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EFFECTIVENESS OF LOCAL AYURVEDIC THERAPEUTICS IN THE MANAGEMENT OF PROLIFERATIVE DIABETIC RETINOPATHY – A CASE REPORT

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ABSTRACT

Proliferative diabetic retinopathy (PDR) is a severe complication of diabetes mellitus, often leading to significant vision loss despite conventional treatments such as photocoagulation and intravitreal injections. This case report evaluates the effectiveness of local Ayurvedic therapies in managing PDR in a 55-year-old male with a 28-year history of Type 2 diabetes along with hypertension, hypercholesterolemia, and chronic smoking. Despite undergoing multiple conventional treatments with minimal improvement, the patient sought alternative management through Ayurveda. The Ayurvedic treatment regimen, administered over three months, included a range of external therapies to address dosha imbalances and alleviate symptoms. *Sekam, Takradhara, Shirolepam, Mukhalepa, Kashaya vasthi, Kashaya dhara, Ksheera vasthi, and Jalukavacharanam* were utilized. These therapies focused on balancing *Rakta and Pitta Doshas*, reducing hemorrhage, and addressing oedema. Post treatment evaluations showed notable improvements in visual function and reductions in retinal haemorrhage and oedema, as evidenced by follow-up examinations. This case highlights the potential of Ayurvedic external therapies as a valuable complementary approach to conventional methods in managing PDR. The significant improvement in symptoms and visual outcomes demonstrates the efficacy of integrating holistic Ayurvedic treatments with standard care, offering a promising alternative for patients with PDR who do not respond adequately to conventional treatments.

Keywords: Proliferative diabetic retinopathy, Ayurvedic external treatment

INTRODUCTION

Diabetes mellitus is a common disease and occurs in one of two forms: Type 1and Type 2. This disease results in generalised macro and microvascular complications. Microvascular complications due to microangiopathy have been directly linked to glycemic control and affect the kidneys, eyes and peripheral nerves. Macrovascular complications are more common in diabetic patients than in the average population but are not necessarily directly linked to the level of hyperglycemia and affect the heart, brain and limbs[1]. A characteristic picture is seen in the fundus; however, in the elderly, the ophthalmoscopic picture may be complicated by arteriosclerosis, hypertension, or even renal disease. Almost all patients with Type 1 diabetes develop retinopathy in about 15 years. In those with Type 2 diabetes, the risk of diabetic retinopathy increases with the duration of diabetes, accompanying hypertension and smoking. People with diabetes have a 20-25 times greater risk of blindness as compared to the normal population[2]. Proliferative diabetic retinopathy (PDR) develops in more than 50% of cases after about 25 years of the onset of disease[3]. Therefore, it is more common in patients with juvenile onset (type I) diabetes. Histopathological examination of eyes with diabetic retinopathy shows a loss of intramural pericytes, thickening of the basement membrane and progressive closure of the retinal capillaries.

The clinical features of PDR in case of early lesions in serial angiograms have been shown that the extent of capillary closure increases as the severity of new vessels increases on a four-step scale, viz. (i) none, (ii) new vessels elsewhere (NVE) in the retina but sparing the disc, (iii) new vessels involving the disc(NVD), and (iv) neovascularization of the anterior chamber angle with neovascular glaucoma (NVG)[3]. Ophthalmoscopic features of PDR include neovascularization at the optic disc (NVD)or elsewhere (NVE), fibrovascular epiretinal membrane, vitreous hemorrhage and vitreous detachment in severe cases. The treatment available for proliferative diabetic retinopathy is photocoagulation of the ischemic areas to reduce the metabolic demand and decrease or prevent the release of Vaso proliferative factors by conversion of hypoxic foci into anoxic areas and leaking vascular anomalies into inert scars. This relieves the retina of oedema and hard exudates, improves its function, and causes the regression of new vessels, inhibiting further haemorrhage. But this treatment sometimes leads to complications if not done properly, including the development of a choroidal neovascular membrane (CNVM) from a previous laser scar, which can lead to severe loss of central vision, which may not improve even with further laser treatment to the CNVM. Excessive laser treatment can lead to a transient increase of aqueous flare, choroidal effusion, angle closure glaucoma, transient myopia, photophobia and impaired accommodation[5].

In Ayurveda, *Rakta dhatu* is considered essential for sustaining life. The *Sushruta Samhita's Sonitavarnaneeya Adhyaya* highlights *Rakta* as crucial for maintaining the body's vitality and asserts that it should be safeguarded meticulously. When *Rakta* is pure *(Visudha rakta*), the sense organs are vibrant, and sensory perception is balanced. *Rakta* and Pitta have a profound interconnection[6]. *Pitta* is regarded as a by-product (*Mala)* of *Rakta dhatu,* and their relationship is explained by the principle of *Asraya-asrayi bhava*, which illustrates their mutual dependency[7]. Pitta relies on *Rakta and Sweda (Sweat*) for its function. Therefore, if *Pitta* becomes imbalanced, it also disrupts *Rakta* and vice versa. Treatments that alter one factor will similarly impact the other. Diet and lifestyle play significant roles in the health of *Rakta dhatu.*

Ayurveda considers PDR in *Drishtigata roga* with the involvement of *Tridosha* with a predominance of *Raktha and Pitta*. The symptoms can be correlated with Parimlayi kacha, Pithaja kacha and Rakthaja kacha features. While treating ,Ayurveda consider a multidimensional approach with prime importance to *Nidana parivarjana and Samprapthi vighatana*. The treatment modalities include dietary and lifestyle modification, *Madhumeha chikitsa, Vata shonita chikitsa, Urdwaga Raktha pitha chikitsa, Shopha chikitsa And Abhishyanda chikitsa.*

Even after conventional treatments, patients do not get complete cure for their conditions and often present

with a recurrence of the diseases. The cost of modern management is also high, which may trouble the patient's lifestyle in general. Ayurveda offers treatments that can lead to substantial improvements in vision, providing new hope for many patients struggling with this condition.

CASE HISTORY

Chief complaints

- Sudden painless loss of vision in right eye marked for three months
- Sudden painless diminution of vision in the left eye

History of presenting complaints

A 55-year-old male patient with a long history of type 2 diabetes (28 years O/M), hypertension(1-year O/M), hypercholesterolemia (1-year O/M), High serum creatinine (O/M), and who is a chronic smoker with a 30-year history, using 1-2 packs daily on average presented to our OPD with a sudden, painless loss of vision in his right eye, which had been severe for the past three months, and a sudden, painless diminution in vision in his left eye on 5/7/24. He had defective vision in both eyes about two and a half years ago and was diagnosed with diabetic retinopathy at another facility. He underwent two laser treatments in both eyes and two intravitreal Avastin injections in his left eye in 2022 and 2023. Since there was no significant improvement in his vision, he came to our OPD for alternative management and was admitted on 9/7/24 for further treatment.

Past medical history

Stroke-1year ago

Family history

Both of the parents are diabetic

Ocular examination

Ocular structure	Right eye	Left eye
Adnexa	No abnormalities	No abnormalities
Lower palpebral conjunctiva	Concretions	No abnormalities
Upper palpebral conjunctiva	No abnormalities	No abnormalities
Bulbar conjunctiva	Degenerative changes	Degenerative changes
cornea	Arcus senilis	Arcus senilis
Anterior chamber	Normal depth	Normal depth
Iris	Normal	Normal
Pupil	Round, regular, reactive to light	Round, regular, reactive to light
Lens	Immature senile cataract	Immature senile cataract
IOP	10.2 mmHg	13 mmHg

Fundus examination

Characters	Right eye	Left eye
Media	Clear	Clear
Optic disc	Blurred margin Neovascularization	Blurred margin Neovascularization
CDR	Couldn't differentiate	Couldn't differentiate
Vessels	Tortuous, attenuated	Tortuous, attenuated
macula	Unhealthy	Unhealthy
GF	Dot and blot haemorrhages, Hard exudates Neovascularization	Dot and blot haemorrhages, Hard exudates Neovascularization

OCT findings(21/06/24)

characters	Right eye	Left eye
Central subfield thickness (µm)	250	311
Volume(mm^3)	8.7	11.4
Thickness Average cube(µm)	241	318

OCT shows low signal and traction in the right eye and macular oedema in the left.

Laboratory investigations

Blood examination

FBS	139 mg%
PPBS	287 mg%
Blood urea	72 mg%
Creatinine	3 mg%
Uric acid	7.3mg%

Urine examination

Albumin	+++
Microalbumin	1943 mg/l
Albumin creatinine ratio	1750 mg/gm of creatinine
RBC	4-6/HPF

Pathyapathya

- To follow a diet that will not aggravate diabetics
- Walking
- Avoid alcohol and smoking permanently
- Avoid stress, anger

TREATMENT PROTOCOL

SL NO	TREATMENT	MEDICINES	DURATION
1	*Sekam*	*Triphala, Dhanyamla*	2 times a day
2	*Vidalakam*	*Mukkadi Churna ,Jadamayadi Churna,Triphala Kashaya*	2 times a day
3	*Takradhara (Head)*	*Conventional+Guduchyadi Ksh, Manjistadi Ksh*	7 days
4	*Shirolepam*	*Manjistadi Churna, Jadamayadi Churna, Laksha Churna In Seka Kashaya*	7 days
5	*Mukhalepa*	*Manjistadi Churna, Jadamayadi Churna, Laksha Churna In Seka Kashaya*	7 days
6	*Kashaya Vasthi*	*Manjistadi Kashaya, Pancha Tiktham Ksh, Triphala Churna And Laksha Churna For Kalka*	3 days
7	*Kashayadhara(Head+ Whole body)*	*Manjishtadi Ksh, Guluchyadi Ksh*	7 days
8	*Ksheera Vasthi*	*Thikthakam Ksheera Ksh,Patoladi Grutha, Madhuyastyadi Taila, Yasti, Laksha And Manjista For Kalka*	7 days

9	*Kashaya dhara*	*Manjisthadi Kashaya+punarnavadi kashaya*	7 days
10	*Jalukavacharanam (both eyes)*		Two days

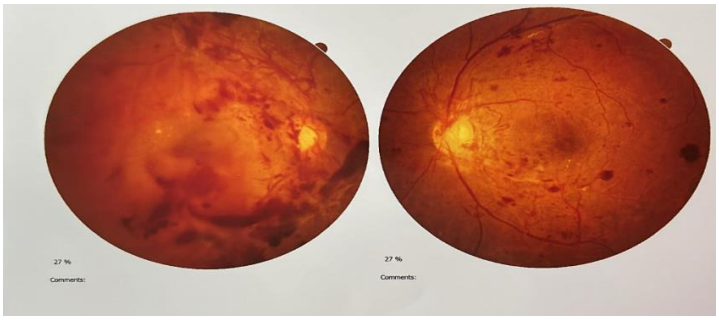
OBSERVATION AND RESULTS

Visual acuity

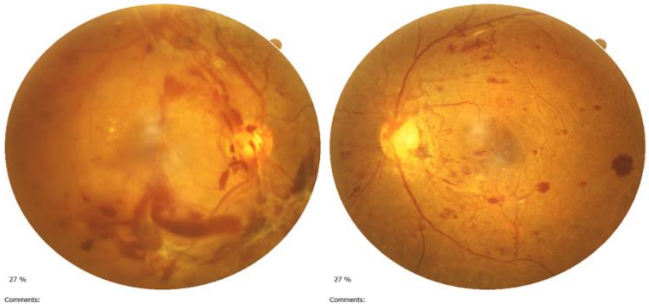
DATE	UCVA				BCVA			
	DV		NV		DV		NV	
05/07/24 (FIRST VISIT IN OP)	CF@1/2M	4/60	<N36	<N36	CF@1/2M	6/36	<N36	N18
09/07/24	CF@2M	4/60	<N36	<N36	CF@2M	6/24	<N36	N18
25/07/24	CF@2M	4/60	<N36	<N36	CF@2M	6/36	<N36	N18
05/08/24	CF@2M	4/60	<N36	<N36	CF@2M	6/24(B)	<N36	N12(B)
08/08/24	CF@2M	5/60	<N36	<N36	CF@2M	6/26(B)	<N36	N12(B)
12/08/24	3/60	5/60	<N36	<N36	3/60	6/24	<N36	N12
15/08/24	3/60	5/60	<N36	<N36	6/60(B)	6/24(B)	N36	N12
20/08/24	4/60	4/60	<N36	<N36	6/24(B)	6/24	N18	N12
30/08/24 (OP FOL-LOW UP)	6/60(B)	6/60(B)	N36	N36	6/24	6/24	N18	N10

FUNDUS PHOTOS

BEFORE TREATMENT (26/7/24)

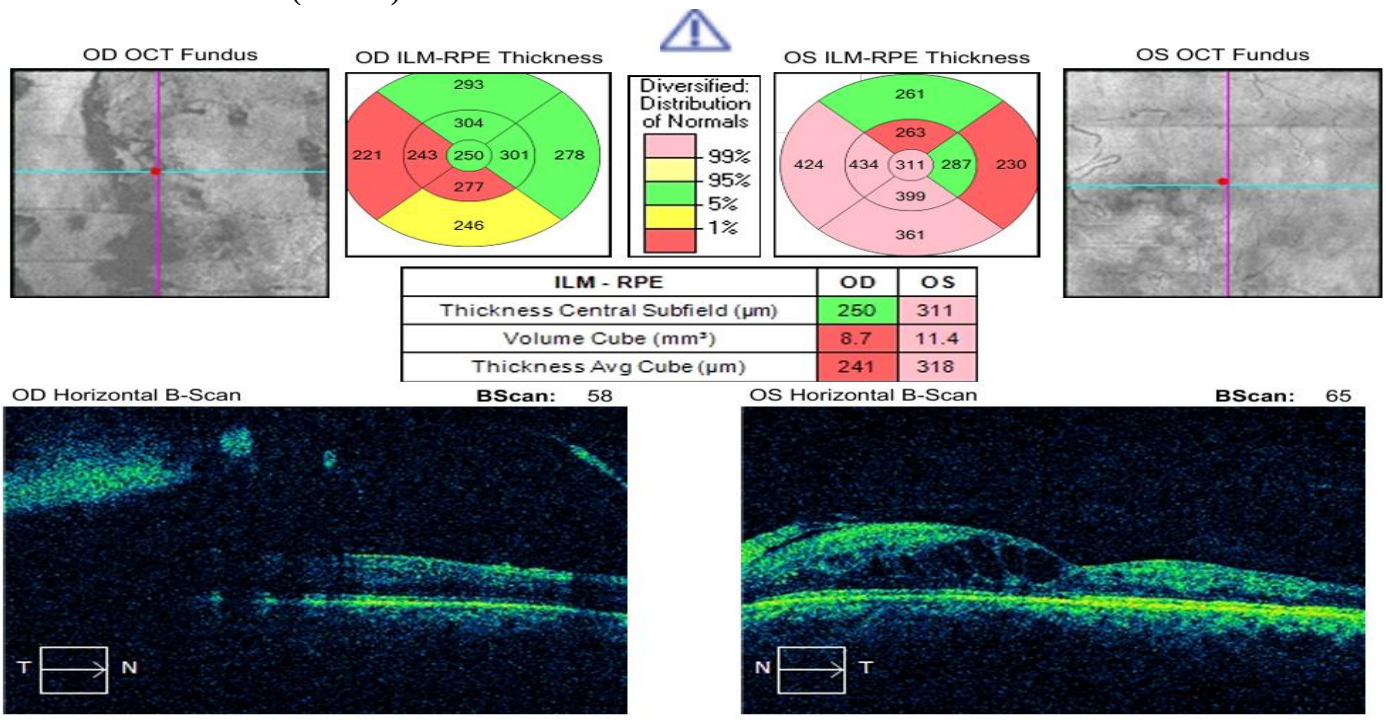


AFTER TREATMENT (30/8/24)

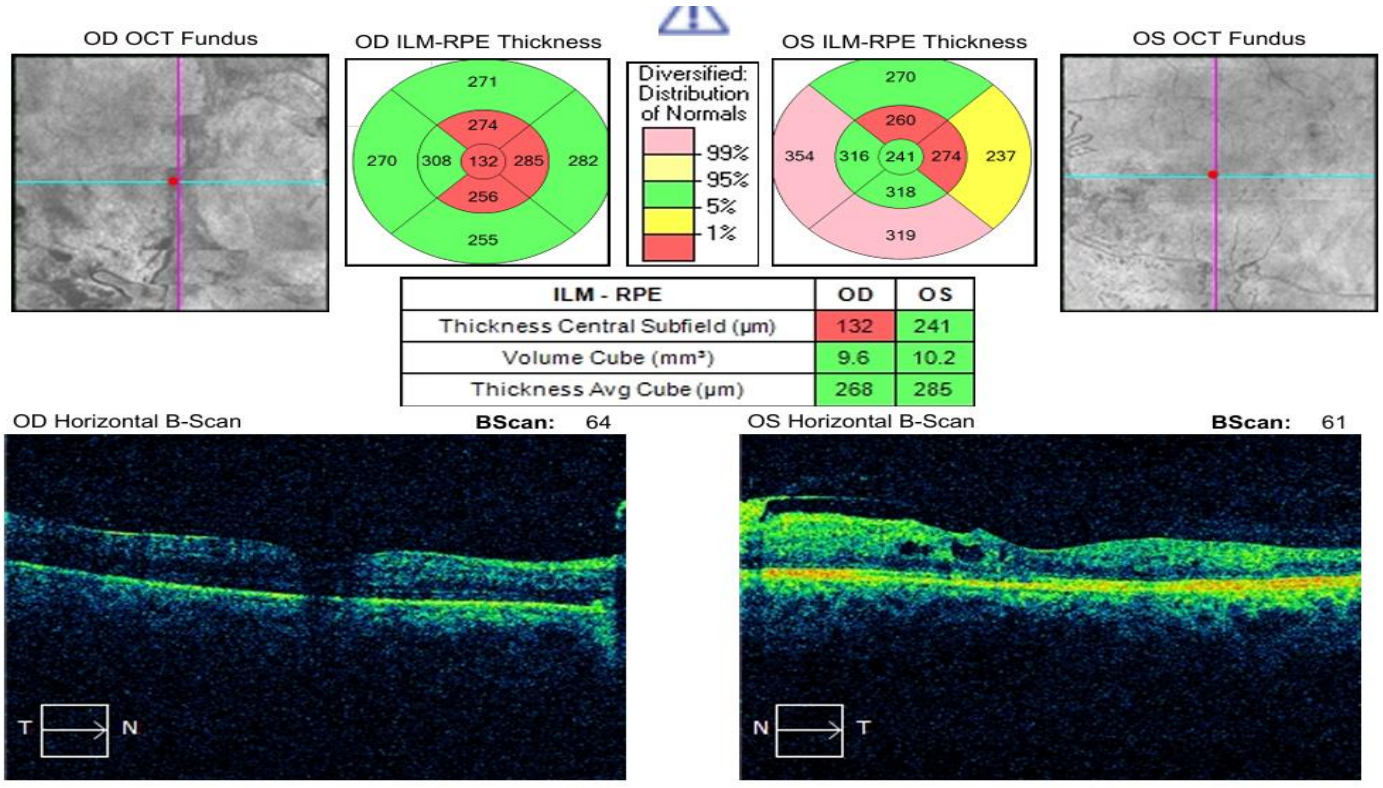


OCT IMAGES

BEFORE TREATMENT (10/7/24)



AFTER TREATMENT (30/8/24)



RESULTS

As the patient suffered from systemic illness like hypertension, diabetes mellitus and kidney disease, the possibility of giving internal medication was limited. Thus, this patient was given only external local therapeutics for three months. The patient showed considerable improvement in vision. Visual acuity improved from UCVA: RE:CF ½ m, <N36, LE: 4/60, <N36, BCVA:RE:CF ½ m, <N36, LE: 6/36, N18 to UCVA:BE:6/60(B), N36 BCVA:RE:6/24, N18, LE:6/24, N10. There was a reduction in bleeding in fundoscopy and oedema in OCT.

DISCUSSION

Diabetic retinopathy (DR) is the leading cause of irreversible blindness in adults between 20 and 65 years old. The key to preserving vision in diabetics is to prevent retinopathy, detect it early, treat it promptly, and maintain regular follow-ups. However, preventing further vision loss can be challenging when visual symptoms appear. In Ayurvedic terms, the pathology of diabetic retinopathy begins with disturbances in the *Raktavaha srotas*, leading to microangiopathy characterised by increased flow *(Atipravriti*), blockage (*Sanga)* and formation of nodules (*Granthis*), which manifest as haemorrhages, exudates, and venous beading[8]. In proliferative diabetic retinopathy, the condition may involve additional factors such as inflammation *(Abhisyanda*), blood impurities (*Raktha dusthi*), and improper diet and lifestyle (*Achakshusya ahara vihara).*

Ayurvedic treatment for eye disorders is categorised into two approaches: one based on the stage of disease (*Amapakwa avastha*) and the other focusing on specific eye diseases (*Drishti roga chikitsa*). Proliferative diabetic retinopathy can be identified as *Parimlayi kacha*, with possible differentiation from *Pithaja kacha, Rakthaja kacha, And Sannipatha kacha*. When treating retinal vascular diseases, it is essential to consider the pathology of *Vata shonita, Urdwaga Raktha pitha, And Abhishyanda.* The general treatment for timira (eye disorders) includes local therapies such as blood purification (*Raktha Mokshana*), nasal administration (*Nasyam*), ocular applications (*Anjana*), external treatments (*Lepa*), and eye washes (*Seka)*[9]. Given the involvement of *Pitha, Raktha, Kapha,* and *Vata* doshas in the disease, treatments should be tailored accordingly, focusing on balancing these *Doshas.* Additionally, avoiding causative factors (*Nidana Parivarajana*) and addressing the disease's progression (*Samprapthi vighatana*) are crucial. A significant challenge in treating retinal diseases is overcoming the blood-retinal barrier, which is influenced by *Kapha dosha, Rasa dhatu*, digestive function (*Jataragni*), diet, and mental health. This underscores the importance of maintaining a healthy mental state.

Probable mode of action of treatments given

***Takradhara*:** Was done with *Takra* processed with *Guluchyadi* and *Manjishtadi kashaya*, which mainly reduced *Raktha* and *Pitha doshas* as there was severe bleeding in fundus findings. Also, it may help to reduce *Sthanika kleda,* thus resulting in reduction of bleeding and oedema.

***Sirolepa and Mukhalepa, Vidalaka*:** Done with drugs which may help to reduce *Pitha* and *Kapha doshas*. It is based on *Pitha timira Chikitsa*, where *lepas* are given importance. Also, the first line of treatment of *Sopha* is *Alepa*, which may help with *Samprapthi vighatana* of *Abhishyanda.*

Kashaya dhara: was done with *Pitta* and *Kapha samana Drugs* as an alternative option to *Takradhara* when oedema is not fully resolved.

Ksheeravasthi: This was done judiciously with *Pitta Samana* drugs by considering the recurrent nature of the disease and to provide strength to retinal layers. The innermost *Patala of netra is Asthyasritha*. Here, the *Asthi asrita* should be taken as a supportive function, and it is evident that the retina is anatomically attached only in two points, i.e. at Ora serrata and optic disc. It is easily detachable in nature, so the retina needs support for its existence and functioning. Thus, *Vasthi* will be beneficial.

Netra sekam: Done with *Raktha and Pitta Samana* drugs, it is used to overcome retinal haemorrhage under the *Urdhva Raktapitta* spectrum. It helps to arrest bleeding.

Jalaukavacharana: To control bleeding within a short duration, it was adopted

CONCLUSION

Diabetes is the primary cause of diabetic retinopathy, and the goal of treatment is to restore both the structural and functional integrity of the *Drishti patala*. This case highlights that Ayurvedic external therapies, combined with proper diet and lifestyle changes, can significantly improve vision and even partially reverse the condition, sometimes without internal medications. Timely consultation and intervention are crucial for resolving complications like bleeding and oedema. The treatment focused on balancing *Rakta, Pitta, and Kapha* through local applications and blood-purifying therapies, which were essential for enhancing blood vessel integrity, aiding in the absorption of haemorrhage, and improving visual acuity. Additionally, *Vasthi* (An Ayurvedic therapeutic enema) was administered to support overall health and prevent recurrence. It is essential to avoid treatments such as *Tarpanam* for this condition. This case effectively demonstrates Ayurveda's role in the initial management of ocular diseases like proliferative diabetic retinopathy (PDR) and macular oedema, emphasising the importance of lifestyle modifications, dietary adjustments, and timely Ayurvedic treatments in restoring visual function.

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