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An Ayurvedic approach to Non Proliferative Diabetic Retinopathy - A Case Study

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Abstract:

Retinal damage from diabetes is one of the causes for blindness. There is a strong correlation between the duration of diabetes, blood glucose and blood pressure with degree of diabetic retinopathy. In modern medicine, it can be controlled by early diagnosis and other management protocols like anti-VEGF drug therapy, laser photocoagulation, etc. which can have some side-effects. *Ayurveda* is a traditional ancient medicinal system, can be used to manage this disease. However, there is no specific mention of diabetic retinopathy in *Ayurveda*, it can be co-related to *Timira* on the basis of the symptoms. For this case study, a patient with diabetic retinopathy was selected from Shalakyatantra (Netra) OPD. He presented with complaints of diminished near and distant vision along with perception of black spots in eye from last two years. The diagnosis was established on the basis of posterior segment examination of the eye where dot blot hemorrhage and few micro-aneurysms were observed in both eyes along with blood sugar reports. The ayurvedic management protocol was made on the ayurvedic principle to manage diabetic retinopathy which includes local as well as systematic medications like Netra tarpana, Chandarprabha vati, etc. After completion of study, significant improvement was seen in patient's funduscopy which shows that ayurvedic interventions can help in treating and halt the further progression of Diabetic retinopathy.

Key words: Diabetes Retinopathy, Ayurveda, Timiraa Netra-tarpana

Introduction:

A vascular condition that affects the retina's microvasculature is called diabetic retinopathy. A quarter of diabetic people experience this syndrome, which is more common the longer a patient has the condition(2). Compared to patients with NIDDM (20%), those with IDDM have a higher prevalence of diabetic retinopathy (45%)(2). Over 40 million people in India have diabetes mellitus, according to a recent poll. Diabetic retinopathy affects 5.6 million people now; by 2030, it is expected to affect 79.4 million, A pressing public health concern that requires proper management. Among the particularly prevalent signs of diabetic retinopathy is bleeding and it can lead to serious conditions such as retinal detachment and severe vision impairment(2).

Ayurveda Concept:-

The classical texts make no mention of a visual disturbance brought on by madhumeha(3). However, Netra Prakashika has identified meha roga and granthi as the root causes of eye disorders. (Ca.Ni. 4) Bahu Drava Sleshmaa (Doshaa vishesaa) and Abaddha Meda, Mamsa, sarira kleda, sukra, sonita, vasa, lasika, majja, rasa, and oja are the main components of Madhumeha.

These vitiated dhatus and the overly diluted Sleshma will disperse throughout the body, resulting in development of signs and symptoms. Additionally, its complications are divided into three groups:

1. according to doshas (e.g., vataja prameha upadravas).
2. The Prameha Pidikas.
3. Additional Upadravas in the dhatu of Sandhi, Marma, and Mansa.

The eye ball into the third category of complications because it is a muscular organ, a component of shiromarma, and contains netra sandhis. When doshas enter the eye, Netra abhishyanda usually results. Since rasa, rakta, mansa, and medas are pathological constituents, they will cause disturbance in the corresponding patalas of the eyes(4). Pathological events dominated by the element of Kapha will result in the production of Kaphaja Abhishyanda and Kaphaja Timira. The "Usna abhinanda," "Guruta," "Sitata," "Ati saitya," "Srava-muhu," and "Pichila" are the Kaphaja Abhishyanda Laksanas. Each of these terms has a gudartha, or hidden meaning, that should be understood in light of current understanding. (Su.Ut. 19.19–20) Ushna Chikitsa relieves Usnabhishyanda. In this case, photocoagulation may be the precise method of this usna cikitsa. Retinal edema, or swelling, is what guruta and aksi sopha are. Various exudates are indicated by upadeha or mala vridhi, which are commonly referred to as cottonwool appearances. Frequent exudates and sticky exudates are both indicative characteristics. whitish discoloration, is a sign of hypoxia, or low oxygen delivery to the retina. If left untreated, Kaphaja Timira can progress to Kafa and Linganasha. Kaphaja Kach and the diabetic cataract may be related. The sthanasamshraya of dosas in patala describes the progressive loss of vision in Timira.(5)

Modern review

Pro-angiogenic factors like VEGF are released by retinal cells in response to prolonged ischemia. These elements promote neovascularization in order to avoid damaged retinal blood vessels. Angiogenesis is the process by which preexisting capillaries divide into new blood vessels. When retinal neovascularization occurs, these blood vessels typically emerge at the boundary between perfused and non-perfused regions of the retina. They may also come from the iris or optic disc due to neovascularization of these tissues. Due to their extreme immaturity, fragility, permeability, and sensitivity to bleeding, these new vessels can cause serious complications like tractional retinal detachment or vitreous hemorrhage.

Signs and Symptom :- floating spots, abrupt loss of vision, fluctuating vision, and blurred vision, Diabetic blot and spot hemorrhage, microaneurysms, retinal hemorrhage, Cotton Wool Spot, Hard Exudates, and intraretinal microvascular anomalies are examples of signs.(9)

Background retinopathy, also known as non-proliferative retinopathy Initial indicators of non-proliferative retinopathy include: Microaneurysms in capillaries, hemorrhages in the dots and blots, Hard Exudates, and Cotton-Wool (Soft Exudates). Cotton-wool spots are white, small, fuzzy-edged areas of ischemia that block underlying arteries and opacify the retina. Hard exudates are distinct, yellow, and usually occur lower than retinal vessel walls. They are indicative of retinal oedema. Macular edema, which appears as elevation and blurring of retinal layers on slit-lamp bio microscopy, venous dilatation, and intraretinal microvascular abnormalities are symptoms in the later stages(7). The hallmark of proliferative retinopathy is aberrant neovascularization, or the development of fresh blood vessels on the retina's vitreous layer that might eventually expand into the cavity within it and cause vitreous hemorrhage. Neovascularization and preretinal tissue with fibrous structure commonly coexist, and it has the ability to contract with the vitreous humor to cause a traction retinal detachment. can cause neovascular glaucoma by causing neovascular membrane growth at the iris's periphery in the angle of the eye. Proliferative retinopathy will cause significant vision loss. The foremost clinical cause of loss of sight associated with diabetic retinopathy is retinal swelling(9). Proliferative diabetic retinopathy is characterized by vision impairment, sudden, painless vision loss, and dark spot or lights that flash in the field of vision. Some of these symptoms may be related to a vitreous hemorrhage or tension detached retina(8).

Diagnosis :- Diabetes history Fundoscopy is used for diagnosis of this disease.

Management

Handling control of blood pressure and glucose. Focal laser, vitrectomy, and possibly intravitreal medication for macular edema Triamcinolone, in addition to medications that block vascular endothelial growth factor (VEGF) ought to be provided, Vitrectomy and panretinal laser photocoagulation, which reduce the risk of severe vision loss which preserves and frequently restores lost vision, are occasionally required for high-risk or complex proliferative retinopathy(10)(11).

A case report:-

A 54-year-old male patient came to the OPD 6 (Shalakya Tantra) of Dr. D. Y. Patil College of Ayurved and Research Centre, Pimpri, Pune.

Age – 54 Year

Sex – Male

Marital Status – Married

Occupation – Teacher

Chief complaints:- reduced vision, affecting both near and far vision, for the last two years

Related problems:- No floaters

History of present illness:-

A male patient with a moderate build who was around 54 years old, was diagnosed with moderate non-primary diabetic eye disease (NPDR) in both eyes, and was prescribed a 5-month course of Nepafenac 0.1%.

Past History:- Type II Diabetes Mellitus from last 10 years and is under medication.

Recent blood sugar report

Fasting – 150 mg/dl

Post prandial – 200 mg/dl

Local Examination:

Sr. No.	Part Examined		Right Eye	Left Eye
1.	Eyelids		WNL	WNL
2.	Conjunctiva		WNL	WNL
3.	Sclera		WNL	WNL
4.	Cornea		WNL	WNL
5.	Anterior Chamber		WNL	WNL
6.	Iris		WNL	WNL
7.	Pupil		WNL	WNL
8.	Lens		WNL	WNL
9.	Vision		6/9 (with glasses) 6/18 (without glasses)	6/12 (with glasses) 6/18 (without glasses)

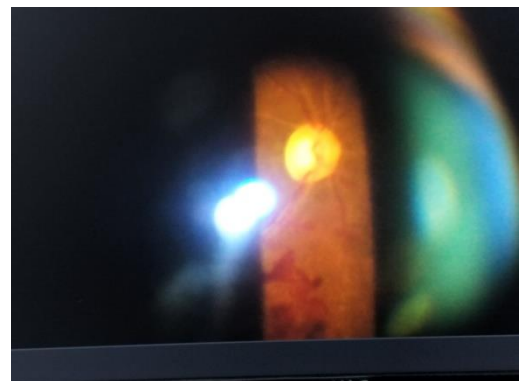
			N6 (with glasses) N8 (without glasses)	N6 (with glasses) N8 (without glasses)
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Fundus Examination: (Before treatment)

Sr. No.	Part Examined	Right Eye	Left Eye
1.	Media	Clear	Clear
2.	Cup & Disc	Mild Peri-papillary Atrophy	Mild Peri-papillary Atrophy
3.	Cup & Disc Ratio	0.4:1	0.5:1
4.	Macula	Dull	Dull
5.	foveal reflex	dull	dull
6.	Other findings	micro-aneurysms (+) Blot hemorrhages in supero-temporal, inferotemporal, and infero-nasal quadrant. (+) (figure 1)	micro-aneurysms (+) Multiple dot-blot hemorrhages in infer-temporal and infero-nasal quadrant. (+) (figure 2)



**Fig.1. (Right eye)
Dot blot hemorrhages**



**fig.2. (left eye)
Dot blot hemorrhages**

Treatment:**1.Abhyantar chikitsa:**

Sr. No.	Medicines	Dose	Duration
1.	Aam Pachak Vati	2 tab bid	5days
2.	Chandarprabha Vati	2 tab bid	7 days
3.	Nisha-Amalaki Vati	2 tab bid	7 days
4.	Triphala Guggul	2 tab bid	7 days
5.	Punarnavadi Kwath	15 ml bid	7days

2.Bahyachikitsa :

Vasadi ghrita netratarpana

Follow up :-

Sr. no	Date of visit	Medication	Duration
1.	On the First visit	<i>Deepan Pachana with Ichitrakadi vati</i> <i>2 aam pachak vati</i>	First 5 days

2.	From 2 nd visit	1 - <i>Tarpana</i> with <i>vasadi Ghrita</i>	7 days
		2.Chandra prabha vati 3.Nisa Amlali vati 4.Triphala Guggul	7 days
		5- <i>Punarnava Kwath</i>	30 days

Fundus exam (after treatment) :

Sr. No	Part examined	Right Eye	Left Eye
1.	Media	clear	clear
2.	Cup and disc	Mild peri- papillary atrophy	Mild peri-papillary atrophy
3.	Cup & disc ratio	0.3:1	0.3:1
4.	Macula	Dull	Dull

5.	Macula: Foveal reflex	Dull	Dull
6.	General background	Microaneurysms (+) Blot hemorrhage (-) (Figure 3.)	Microaneurysms (-) Dot -blot hemorrhage changes (-) (Figure 4.)

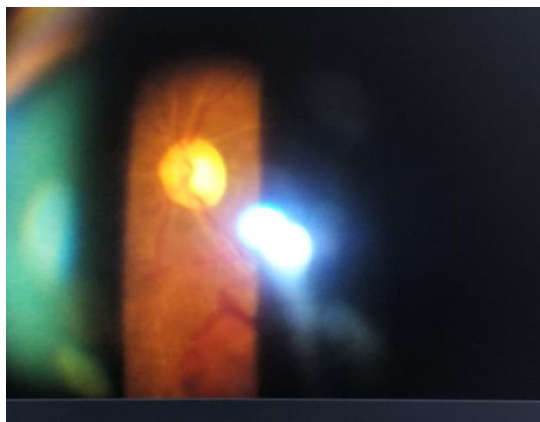


Fig. 3. (Right Eye)

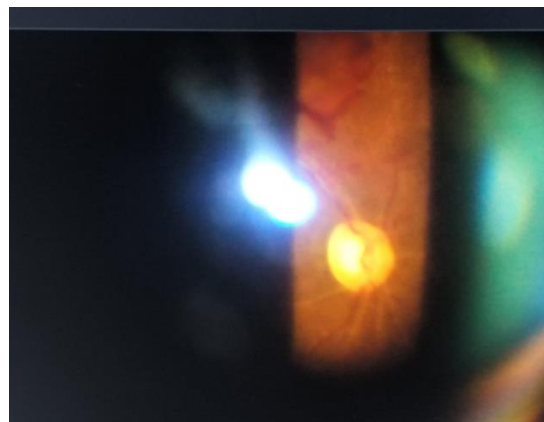


Fig. 4.(Left eye)

Result: -

The results were evaluated thirty days afterward. Both eyes' visual acuities significantly improved—From 6/24 to 6/9 (p) in the left Eye with out glass And From 6/12 to 6/9 (p) in the right with out glass.

Discussion:-

1) The principal components of kattoo rasa, laghoo tikshana goona, usna viryaa, and katu vipak, which enhance jaatharagni and eliminate Aama avasthaa, are deepana and pachana - chitrakadi Vati.

2) Chandra-prabha vati: It has sheelajatu, It possesses Kaph-hara's characteristic . Additionally, it has a Rasayana action that aids in the regeneration of damaged retinal vessels. There are certain ingredients in Chandraprabha Vati that lower blood sugar levels. Additionally, it aids in improving the way that insulin functions and lowers high cholesterol, which is linked to diabetes. 3)Nisha Amalaki Churna: Amalaki and Haridra, which are mentioned in Prameha Chikitsa and have antioxidant qualities, are the main ingredients. Amalaki contained vitamin C, an antioxidant that efficiently protects retinal cells from oxidative damage.

4) Punarnava Kasaya has an anti hypertensive action along with potent vdiuretic effect.Prevention of macular oedema and formation of soft exudates improved retinal oxygenation may be explained with this pharmacological action.

5) Tarpana has Pittasamana, Raktstambhana, and Raktprasadana properties when combined with vasadiGhrita. Retinal hemorrhage under the Urdhvaraktapitta spectrum was previously overcome by it. In addition to stopping the bleeding, it fortifies the retinal capillaries, which aids in reversing and averting pathogenesis.

Conclusion:-

One may think of diabetic retinopathy as Pramehajanya Timira. Ayurvedic treatments like Tarpan , when combined with internal medications, have demonstrated notable outcomes. Gross changes in the fundal photograph could not be observed during this study because it is difficult to completely reverse the underlying pathology in a short amount of time due to Vyadhi ChirakariSvabhava and Kruchra Saadhyatva.

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