



CASE REPORT

Ayurvedic Management Of Non- Proliferative Diabetic Retinopathy And Diabetic Macular Edema- A Case Report

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Abstract

Non-Proliferative Diabetic Retinopathy (NPDR) is silent microvascular damage of retina developed as the complication of diabetes mellitus. Diabetic Macular Oedema (DME) happens by the accumulation of fluid in macula causing swelling and it can occur at any course during the progression of diabetic retinopathy. This results in distorted visual impairment in Diabetic patients. Currently, Intravitreal anti- VEGF drugs, intravitreal steroids, photocoagulation and laser therapy has revolutionised the management of DR. In Ayurveda there is no direct correlation for DR & DME, but analysing the etiopathogenesis it can be a *Premehajanya netra vikara* and somewhat specifically *Saraktha sannipathika kacha*.

A 60-year-old moderately built male patient with a known history of DM which is under moderate control approached the OPD with gradual painless defective vision in his right eye since 6 months ago along with wavy vision and floaters in front of his right eye since 4 months. Ocular examination reveals visual acuity during presentation UCVA OD - 6/18(P) & N36 OS- 6/6(P) & N24 and BCVA OD - 6/18 & N8 and OS - 6/6 & N6. Fundus examination revealed microaneurysms in both eyes. Hard exudates were present in right eye. Oct showed cystoid spaces with subretinal fluid collection. Admitted treatment was given for one month and Internal medication & external applications had continued for three months. Observations were noted as per subjective and objective parameters.

Treatment mainly focused on *pitta raktha samaka* along with balancing *anubhandha kapha*. Considering *timira chikitsa*, procedures such as *snehana* (oleation), *virechana*(purgation), *nasya*(errhine), *Anjana*(collyrium), *murdhavasthi*, *tarpana*, *putapaka* and *kriyakalpa* were adopted. Parallely *samana chikitsa* (palliative therapy) was also underwent based on *dosha* and *dhatu* involved.

Finally, the outcome showed, the medications and procedures done in the case were significant in reducing the DME and retinopathic changes. By reducing edema, patient got improvement in visual acuity.

Introduction

The long-term outcome of diabetes mellitus is the diabetic retinopathy, a microangiopathy condition that can result in vision-threatening retinal changes and ultimately cause blindness. Nearly 25% to 30% of the population with type 1 diabetes and type 2 diabetes are known to have the chance of DME, along with the prevalence of diabetic retinopathy being 77.3% and 25.1%, respectively [1]. Etiopathogenesis reveals that duration of diabetes, poor metabolic control, heredity, pregnancy, hypertension, CVD, smoking are the risk factors for developing diabetic retinopathy. Females are more affected than males with ratio 4:3[2]. Chronic hyperglycemia causing increased vascular permeability and microvascular occlusion is responsible for changes in retina. Along with this, Oxidative stress also cause damage to cells and tissues.

Clinically, DR can be divided into Non proliferative Diabetic Retinopathy (NPDR) with subtypes of mild, moderate, severe & very severe and Proliferative diabetic retinopathy (PDR) as mild-moderate and high-risk PDR. NPDR shows the retinal pathologies such as microaneurysms, haemorrhages, hard exudates, soft exudates, Intra Retinal Microvascular Abnormalities (IRMA), venous changes (dilatation, looping, beading) and arterial changes (peripheral narrowing, silver wiring). PDR is the late stage of DR characterised by neovascularisation. Diabetic Macular Edema is the main reason for the vision impairment in this patient. Breakdown of blood retinal barrier results in DME causing the thickening of macula due to the accumulation fluid in intra or sub retinal layers of macular area [2]. Due to this reason, the fovea gets a cystoid look because of the collection of fluid at the centre, which is known as cystoid macular edema [3]. Evaluation can be done with Fundus Photography, Fundus Fluorescein Angiography (FFA), Optical Coherence Tomography (OCT) and ultrasonography. Metabolic control of Diabetes Mellitus along with periodic follow up is the initial step in the management of DR. Anti- VEGF agents, Intra vitreal steroids, focal or grid laser, macular photocoagulations helped in halting the progression of vision loss. Mostly involved complications are tractional retinal detachment Vitreous haemorrhage.

In the ayurvedic aspect, Diabetic Retinopathy can be analysed as *premeahjanya netra vikara* which developed as *premeha upadrava* (complication of diabetes mellitus). A *premeha rogi* with increased *kledatva* and *bahu dravatva* of *kapha* in the *shareera* causes *abishyanda* of *siras* and *srotas* where *raktha dhatu* is affected and *pitta dosha* get vitiated. When the condition spread to *jatrurdhva* and gets *sthanasamsraya* in *netra* causes the changes in *drishtipatala*. The entire pathogenesis of DR begins with *rakthavaha*

srotodushti. The microangiopathic changes such as *sanga*, *granthi* and *attipravriti* appear as exudates, venous beading and haemorrhages in DR [4]. Viewing the features of diabetic retinopathy, it shows much relation with *kacha* in *drishtigataroga* with *pitta rakta* involvement. When *kaphanubandhatvam* become more evident, it results in DME where *sopha* has quoted as *upadrva* of *premeha* in *Susrutha Samhita*. Outlining these findings NPDR & DME as a combination corresponds with the stage of *Saraktha sannipatha kacha*.

General treatment measures of *timira chikitsa* can be adopted with suitable drugs and medications. *Ghritapana*, *nasya* and other *shodana chikitsa*, *anjana*, *murdhavasti*, *tarpana* are mentioned in the context [5]. *Ama lakshnas* of *netra* like *Vedana*(pain), *raga*(redness), *sopha*(swelling) etc should be treated with *kriyakalpa*. Here *sopha* can be correlated with the swelling in macular area and thus all these treatment modalities can be appropriately adopted for the management of the condition presented.

CASE REPORT

Presenting complaints

A 60-year-old moderately built male patient male patient with k/c/o Diabetes Mellitus since past 10 years approached our OPD with complaints of Gradual painless defective vision in right eye for 6 months and distorted vision and black spots in front of right eye for 4 months.

No relevant family history noted. Patient had no other ocular disorders.

General examination

Patient was appropriately nourished with *Kapha pitta prakriti*. The blood pressure was 128/80 mm Hg, pulse rate was 74 beats/min, respiratory rate was 20/min and temperature were 96.8°F.

No other systemic illness was noted.

Personal history

It showed mixed diet with irregular timings of food intake, bowel was regular, micturition was 5-7 times/day. Appetite was good and sleep was disturbed. No addictions of alcohol, tobacco was found. Allergic to dust.

Clinical findings

During the presentation of symptoms, his visual acuity was UCVA OD - 6/18(P) & N36

OS - 6/6(P) & N24 and BCVA OD - 6/18 & N8 and OS - 6/6 & N6.

A complete blood investigation was carried out and result showed FBS - 134mg%, PPBS- 298 mg%, B.urea - 19 mg%, SGOT - 45 IU/ L, SGPT - 51 IU/L

Table 1

OCULAR EXAMINATIONS		
Structures	Right eye	Left eye
Eye ball	Orthophoric	Orthophoric
Eyelid	Normal	Normal
Eyelashes	Poliosis	Poliosis
Conjunctiva	Normal	Normal
Sclera	White	White
Cornea	Clear	Clear
Iris	Brownish	Brownish
Pupil	RRR	RRR
Lens	IMSC	IMSC
IOP	11 mmHg	12 mmHg

Table 2

DILATED FUNDUS EXAMINATIONS		
	Right eye	Left Eye
Fundal glow	Present	Present
Media	Slightly hazy	Slightly hazy
Optic disc	Irregular margin	Irregular margin
CDR	0.3	0.3
Macula	Unhealthy	Healthy
Hard exudates		
FR	Absent	Dull
Vessels	Thin and tortuous	Thin and tortuous
GB	Microaneurysms	Microaneurysm
Dot haemorrhage	Dot haemorrhage	Hard exudates

OCT showed increased macular thickness with the presence of small to medium sized cystoid spaces with subretinal space fluid collection

Methodology /Treatment given

Internal medication

Vaiswanara choorna : 5gm with lukewarm water bd b/f

Punarnavadi kashaya : 90 ml bd b/f

Chandraprabha Vati : 1-0-1a/f

Gokshura choorna : 5gm with lukewarm water bd a/f

Trivrit choorna : 5gm with lukewarm water HS

External application

Seka - Yashti Kashaya - twice daily

Bidalaka - Mukkadi choorna - twice daily

Shirovadana lepa - Mukkadi choorna + Saribadi choorna

Procedures

Table 3

Sl no	Date	Procedure	Medicine used	Duration
1	3/8/24 -7/8/24	<i>Kashayadhara</i>	<i>Varanadi gana kashaya +guluchyadi gana Kashaya</i>	5 days
2	8/8/24- 9/8/24	<i>Takrapanam</i>	<i>Vaiswanara choorna</i>	2 days
3	10/8/24- 12/8/24	<i>Snehapana</i>	<i>Patoladi ghritha</i>	3 days
4	13/8/24 – 14/8/24	<i>Abhyanga + ushma sweda</i>	<i>Dhanwantaram taila</i>	2 days
5	15/8/24	<i>Virechana</i>	<i>Trivrit choorna+Ela+sarkara+honey</i>	1 day
6	17/8/24 – 19/8/24	PMN	<i>Durvadi ghritha</i>	3 days
7	20/8/24 – 22/8/24	<i>Anjana</i>	<i>Saribadi</i>	3 days
8	23/8/24 – 29/8/24	<i>Ksheeradhara</i>	<i>Varanadi gana Kashaya + guluchyadi gana kashaya</i>	7 days
9	30/8/24 – 5/9/24	<i>Tarpana</i>	<i>Durvadi ghritha</i>	7 days
10	6/9/24	<i>Putapaka</i>	<i>Lekhana</i>	3 days

Result

The patient was given both Internal and external medication and procedures for a period of three and half month showing significant changes in Visual acuity. Fundus examination showed satisfactory results by reduction in exudates. Oct revealed normal macular thickness map.

Dates	UCVA	BCVA
20/05/24	OD - 6/18(P) & N36 OS - 6/6(P) & N24	OD - 6/18 & N8 OS - 6/6 & N6
12/07/24	OD- 6/18(P) & N36 OS - 6/6 (-2) & N24	OD - 6/12(-2) & N8 OS - 6/6 & N6
1/08/24 (Before IP management)	OD - 6/12(-2) & N8 OS - 6/6(-2) & N24	OD - 6/18(P) & N36 OS - 6/6 & N6
30/08/24 (Before tarpana)	OD- 6/18 & N18 OS - 6/6 (-2) & N12	OD - 6/9 & N6 OS - 6/6 & N6
7/10/24(follow up)	OD - 6/12 (-2) & N12 OS - 6/6(P) & N12	OD - 6/9 & N6 OS - 6/6 & N6

Discussion

The initial step was the strict glycemic control of the patient, and *Samprapthi vightana* focused on normalizing the doshas. So *tridosha samaka* and *sophahara* medicines were given accordingly. Since *agnimandhya* has been established in *jataragni* and *dhatvagni* levels, the first line of treatment has started with *Deepana pachana*, *Rookshana* followed by *Snehapana* and *Shodana chikitsa* and *samana chikitsa*. *Vaiswanara choorna* has *vatakapha* properties and corrects *apana vayu* by *anulomana* effect. It also balances *pitta dosha* and improves the digestive fire. *Punarnavadi kashaya* has *sarvanga sophahara* and *ama pachana* properties. Drugs in the *Kashaya* are known for anti-inflammatory, antioxidant and anti-diuretic properties; they act on the permeability of capillaries and help in reducing retinal edema. *Chandraprabha Gulika* has *kaphahara* and *lekhana* property is indicated in all types of *premeha*. Detoxifying and rejuvenating action helps in strengthening the capillaries and vessels of the retina. *Gokshura choorna*, having *sothahara*, *mootrala*(diuretic), and *srothovishodaka* properties helps in balancing the *tridoshas*.

Trivrit choorna has given as *nitya virechana* (therapeutic purgation on a daily basis) for balancing the *kapha pitta dosha*.

Parisheka and *bidalaka* in direct contact with eyelids promote vasodilatation of superficial vessels and stimulation of nerve endings, leading to clearing the channels and faster absorption of medicines. *Yashti choorna*, having *chakshushya*, *pitta rakta hara*, and *sthambhana* properties supports both vascular integrity and retinal health. *Mukkadi choorna* has cooling action and anti-inflammatory action and also works by transdermal action. *Shirovadana lepa* (application of medicated paste over the head and face) with *mukkadi choorna* and *saribadi choorna* mentioned in *paittika timira chikitsa* pacify aggravated pitta and also helps in the resolution of macular edema.

Prior to *shodhana* therapy, *Poorva karma* like *rookshna* with *varanadi gana* and *guluchyadi gana Kashaya*, having *kapha pitta samaka* property; *snehapana* with *patoladi ghritam*, mentioned in *dristi roga* with *tridosha samaka* property; and *sarvadehika abhyanga* for enhancing the absorption through skin by stimulating the blood vessels and neurological pathway were done. *Virechana* is essential for the

anulomana of *doshas*, especially *kapha & pitta* (Akshi is the sthana of *alochaka pitta*). It prevented the further accumulation of doshas in *shiras* and aid in absorbing the fluid from retinal layers. After attaining *srothosudhi*, *Pratimarsha nasya* helped in preventing the accumulation of *kapha dosha* in the head and *durvadi ghrita*, having *pittasamana*, *rakthasthambhaka*, and *rakthaprasadana* properties help to control retinal haemorrhages and reduce macular oedema, offering both *shodhana & samana* effect. *Drishtiprasadana Anjana*, like *saribadi Anjana*, having *pittaraktha samana* property, rapidly enters the bloodstream and maintains the overall health of the retina. *Ksheeradhara* done with *varanadi* and *guluchyadi gana ksheera Kashaya* is *pitta-kaphahara* by its action. So, it helps in clearing *srodhorodha* in vasculature and resolving the subretinal fluid accumulation. *Tarpana* with *durvadi ghrita* with special mentioning of indication in *raktasrava* and *pitta pradhana netra roga* disorders, strengthens the capillaries of the retina and somehow reverses the *shoth*, *kleda*, etc i.e. removing the fluid left in retinal layers significantly. *Lekhana putapaka* done thereafter helps to improve the vision, detoxification and rejuvenate the ocular structures.

Images

Image 1: Before treatment

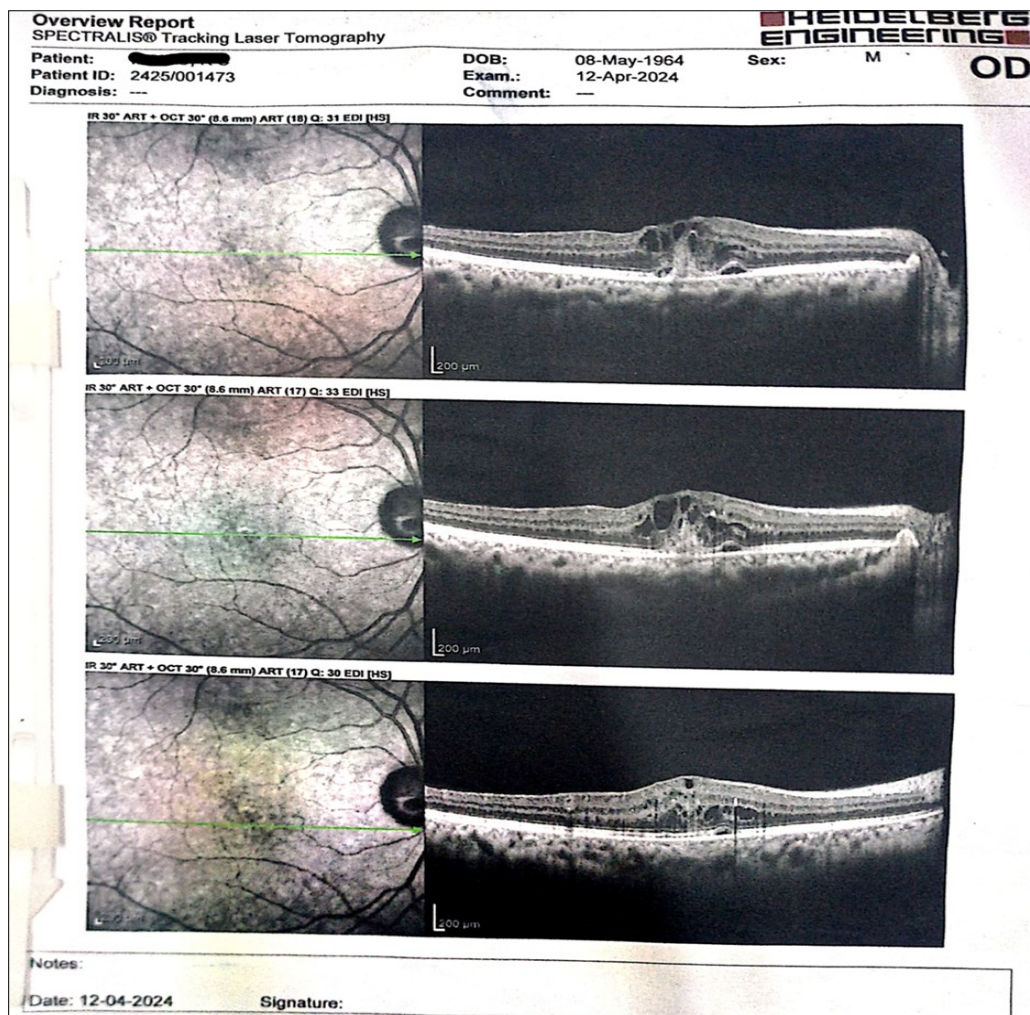
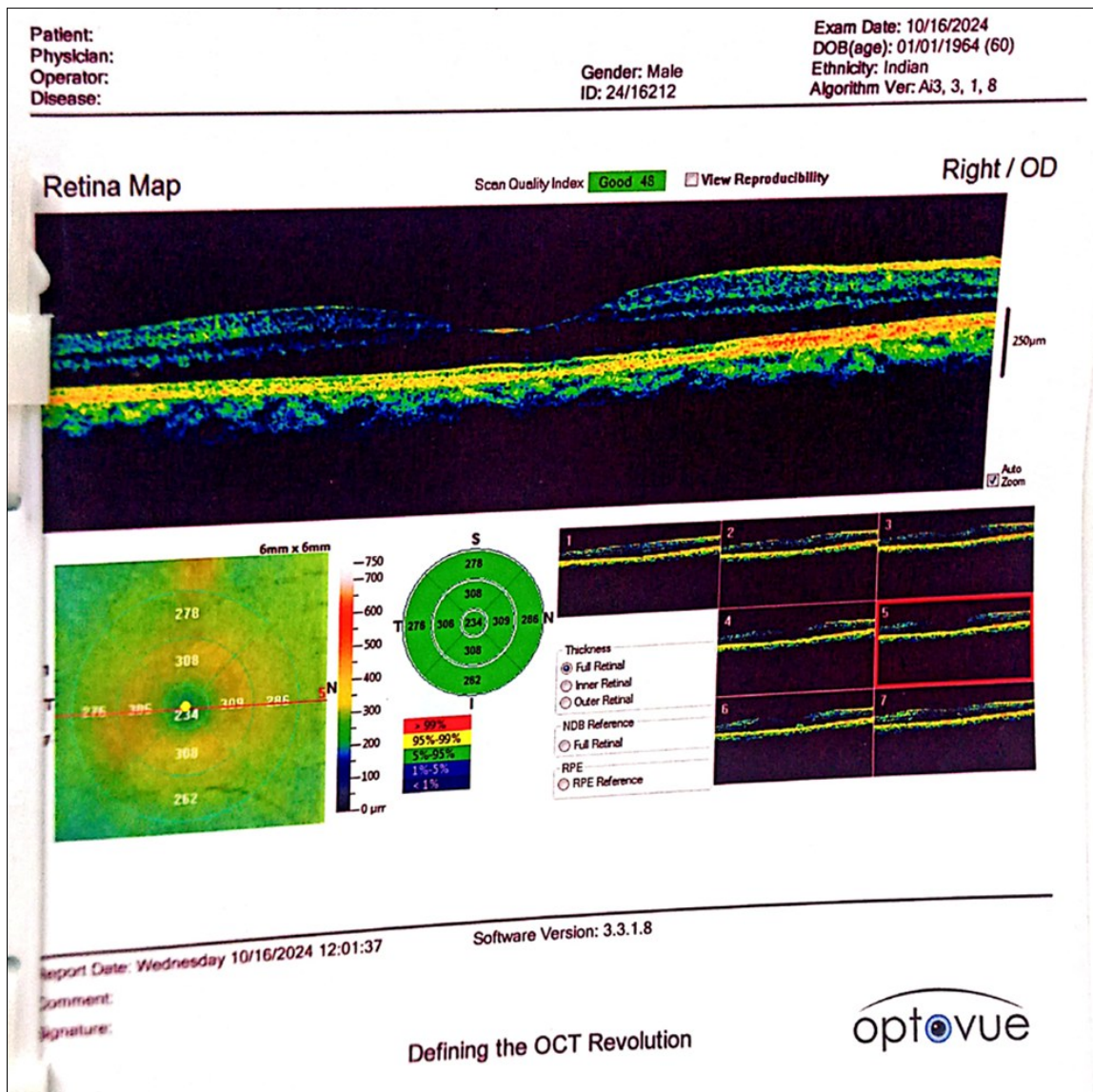


Image 2: After treatment



Conclusion

Primary aim of a treatment modality is to provide utmost satisfactory changes in the disease condition with less complications. Looking on to the results of the present case, showed that ayurvedic treatment principles adopted here has effect in reducing the DME and arrest the progression of DR. The patient got improvement in visual acuity and the status remained same during the follow up time also. Fundus ophthalmoscopy and OCT evaluation also revealed significant changes. Patient perspective on his condition was also satisfactory. So, it can be concluded that ophthalmic condition NPDR & DME can be managed with the ayurvedic principles including internal medications, *kriyakalpas* and procedures specified for particular condition and it can also prevent the further progression of condition to the late stage.

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