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An Ayurvedic Management of Diabetic Retinopathy - A Case Report

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ABSTRACT

Diabetic retinopathy (DR) is the most frequent micro vascular complication of Diabetes mellitus. It is an eye condition that can cause vision loss and blindness. Globally the prevalence of Diabetic retinopathy among diabetic patients is estimated to be 27.0% which leads to 0.4 million blindness in the world.^[1] It affects blood vessels in the retina (the light-sensitive layer of tissue in the back of the eye). It commonly affects both eyes and can lead to vision loss if it left untreated. Currently available conventional treatments (Focal laser therapy, Anti-vascular growth factor drug) for DR have certain limitations, considering which options from alternative resources are being searched. Despite advances in science the treatment of DR is challenging. So, in this case Ayurveda treatment was done.

Key words: Diabetes mellitus, Diabetic retinopathy.

INTRODUCTION

Diabetes mellitus is a serious metabolic disorder, with a major impact on the lives and well-being of individuals, families and societies worldwide. Diabetes mellitus is becoming a global epidemic and now one of the major causes of vision loss globally. Uncontrolled blood sugar is a risk factor to develop Diabetic retinopathy by damage to the blood vessels in the tissue at the back of the eye (retina). The degree of retinopathy is highly correlated with duration of Diabetes, Blood glucose level. Diabetic retinopathy is a leading cause of blindness.^[2] Globally the prevalence of

Diabetic retinopathy among diabetic patients is estimated to be 27.0%, which leads to 0.4 million blindness in the world. Blurring of the central vision may be the first symptoms the patient notice. Diabetic macular edema (DME) is a potential complication of Diabetic retinopathy.^[3] There is no direct reference of a visual disturbance caused by *Madhumeha* in the *Ayurveda* classical text. But *Netra Prakasika* has mentioned *Granthi* and *Meha Roga* as the causes of eye diseases. A description of *Timira* (a disease characterized by blurred vision) as a cause or complication of *Prameha*. Thus, DR would be taken as *Madhumehajanya Timira*.^[4] The major constituents of *Madhumeha* are *Bahudrava Sleshma Dosha Vishesa* along with *Abaddha Meda, Mamsa, Sarira Kleda, Sukra, Sonita, Vasa, Lasika, Majja, Rasa* and *Oja*. Similarly in Diabetic retinopathy, visual loss depends upon the site of pathology in the retina. If more damage is created to the central macula, the central vision is reduced and if it is in peripheries, peripheral vision diminishes. The dominance of *Bahudrava Sleshma* greatly disturbs *Alochaka Pitta* by increasing its *Dravatwa*. The three *Doshas* are affected with *Rakta* (as both *Dosha* and *Dushya*), mainly *Vata, Pitta, Rakta* and *Kapha Anubandha*. All the *Dhatus* are affected with *Rakta, Meda* and *Mamsa* predominant, *Sira*

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Srotas, *Raktavaha Srotas* and *Ojavaha Dhamani* get affected in successive stages. This *Samprapti* results in *Kaphaja Raktapitta* or *Urdhwaga Raktapitta*.^[5] It can be understood by massive haemorrhages in some cases of Diabetic retinopathy. As the management is aimed at both preventing further damage and relieving the complaints. The *Chakshushya* drugs and regimen are of great value. So following *Ayurveda* line of treatment, *Kleda Harana*, *Rakta Vaha Sroto Dusti Harana*, *Vata Anulomana*, *Pitta Harana* was advised. In contemporary medical science few treatment modalities are available like Intravitreal anti-vascular endothelial growth factor injections (anti VEGF injections), Intravitreal steroids. For high risk or complicated proliferative retinopathy, Pan retinal laser photocoagulation (reduce the risk of severe vision) and sometimes Pars-Plana Vitrectomy (PPV) surgery (to preserve and often restore lost vision) etc are done.^[6] But these management do not provide significant relief. Hence it is the need to find out safe, effective and economic therapy in alternate systems of medicine which can decelerate the progression of disease and the risk of visual loss.

MATERIALS AND METHODS

A male patient, aged 37 years, came to OPD of *Shalaky Tantra*, Rishikul Campus, Haridwar on 2-10-2022 with chief complaints of progressive painless blurring of vision from both eyes for both distant and near vision along with mild watering from both eyes, floaters and black spots in front of both eyes since 6 months. He was chosen to have a signs of Retinal haemorrhages.

Past History: There was H/O Type 1 Diabetes mellitus since 2009.

Family History: Mother - Type 1 Diabetes mellitus since 15-16 years, HTN since 13 Years.

History of Present Illness

According to the patient he was asymptomatic 13 years back, then he gradually developed painless blurring of vision from both eyes [rt>lt] for both distant and near objects. There were occasional floaters and black spots in front of eyes. After passing of time the patient also

started having complaints of heaviness and mild pain in both eyes, around the eyes and forehead for 5 years. Patient gradually developed a blurring of vision. For this he approached an Ophthalmologist and found out that his blood sugar level was high and after his thorough examination, OCT was done, where he was diagnosed having Diabetic retinopathy in both eyes. He was advised to take Intravitreal bevacizumab (0.5mg). Patient was not willing to undergo the above advised treatment and wanted to take *Ayurveda* treatment. Thus, he approached our OPD.

History of Past Illness: He was a known case of Diabetes mellitus past 13 years.

Personal History

- **Sleep:** Disturbed
- **Appetite:** Good
- **Bowel:** Once a day
- **Micturition:** 5-6 times /day
- **Alcohol:** Occasionally
- **Tobacco chewing:** No
- **Smoking:** 1-2 /Day

General Examination: The vitals were within normal limits.

Systemic Examination: All the Systemic Examinations were within normal limits.

Ashta Sthana Pareeksha

- **Nadi:** 72/min
- **Mala:** Prakrta
- **Mutra:** 7-8 times/day
- **Jihwa:** Prakrta
- **Shabda:** Prakrta
- **Sparsha:** Prakrta
- **Drika:** Vikrta
- **Akriti:** Madhyama

Dashavidha Pareeksha

- **Prakriti** - a) Sharira: Vata-Pittaja
b) Manasa: Rajasika
- **Vikriti** - Madhyama
- **Satva** - Madhyama
- **Sara** - Madhyama
- **Sahanana** - Pramana
- **Satmya** - Madhyama
- **Aharshakti** - Madhyama
- **Vyayamashakti** - Avara
- **Vaya** - Madhyama

Ocular Examination

Table 1: Slit lamp examination

Ocular structure	Right Eye	Left Eye
Adnexa	No abnormalities	No abnormalities
Conjunctiva – Palpebral	Normal	Normal
Bulbar	Congested	Congested
Cornea	Clear transparent	Clear transparent
Ant Chamber	Normal depth	Normal depth
Iris	Normal	Normal
Pupil	Round, regular, reactive to light	Round, regular, reactive to light
Lens	Grayish black	Grayish black

Table 2: Visual Acuity Test

	Right Eye	Left Eye
DVA	6/24	6/12
NVA	N10	N8
PH	6/12	6/12 (NI)

Test for Colour Vision: Ishihara Colour Plates - The patient identified the colour patterns as well numbers in the plates.

Amsler Grid Test:

Right Eye - Normal

Left Eye - Normal.

IOP: RE - 18mm/Hg, LE - 16mm/Hg.

Table 3: Refraction

	RE				LE			
	SPH	CYL	AXIS	Vision	SPH	CYL	AXIS	Vision
Distance	-0.75	-0.75	90	6/12	-1.00	-0.75	100	6/9p
Near	+0.75	-	-	N/8	+0.75	-	-	N/6

Table 4: Confrontation Test (Visual field finding)

RE	LE
Superotemporal quadrant -ve	Superotemporal quadrant -ve
Inferotemporal quadrant +ve	Inferotemporal quadrant +ve
Superonasal quadrant +ve	Superonasal quadrant +ve
Inferonasal quadrant +ve	Inferonasal quadrant +ve

Table 5: Fundus Examination

Characters	RE	LE
Media	Clear	Clear
Disc		
▪ Size	Normal	Normal
▪ Shape	Oval shape	Oval shape
▪ Color	Pinkish - yellow	Pinkish - yellow
▪ Margin	Clear	Clear
C:D ratio	0.3	0.3
Macula - Foveal reflex	Dull	Dull

General background	Microaneurysms (+) Blot haemorrhages in superotemporal, inferotemporal, and inferonasal quadrant. (+)	Microaneurysms (+) Multiple dot-blot haemorrhages in superotemporal and inferonasal quadrant. (+)
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Table 6: Laboratory Investigations

FBS	180 mg/dl
PPBS	260 mg/dl
HBA1C	9

After examination of the patient, his consent was taken for the treatment and the prognosis was explained in detail to him and his family members. He was treated on an OPD basis. The total duration of the treatment was 90 days.

Table 7: Treatment planned

SN	Date of visit	Therapeutic Intervention		
		Medication	Duration	Dose
1.	On the First visit 03-10-2022	<i>Deepan Pachana</i>	First 5 days	<i>Chitrakadi Vati</i> 2 tab 500mg tds
2.	Start this medication from 08-10-2022	1 - <i>Tarpana</i> with <i>Doorvadi Ghrita</i>	7 days	Repeated after 15 days interval (2 Sittings)
		2 - <i>Sirotalam</i> with, <ul style="list-style-type: none"> ▪ <i>Jatamansi Churna</i> - 5gm ▪ <i>Amalki Churna</i> - 5gm ▪ <i>Brahmi Taila</i> - 100ml 	7 days	Repeated after 15 days interval (2 Sittings)
		3 - <i>Punarnava Kwath</i>	30 days	20ml with 5 ml <i>Gomutra</i>

				<i>Arka</i> BD before meal
		4 - <i>Chandraprabha Vati</i>	30 days	2 tab BD with water after meal
		5 - <i>Nisha-Amalki Churna</i>	30 days	5gm BD with water after meal
		6 - <i>Cap. Netramrit</i>	30 days	1cap BD with milk after meal
		7 - <i>Madhumeha Kusumakar Ras</i>	30 days	2 tab BD with water after meal
3.	On the Second visit 9-11-2022	There was some improvement in vision so the same treatments advised to continue for 30 days more.		
4.	On the Third visit 11-12 - 2022	There was marked improvement in visual acuity, some reduction also found in the value of FBS, PPBS and HbA1C level. <i>Tarpana</i> and <i>Sirotalam</i> stopped. All other treatments were advised to take continuously for 30 days more.		

Pathya-Apathya

Patient was advised to avoid *Achakshushya* and *Rakta-Pitta Vardhaka* diet and regimen.

Follow-up

During the subsequent follow-up there was marked improvement in visual acuity and blood sugar was controlled.

RESULT

The results were evaluated after 90 days. Blood sugar level was controlled along with marked improvement in visual acuity from 6/24 to 6/9(p) in the right eye, and from 6/12 to 6/6(p) in left eye.

Table 8: Visual acuity changes

	RE	LE
DVA	6/9(P)	6/6(P)
NVA	N8	N8
PH	6/9	6/6(P)

Table 9: Fundus examination

Macula: Foveal reflex	Dull	Dull
General background	Microaneurysms (+) Blot hemorrhage (-)	Microaneurysms (-) Dot -blot hemorrhage changes (-)

Table 10: Changes in laboratory investigations

FBS	130 mg/dl
PPBS	180 mg/dl
HBA1C	7.8

DISCUSSION

Diabetic retinopathy is a silent until the patient will not experience blurred vision. Diabetic retinopathy basically a *Dristipatalagata Roga*, is mainly attributed to *Sira Srotasabhisyandam* and *Raktavaha Sroto Dusti* due to a variety of *Achakshyushya Ahara* and *Vihara Karanas* especially in *Prameha* patients. In order to understand the *Samprapti* of diabetic retinopathy in *Ayurveda*, general *Samprapti* of eye disease must be considered. *Nidana* of endogenic eye diseases are mainly *Achakshyushya* factors which vitiate *Pitta*. The vitiated *Pitta* in turn vitiates the *Pitta Vaha Srotas*. Due to interconnection of *Pitta* and *Rakta*, which shares *Ashrya Ashrayee Bhava*, the *Raktavaha Srotasa* also gets vitiated due to *Pitta vitiation*. As the *Nidana* factors are *Achakshyushya*, the vitiated *Pitta* and *Rakta* have an affinity towards penetrating the eyes. Hence the vitiated *dosha* moves towards the eyes through *Jatroordhwa Srota* and finally gets confined to the eyes, there is a stage when the *Sirasrotasa* are deeply involved which is known as *Sira Abhisyanda*.^[7] The whole pathology of diabetic retinopathy which starts with *Sroto Dusti* of *Raktavaha Srotasa* manifested as microangiopathy in the form of *Attipravriti*, *Sanga* and *Granthi* as haemorrhages, exudates and venous beading in diabetic retinopathy respectively. Diabetic retinopathy can be compared with *Timira* involving all the four *Patalas*. *Patalas* are described on the basis of functional composition of *Dhatu*s of *Dristi*. The

symptoms of vision are manifested when the vitiated *Dosha* afflicts the concerned *Dhatu* in *Dristi Patalas*. All the three *Dosha* in single or in combination can affect one or more *Patalas*. Treatment is all about correcting and preventing the etiopathological mechanism (*Samprapti Vighatana*). So as per etiopathological mechanisms described above, the first and foremost care should be given to prevent *Madhumeha*. The treatment of diabetic retinopathy revolves around treating the causes of *Madhumeha*, management of *Urdwaga Raktapitta*, treatment of *Avarana*, prevention of *Dhatu Kshaya* including *Oja Kshaya*, and prevention of *Agnimandya* in general.

Probable mode of action of treatment given

Deepana and Pachana - *Chitrakadi Vati* mainly of *Katu Rasa*, *Laghu Tikshana Guna*, *Usna Virya*, *Katu Vipaka* which improve the *Jatharagni* and removing the *Ama Avastha*. **Premehahara Chikitsa** - Mainly to treat the root cause of the disease, we had given internal medication to control the raised blood sugar level. **Chandraprabha Vati**: It contains *Shilajatu* which has *Kaphhara* property. It does *Rasayana* action also which helps in regenerating the damaged retinal vessels. Some contents of *Chandraprabha Vati* have a blood glucose lowering effect. It also helps to enhance the action of insulin and also helpful in lowering elevated lipid, associated diabetes. **Nisha Amalaki Churna**: Main ingredients are *Haridra* and *Amalaki* which have antioxidant properties and are mentioned in *Prameha Chikitsa*. *Amalaki* had vit c which acts as antioxidant, effectively safeguarding retinal cells against oxidative stress. **Madhumeha Kusumakar Ras**: It contains *Shodhit Shilajatu*, *Yashada Bhasma*, *Haridra*, *Amalki*, *Guduchi*, *Bilwa Patra Swarasa*, *Asana*, *Swarna Bhasma*, *Rajat Bhasma*. It reduces blood and urine sugar effectively due to their *Kapha* and *Meda pachaka* action. **Punarnavadi Kwath with Gomutra Arka and Triphala Guggulu** - Oral administration of *Punarnavadi Kwath* and *Triphala Guggulu* contains of both drugs having *Shothahara*, *Pramehanashaka*, *Rasayana*, *Mootrala*, *Chakshushya* properties. Cow's urine (*Gomutra*) also has *Katu*, *Lavana*, *Tikta*, *Kasaya*, *Madhura Rasa*, *Ushna Virya*, *Tikshna*, *Laghu*, *Ruksha Guna* & *Kapha Shamaka*, *Vatanulomaka*, *Pittanisaraka*

attributes. Cow urine have Anti-diabetic effect (glucose lowering effect) is might be due to stimulation of beta cells of pancreatic islets or stimulation of glycogenesis. **Netramrita** - It contain *Saptamrit Lauha, Abhrak bhasma, Shatavar, Ashwagandha, Akik Bhasma, Triphala*, all contain *Tridoshagna Chakshusya* and *Rasyana* properties and help in DR by disintegrate the pathology of *Timira*. **Shirotalam** - It is a type of *Sirolepa* contain *Jatamansi, Amalki, Brahmi*. It will reduce the *Sanga* and *Siragranthi* (microaneurysm). *Sanga* and *Siragranthi* in retinal blood vessels cannot be easily reversed, so *Sirotalam* which are *Srotorodha Harana* was an option at this stage. **Tarpana** - *Tarpana* with *Doorvadi Ghrita* has *Pittasamana, Raktstambhana* and *Raktprasadana* properties. It used to overcome Retinal haemorrhage under the *Urdhvaraktapitta* spectrum. It not only arrests bleeding but also strengthens the retinal capillaries, helping reverse and prevent pathogenesis.

CONCLUSION

Diabetes is the main underlying reason behind Diabetic retinopathy. Restoration of structural and functional integrity in disease of *Drushti Patala* caused due to *Prameha*, was the objective of treatment in this case. By adopting *Ayurvedic* protocols and making changes in *Dinacharya* and *Ahara Vihara*, will bring changes not only in the disease condition but also it will upgrade the lifestyle of the person. Here we had adopted *Pitta-Kapha Hara Chikitsa*, resulting in removing the *Sangathva* of *Rakta Vaha Srotas* as it prevents further damage to retinal vessels. *Ayurveda* treatment principles can help to arrest the progression of the disease. In this patient the subsequent follow-ups while treatment, improvements were noticed though he presented with an advanced stage. Weekly follow-up also taken after treatment up to 2 months. The treatment modalities employed efficacious in controlling *Rakta Srava* (intraretinal haemorrhages). Promoting resorption, improving visual perception. *Madhumehahara* properties of the drugs helped to lower the blood glucose level. As a prophylactic

treatment a proper screening of patients by *Chakshu Visharada's* at regular interval with proper intervention of *Kriyakalpa*, Lifestyle modification, *Pathyapathya* along with oral medicines at appropriate time will definitely retard the progression of the disease and maintains the retinal function.

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