terminalia chebula* Retz., *Terminalia bellerica* Linn., *Embllica Officinalis* Gaertn., *Adathoda vasica* Nees., *Eclipta alba* Linn., and *Santalum album* Linn., is useful in all eye diseases. *Vinayakanjana*, prepared from *Cynodon dactylon* Linn., goat's milk, and goat's ghee, provides strength to the eyes and is healing medicine. *Pathya Punarnava Churna* prevented the collection of fluid and permitted smooth flow of nutrients to the target tissues.

The discharge medicines helped maintain digestion, prevent the formation of oedema, and promote vision.

CONCLUSION

One of the main challenges in these patients was the restoration and maintenance of vision. One of the three patients had complete restoration of vision, while the other two patients' visual acuity could be maintained. However, satisfactory fundus and OCT findings could be obtained at both discharges and subsequent follow-ups. In the end, the patients themselves were satisfied with the results. The results of this series may be validated with large-sample trials and studies.

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Abbreviations:

CRVO: central retinal vein occlusion

DVA: distant visual acuity

NVA: near visual acuity

OD: oculus dexter

OS: oculus sinister

OU: oculus uterque

OCT: optical coherence tomography

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Table 1: Oral Medicines

Medicine	Dose	Anupana (post-prandial drink)	Case	Duration
Kvatha (Herbal Decoctions)				
SamirapancakamKvatha*	30mL	<i>Sukhoshna Jala</i>	1	5 days
			1°	2 months
			3	2 months
Punarnavadi Kvatha ⁸	30mL	<i>SamirapancakamKvatha</i>	1°	5 days
			2	13 days
Patolamuladi Kvatha ⁹	60mL	<i>Sukhoshna Jala</i>	1	6 days
Guducyadi Kvatha ⁹	15mL	<i>Sukhoshna Jala</i>	2	25 days
			2°	2 months
BhunimbadiKvatha	15mL	<i>Sukhoshna Jala</i>	2	25 days
AmrtottaramKvatha	15mL	<i>Sukhoshna Jala</i>	2	25 days
DasamulaKatutrayamKvatha	15mL	<i>AmrtottaramKvatha</i>	2	13 days
Kvathaprepared from Kantakari, Tukasi, and Vasa	15mL	<i>Sukhoshna Jala</i>	2	13 days
Tablets				
Guggulu PancapalaTablet	1 tablet twice a day after food	<i>Sukhoshna Jala</i>	1°	2 months
Triphala Guggulu ¹⁰	1 tablet twice a day after food	<i>Sukhoshna Jala</i>	1	4 days
			2	25 days
SudarsanamTablet ¹¹			2	25 days
Chimiumco Tablet [^]	1 tablet twice a day after food	<i>Sukhoshna Jala</i>	3	2 months
Bilvadi Gutika ¹²	1 tablet twice a day before food	<i>Sukhoshna Jala</i>	3	2 months
Ophtha Cap*		<i>Sukhoshna Jala</i>	3	2 months
Kalka (herbal pastes)				
Kalka prepared from Haridra and Tulasi	20g	-	1	4 days

Table 2: External Purification and Local Therapies

Treatment	Medicine	Procedure	Time of Administration	Case No.	Duration
Sodhana(purification) and Raktamokshana (bloodletting)					
Virecana (therapeutic purgation)	<i>Avipattikara Yoga</i> ¹³	6g of the powder was given to the patient in the early morning. The number of urges were recorded	Morning	2	5 days
Pratimarsa Nasya (nasal medication)	<i>Anutaila</i> ¹⁴	2 drops of the lukewarm oil were instilled into each nostril.	Morning	2	14 days
Jalaukavacarana (leeching)	-	The <i>Jalauka</i> (leech) is suspended in a solution of <i>Haridra</i> until it gains motility. It is then applied to the desired spot and made to suck impure blood. Once the patient feels itching or pricking type of pain, the leech is removed.	Morning	1	1 day

Table 2: (Continued)

Treatment	Medicine	Procedure	Time of Administration	Case No.	Duration
Netra Kriyakalpa (Local Ocular Therapeutics)					
Ascyotana (eye drops)	<i>Sunetra Regular*</i>	The patient lies supine and a drop of the medicine is instilled into the eye at the inner canthus.	Twice a day	1	8 days
Anjana (collyrium drops)	<i>Darsana Drops*</i>			2	2 days
	<i>Nalikeranjana</i>				2 days
	<i>Candanadi Anjana</i>				7 days
	<i>Netramrtam</i>				7 days
Seka (pouring of liquids over the eye)	<i>Lodhra, Laksha</i>	A decoction is prepared from the ingredients. This is poured in a thin stream over the closed eyes.	Morning	1	6 days
	<i>KasyapamKvatha*</i>		Morning	2	9 days
Pindi(poultice)	<i>Laksha</i> and milk	A paste is prepared from the ingredients. It is partitioned into two and put on a piece of gauze. This is rolled into a circular bolus and is placed over the closed eyes.	Evening	1	7 days
Purampada(paste over the closed eyes)	<i>MukkadiPurampada</i>	A paste prepared from the tablets was applied over the eyelids, obviating the lashes	Morning	2	1 day
Netra Pichu (oil in a cotton gauze over the eye)	<i>Vinayakanjana*</i>	Suitable oil is poured on both sides of a piece of cotton gauze. This is placed over the closed eyes.	Morning	2	
Heat Treatments					
Takradhara	<i>Vasaguducyadikvatha, Amalaki, AmalakiKvatha</i>	2mL of medicated buttermilk was prepared from 300mL of decoction and 60g of the powder. This was poured over the head in a thin stream with the patient lying supine on the treatment table.	Morning	2	1 day
Talapotticchil (paste over the head covered with a plantain leaf)	<i>Manjishta, Lodhra,</i>	A paste is prepared from the ingredients. It is then applied uniformly over the head. The head is then covered with a plantain leaf.	Morning	1	7 days
	<i>Vasalakshadi-Churna,</i>				
Tala (paste over the head using a square piece of cotton)	<i>Vasaguducyadikashaya,</i>	A paste is prepared from the ingredients and placed on a cotton gauze, which is applied to the centre of the patient's scalp.	Evening	1	7 days
	<i>KacchuradiChurnaand Nimbamr-tadiEranda Taila</i>		Morning	2	11 days
Lepa (application of paste) over the forehead	<i>AmalakiChurna-mixed with milk</i>	A paste prepared from the ingredients was applied over the forehead.	Morning	1	4 days
	<i>AmalakiCurna, milk</i>			2	3 days
	<i>Musta and Amalaki</i>			3	2 months

Table 3: Timeline of Events: Case 1

Date	Event
September 2016	<ul style="list-style-type: none"> ◆ Patient first experiences blurring of vision
October 2016 - March 2017	<ul style="list-style-type: none"> ◆ Advised intra-vitreous injection of anti-VEGF by an ophthalmologist, which she denies. ◆ Put under observation, but no results
April 8 th , 2017	<ul style="list-style-type: none"> ◆ Consults Sreedhareeyam Hospital and is advised inpatient management. She gets admitted for an 8-day course of treatment. ◆ DVA (unaided): LogMAR 1 OD, LogMAR 0 OS ◆ NVA: N6 OU ◆ Anterior segment examination: Within normal limits OU ◆ Pupils: Sluggish with no afferent pupillary defect OD, normal reactions OS ◆ Posterior segment examination: tortuous blood vessels cotton-wool spots, and a few haemorrhages in the superior and inferior quadrants OD, normal findings OS ◆ OCT: cystoid macular oedema OD, normal findings OS ◆ <i>Ascyotana</i> is started.
April 9 th , 2017	<ul style="list-style-type: none"> ◆ <i>Seka</i>, <i>Pindi</i>, <i>Talapoticchil</i>, and <i>Lepa</i> over the forehead are started. ◆ <i>SamirapancakamKvatha</i>, <i>PunarnavadiKvatha</i>, and <i>PatolamuladiKvatha</i> are started.
April 10 th , 2017	<ul style="list-style-type: none"> ◆ <i>Tala</i> is started.
April 11 th , 2017	<ul style="list-style-type: none"> ◆ <i>Jalaukavacaranais</i> done. ◆ <i>Kalka</i> with <i>Haridra</i> and <i>Tulasi</i>, and <i>Triphala Guggulu</i> are started.
April 12 th , 2017	<ul style="list-style-type: none"> ◆ <i>Lepa</i> over the forehead is stopped. ◆ <i>Lepa</i> over the temporal region is started.
April 14 th , 2017	<ul style="list-style-type: none"> ◆ <i>Seka</i> and <i>Lepa</i> over the temporal region are stopped.
April 15 th , 2017	<ul style="list-style-type: none"> ◆ All treatments and oral medicines are stopped. The patient is discharged. ◆ DVA (unaided): LogMAR 1 OD, LogMAR 0 OS ◆ NVA: N6 OU ◆ Posterior segment examination: the resolution of tortuous blood vessels, cotton-wool spots and haemorrhages OD ◆ OCT: resolution in the cystic lesions OD
September 24 th , 2018	<ul style="list-style-type: none"> ◆ DVA (unaided): LogMAR 1 OD, LogMAR 0 OS ◆ NVA: N6 OU
March 23 rd , 2019	<ul style="list-style-type: none"> ◆ DVA (unaided): LogMAR 0.77 OD, LogMAR 0 OS ◆ NVA: N6 OU
January 23 rd , 2020	<ul style="list-style-type: none"> ◆ DVA (unaided): LogMAR 0.77 OD, LogMAR 0 OS ◆ NVA: N6 OU

Table 4: Timeline of Events: Case 2

Date	Event
August 2014	<ul style="list-style-type: none"> ◆ Patient experiences blurring of vision OS. She gets diagnosed with non-ischemic CRVO by an ophthalmologist ◆ She undergoes one round of anti-VEGF injection but gets marginal relief
October 2014	<ul style="list-style-type: none"> ◆ Consults Sreedhareeyam Hospital and is advised inpatient management ◆ DVA: LogMAR 0 OD, LogMAR 0.78 OS ◆ NVA: N6 OD, N18 OS ◆ Anterior segment examination: Within normal limits OU ◆ Pupils: normal responses to direct and consensual reflexes OU ◆ Posterior segment examination: Normal findings OD, haemorrhages, cotton-wool spots, tortuous blood vessels OS ◆ OCT: normal findings OD, macular oedema OS
First Course of Treatment (04/10/2014 - 28/10/2014)	
October 4 th , 2014	<ul style="list-style-type: none"> ◆ Admitted for the first course of treatment ◆ Oral medicines are started
October 5 th , 2014	<ul style="list-style-type: none"> ◆ <i>Anjana</i> is started.

Table 4: (Continued)

Date	Event
October 6 th , 2014	<ul style="list-style-type: none"> ◆ <i>Anjana</i> is stopped ◆ <i>Tala</i> with <i>KaccuradiChurna</i> and <i>NimbamrtadiEranda Taila</i> is done ◆ <i>Pratimarsa Nasya</i> with <i>Anutaila</i> is done
October 7 th , 2014	<ul style="list-style-type: none"> ◆ <i>Talapoticchil</i> with <i>Vasa</i>, <i>Yashtimadhu</i>, <i>Musta</i>, <i>Satavari</i>, and <i>Amalaki</i> mixed with <i>Vasaguducyadi Kashaya</i> is started ◆ <i>Lepa</i> with <i>Amalaki</i> and <i>Takra</i> is started ◆ <i>Purampada</i> with <i>MukkadiPurampada</i> is done
October 8 th , 2014	<ul style="list-style-type: none"> ◆ <i>Pindi</i> with <i>Biophytumsensitivum</i> is started
October 11 th , 2014	<ul style="list-style-type: none"> ◆ <i>Talapoticchil</i> and <i>Lepa</i> are stopped
October 13 th , 2014	<ul style="list-style-type: none"> ◆ <i>Pindi</i> is stopped
October 15 th , 2014	<ul style="list-style-type: none"> ◆ <i>Lepa</i>, <i>Talapoticchil</i>, and <i>Pindi</i> are restarted
October 17 th , 2014	<ul style="list-style-type: none"> ◆ <i>Talapoticchil</i> is stopped
October 19 th , 2014	<ul style="list-style-type: none"> ◆ <i>Virecana</i> with <i>Avipattikara Yoga</i> is done
October 20 th , 2014	<ul style="list-style-type: none"> ◆ <i>Tala</i> and <i>Pratimarsa Nasya</i> are restarted
October 21 st , 2014	
October 23 rd , 2014	<ul style="list-style-type: none"> ◆ <i>Virecana</i> is done
October 25 th , 2014	
October 27 th , 2014	<ul style="list-style-type: none"> ◆ <i>Virecana</i>, <i>Pratimarsa Nasya</i>, <i>Tala</i>, <i>Lepa</i>, and <i>Pindi</i> are stopped
October 28 th , 2019	<ul style="list-style-type: none"> ◆ All treatments are stopped. The patient is discharged. ◆ DVA: 6/6 OD and 6/18 OS ◆ NVA: N6 OD, N18 OS
Second Course of Treatment (15/01/2015 - 29/01/2015)	
15/01/2015	<ul style="list-style-type: none"> ◆ Oral medicines are started ◆ <i>Seka</i> is started ◆ <i>Anjana</i> is started ◆ <i>Tala</i> is started
16/01/2015	<ul style="list-style-type: none"> ◆ <i>Tala</i> is stopped ◆ <i>Pratimarsa Nasya</i> is started ◆ <i>Talapoticchil</i> with is started
21/01/2015	<ul style="list-style-type: none"> ◆ <i>Pratimarsa Nasya</i> is stopped
22/01/2015	<ul style="list-style-type: none"> ◆ <i>Anjana</i> is stopped ◆ <i>Talapoticchil</i> is stopped ◆ <i>Netra Picu</i> is started
23/01/2015	<ul style="list-style-type: none"> ◆ <i>Seka</i> is stopped ◆ <i>Takradharai</i> is done
27/01/2015	<ul style="list-style-type: none"> ◆ <i>Sirolepa</i> with is started
29/01/2015	<ul style="list-style-type: none"> ◆ All medicines and treatments are stopped. The patient is discharged. ◆ DVA: LogMAR O OD, LogMAR o.5 OS
25/08/2016	<ul style="list-style-type: none"> ◆ DVA: LogMAR o OU
01/01/2018	<ul style="list-style-type: none"> ◆ DVA: LogMAR o OU ◆ Posterior segment examination: reduction in cotton-wool spots and tortuous blood vessels, and re-establishment of the foveal reflex OS ◆ OCT: absorption of subretinal fluid OS

Table 5: Timeline of Events: Case 3

Date	Event			
August 2018	<ul style="list-style-type: none"> The patient first experienced foggiess of vision and inability to see in the morning hours. He is administered medicines; these provide symptomatic relief 			
September 9 th , 2018	<ul style="list-style-type: none"> Consults at Sreedhareeyam Eye Hospital. 	Visual Acuity (VA)	Posterior Segment Examination	OCT
	<ul style="list-style-type: none"> Unaided DVA: LogMAR 1 OU Aided DVA: LogMAR 0 OU NVA: N12 OD, N18 OS 	<ul style="list-style-type: none"> Haemorrhages, tortuous blood vessels, cotton-wool spots 	<ul style="list-style-type: none"> Macular oedema 	<ul style="list-style-type: none"> Medicines
				<ul style="list-style-type: none"> <i>Samirapan-cakam Kashaya</i>* <i>Ophtha Cap</i>* <i>BilvadiGutika</i> <i>Lepa</i> with <i>Musta</i> and <i>Amalaki</i>
September 24 th , 2018	<ul style="list-style-type: none"> Unaided DVA: LogMAR 0.78 OU Aided DVA: LogMAR 0 OU NVA: N12 OD, N18 OS 	<ul style="list-style-type: none"> Reduction in haemorrhages and tortuous blood vessels 	<ul style="list-style-type: none"> Reduction in macular oedema 	<ul style="list-style-type: none"> Medicines
				<ul style="list-style-type: none"> <i>Samirapan-cakam Kashaya</i>* <i>Chimumco Tablet</i>[^] <i>BilvadiGutika</i> <i>Lepa</i> with <i>Musta</i> and <i>Amalaki</i>
December 10 th , 2018	<ul style="list-style-type: none"> Unaided DVA: LogMAR 0.78 OU Aided DVA: LogMAR 0 OU NVA: N12 OD, N18 OS 	<ul style="list-style-type: none"> Reduction in haemorrhages and tortuous blood vessels 	<ul style="list-style-type: none"> Reduction in macular oedema 	<ul style="list-style-type: none"> Medicines
				<ul style="list-style-type: none"> <i>Samirapan-cakam Kashaya</i>* <i>Chimumco Tablet</i>[^] <i>BilvadiGutika</i> <i>Lepa</i> with <i>Musta</i> and <i>Amalaki</i>
April 1 st , 2019	<ul style="list-style-type: none"> Unaided DVA: LogMAR 0.78 OU Aided DVA: LogMAR 0 OU NVA: N12 OD, N18 OS 	<ul style="list-style-type: none"> Reduction in tortuous blood vessels 	-	<ul style="list-style-type: none"> Medicines
				<ul style="list-style-type: none"> <i>Samirapan-cakam Kashaya</i>* <i>Chimumco Tablet</i> <i>BilvadiGutika</i> <i>Lepa</i> with <i>Musta</i> and <i>Amalaki</i>
May 27 th , 2019	<ul style="list-style-type: none"> Unaided DVA: LogMAR 0.78 OU Aided DVA: LogMAR 0 OU NVA: N12 OD, N18 OS 	<ul style="list-style-type: none"> Complete resolution of haemorrhages, tortuous blood vessels, and cotton-wool spots 	<ul style="list-style-type: none"> The reappearance of the foveal contour 	<ul style="list-style-type: none"> Medicines
				<ul style="list-style-type: none"> <i>Samirapan-cakam Kashaya</i>* <i>Chimumco Tablet</i> <i>BilvadiGutika</i> <i>Lepa</i> with <i>Musta</i> and <i>Amalaki</i>

*Patented medicines of Sreedhareeyam Ayurvedic Eye Hospital and Research Center

[^]Patented medicine of J&J Dechane Laboratories, Hyderabad, Telangana State, India

[°]Prescribed at discharge

IMAGES: CASE 1

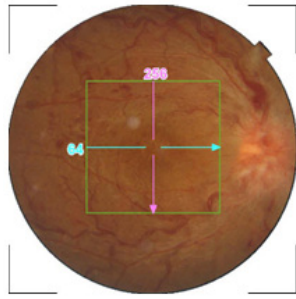


Figure 1a: Posterior segment examination OD at admission.

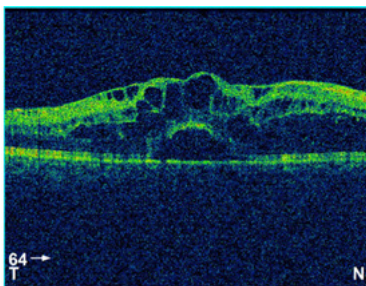


Figure 1b: OCT examination OD at admission.

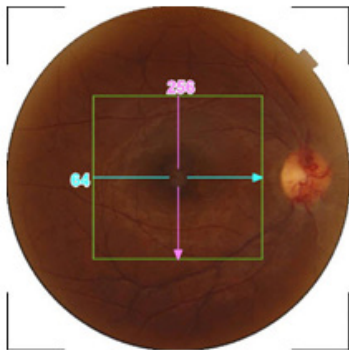


Figure 1c: Posterior segment examination OD at discharge.

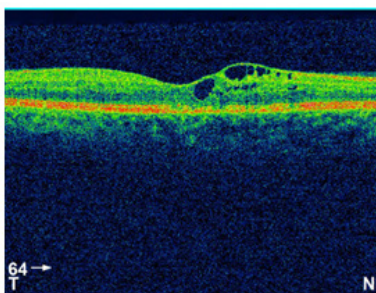


Figure 1d: OCT Scanning OD at discharge.

IMAGES: CASE 2

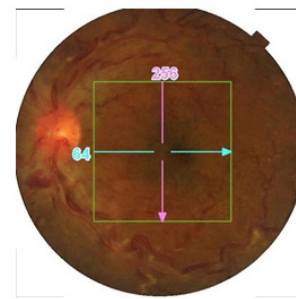


Figure 2a: Posterior segment examination OS at admission.

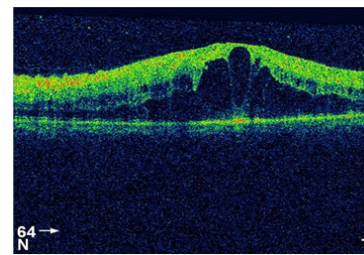


Figure 2b: OCT scan OS at admission.

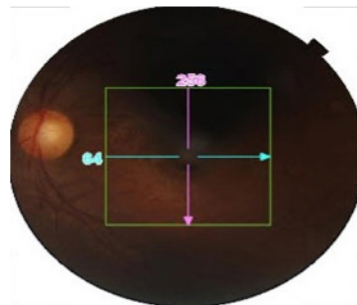


Figure 2c: Posterior segment examination OS at discharge.

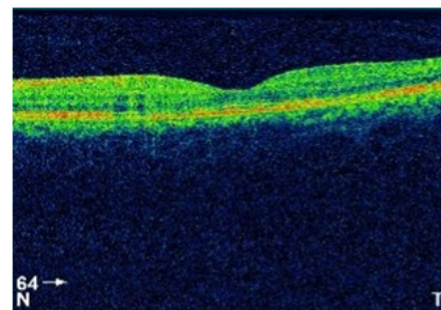


Figure 2d: OCT scan OS at discharge.

IMAGES: CASE 3

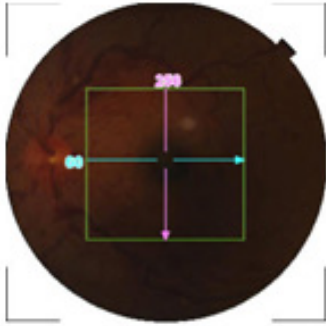


Figure 3a: Posterior segment examination OS on September 9th, 2018.

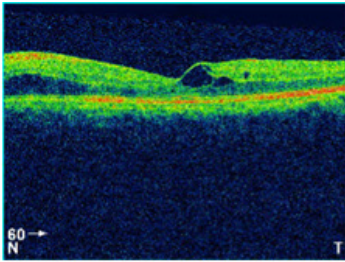


Figure 3b: OCT scan OS on September 9th, 2018.

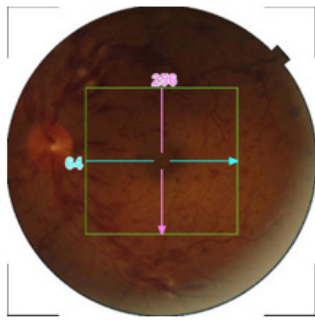


Figure 3c: Posterior segment examination OS on September 24th, 2018.

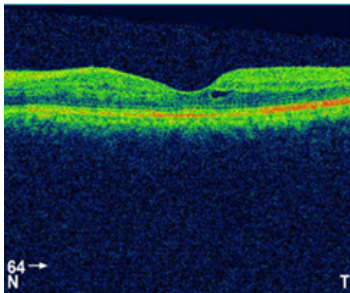


Figure 3d: OCT scanning OS on September 24th, 2018.

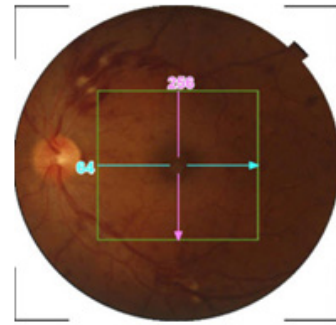


Figure 3e: Posterior segment examination OS on December 10th, 2018.

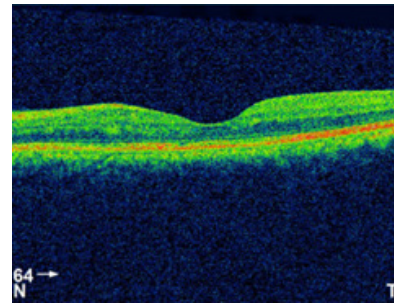


Figure 3f: OCT scanning OS on December 10th, 2018.

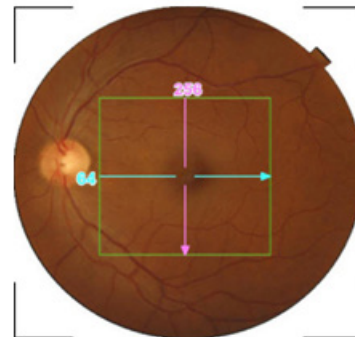


Figure 3g: Posterior segment examination OS on May 27th, 2019.

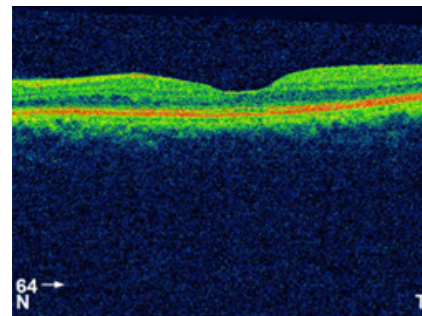


Figure 3h: OCT scanning OS on May 27th, 2019.