

Case Report



Ayurvedic management of Diabetic Macular Edema: A case report

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ABSTRACT:

Background: Macular edema (ME), characterised by exudative fluid accumulation in the macula, is the most common form of sight-threatening retinopathy in people with diabetes (DME) and non-diabetic population, contributes 5th major cause in preventable blindness. 1/3rd of diabetic population develops signs & among those 1/3rd develops vision threatening situation. The patho-physiological processes begin with chronic hyperglycaemia, and interplay between vascular endothelial growth factor (VEGF) and inflammatory mediators. **Clinical findings:** A 76-year-old-male patient presented with complaints of diminished vision in left eye for last 5 months. After a fundoscopic examination, he was diagnosed with left eye diabetic macular edema, confirmed with Optical coherence Tomography (OCT). **Intervention:** As a standard treatment protocol, intra-vitreous injections were advised but patient was willing for Ayurveda treatment. The patient was assessed through Ayurveda protocol and specific treatment was planned starting from *Deepana*, *Paachana*, *Koshta shodhana*, *Basti* and specific topical eye treatment (*Kriyakalpa*). **Outcome:** Encouraging results obtained which might have reduced fluid accumulation in the macular region and significant improvement seen cystoid lesion below Retinal Pigment Epithelial (RPE). **Conclusion:** Significant improvement in reducing the macular edema with ayurvedic management obtained.

KEYWORDS: Case report, Diabetic Macular Edema (DME), Vascular Endothelial Growth Factor (VEGF), *Kriyakalpa*, *Koshtashodhana*, *Basti*, Optical coherence Tomography (OCT)

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1. INTRODUCTION:

Diabetic macular edema is the 5th leading cause of vision loss. [1] When the macula is affected, it can impair central vision, making tasks like reading and driving more challenging. Indians & Asian population are fastest growing censes in Diabetes mellitus. The worldwide prevalence of diabetes has progressively increased in recent decades and is predicted to grow to 430 million by 2030. [2] 1/3rd of diabetic population develops signs & among those 1/3rd develops vision threatening situation. DM complications include macroangiopathy (myocardial infarction or vasculo-cerebral stroke) and microangiopathy (diabetic nephropathy, neuropathy, and retinopathy. This in turn secondary to a range of metabolic changes brought about by hyperglycaemia and inflammatory mediators. [3] Chronically elevated serum glucose is known to cause breakdown in the inner and outer retinal blood barrier resulting in up regulation of vascular endothelial growth factor (VEGF). [4]

Standard Treatment Protocol:

Currently, intraocular anti-VEGF inhibitors namely aflibercept, bevacizumab and ranibizumab are often used in clinical practice. They specifically target angiogenesis and reduce micro-vascular permeability in the eye, resulting in effective resolution of the VEGF-dependent mechanisms that drive DME. [5] Several patients do not benefit and even relapses the manifestation to anti-VEGF treatment. A low-grade inflammatory process and angio-genesis has been shown to be a possible cause, but it still needs to be clarified whether angiogenesis following an

overexpression of VEGF is a cause or a consequence of inflammation. Nearest correlation of DME as a complication of DR (Diabetic retinopathy) in Ayurveda classics can be done with *Parimlayi Kacha* [6] in *Drishtigata Rogas* which is basically *Pittarakta Dushti* and *Sanga* as *Srotodushti Karana*. The *Dosha Dushti* at present in this case is *Kaphavrutta Vata*.

2. CASE REPORT:

The patient, in this report, is a 76 years male diagnosed with Type 2 DM and Hypertensive in the past 20 years (under treatment Tb Glimepiride, Metformin Hydrochloride & Voglibose, Tb Amlodipine 5mg, Cap Aspirin Gastro-resistant & Rosuvastatin) came with complaint of blurred vision in both eyes for 5 months (Lt>Rt). In addition, patient was diagnosed with Diabetic macular edema in Left Eye with non-proliferative diabetic retinopathy. Patient was undergoing conventional therapy to prevent further complications (Hydrocortisone, NSAID and topical supplements) for 3 weeks. History of any surgical or laser treatment was elicited. Post oral medications patient was advised for anti-VEGF intra-vitreous injections for which patient was apprehensive and wanted to explore alternative medicine. He was explained about the Ayurveda management with all prognostic options.

The case was treated at KLE Ayurveda Hospital, Belagavi, Karnataka, from November 18 to November 29, 2024. MR NO: KLE240031179, IPD NO: IP24006738.

Clinical Findings:

According to Ayurveda: *Prakriti* of the patient was *Vata-Kapha Prakriti* and *Dosha* in *Vyadhi Awastha* was

Kaphavrutta Vata with *Dushya* as *Netra, Rakta* and *Majja*.

A general examination showed Blood pressure 130/80 mmHg, pulse rate of 86 bpm, and temperature afebrile. Systemic examination of central nervous system, cardiovascular system, and respiratory system revealed normal findings, with no any significant family history. Fundoscopic and Schiottz tonometry examination revealed Rt Eye Mild NPDR with PSC, IOP 14.6mm of Hg (within normal limit) and that of Lt Eye Mild NPDR with macular edema, with PSC, IOP 14.6mm of Hg (within normal limit).

Table 1- Visual assessment before treatment

Vision assessment	RE	LE
Visual acuity	6/12	6/18 (B)
Pinhole	NI	NI
AR readings	+0.50 -1.00@89	+0.50 +2.00 @9
K readings	39.75 40.75 103	39.75 41.25 90
BCVA	+0.00 +1.00 @180 with Add +2.50 6/9 (B) NVN12	+0.75 +2.00 @180 with Add +2.50 6/18 (B) NVN18
Slit Lamp	PSC Gr 1	PSC Gr 2
IOP	14.6mm of Hg	14.6mm of Hg
Fundoscopy	Mild NPDR	Mild NPDR with Macular edema

Diagnostic Assessment: With the help of Dilated Fundus Examination, Optical Coherence tomography and the readings of macular thickness concluded diagnosis of Left eye diabetic macular edema. Fundus examination excluded the other clinical conditions affecting macula.

Intervention:

- Oral Medications –
Ayurveda intervention started with for *Deepana-Paachana* – Tab. *Arogyavardhini Vati* 1-1-1 Before Food & Tab. *Agnitundi Vati* ½ – 0 – ½ After food.
Koshtashodhana – *Avipattikara Churna* 20gms with hot water morning 8am, 6 *Vegas* were observed.

Post-discharge Internal Medications – Tablet *Chandraprabha Vati* 2-2-2 After Food, Tablet *Manjihtaadi Ghana Vati* 2-2-2 After food Eye Drop. *Elaneeru Kuzambu* 1 drop in both eyes at 6pm – (1 Month)

- Topical Eye Treatment –
Ksheera Seka (KS) – *Ksheera* processed with *Haridra* 2gms, *Yashtimadhu* 5gms and added with 20 drops of *Shigru Patra Swarasa* daily Twice.

Bidalaka – Prepared out of *Gairika* 2gms, *Yashtimadhu* 6gms, *Bibhitaki* 12gms mixed with *Ushnajala* and used for *Bidalaka*

- *Panchakarma* Treatment –
Anuvasana Basti (AB) – *Dhanwantara taila (DT)* 30ml after food

Niruha Basti (NB) (500ml) – *Madhu (Honey)*80ml + *Saindhava Lavana* 5gms + *Murcchita Tila Taila* 60ml+ *Kalka (of Dashamoola Churna 25gms + Guduchi Churna 10gms + Yashtimadhu Churna 10gms +Shatapushpa Churna 10gms) + Dashamoola Kashaya 100ml + Prakshepa of Go Arka 100ml + Kanji 100ml.*

Timeline:

Table 2- Therapeutic intervention timeline

Date	Internal medications	Procedures	Topical Eye Treatment	Notes
18/11/2024	Tab. <i>Arogyavardhini Vati</i> 1-1-1 Before Food & Tab. <i>Agnitundi Vati</i> ½ – 0 – ½ After food	–	KS & <i>Bidalaka started</i>	Start of Deepana – Pachana
19/11/2024	–	<i>Koshtashodhana</i>	Continued KS & <i>Bidalaka</i>	<i>Avipattikara Churna</i> 20gms with hot water morning 8am, 6 Vegas were observed.
20/11/2024	–	Samsarjana krama <i>Anuvasana Basti (AB)</i>	Continued KS & <i>Bidalaka</i>	<i>Basti</i> Procedure initiated
21/11/2024	–	<i>Niruha Basti (NB)</i>	Continued KS & <i>Bidalaka</i>	
22/11/2024	–	AB	Continued KS & <i>Bidalaka</i>	
23/11/2024	–	NB	Continued KS & <i>Bidalaka</i>	Completion of <i>Samsarjana Krama</i>
24/11/2024	–	AB	Continued KS & <i>Bidalaka</i>	
25/11/2024	–	NB	Continued KS & <i>Bidalaka</i>	
26/11/2024	–	AB	Continued KS & <i>Bidalaka</i>	Completion of <i>Basti</i>
27/11/2024 To 29/11/2024	–	–	Continued KS & <i>Bidalaka</i>	Completion of KS & <i>Bidalaka</i>
16/12/2024 (30 th day FU)	Tab. <i>Chandra-prabha Vati</i> 2-2-2 After Food, Tab. <i>Manjihataadi Ghana Vati</i> 2-2-2 After food E/d <i>Elaneeru Kuzambu</i> 1 drop at 6pm in Both eyes	–	–	On Post discharge medications
15/01/2025 (60 th day FU)	Continued same	–	–	Follow-up & Review

3. FOLLOWUP AND OUTCOME:

The patient was treated on an IPD basis and assessment were done on a follow up period of 30 and 60 day with regression of macular edema was noted. During follow up vision was persistent as noted (Table No 4).

Improvement was seen in OCT readings (Table No 3) during follow up period. Patient was advised to undergo cataract surgery for better visual improvement with strict diabetic control.

Table 3- Macular Thickness (μm):

	Before treatment	After treatment
Macular edema (Left eye)	359 μm (fig 1)	317.1 μm (fig 2)

Table 4- Visual assessment before & after treatment

	Before treatment		After treatment	
	RE	LE	RE	LE
Visual acuity	6/12	6/18 (B)	6/12	6/18 (B)
Pinhole	NI	NI	NI	6/12
AR readings	+0.50 -1.00@89	+0.50 +2.00@9	+0.50 -1.00@89	+0.50 +2.00@9
K readings	39.75 40.75 103	39.75 41.25 90	39.75 40.75 103	40.00 41.25 90
BCVA	+0.00 +1.00 @180 with Add +2.50 6/9 (B) NVN12	+0.75 +2.00 @180 with Add +2.50 6/18 (B) NVN18	+0.00 +1.00 @180 6/9 with Add +2.50 for NV N6	+0.75 +2.00 @180 6/9 (B) with Add +2.50 for NV N6 (B)

4. DISCUSSION:

Evaluating a case with the help of modern diagnostic tools like Fundus Photography, Fundus Fluorescein Angiography (FFA), OCT, etc must be considered before planning treatment of posterior segment ailment. This will avoid the serious surgically indicated diseases like Epi-retinal membrane, Macular hole, etc and patient can be promoted for non-invasive alternate therapies. Costs of these equipment's are not affordable for *Ayurveda* setups. But these tests remain as gold standard for considering improvement / progress in the macular diseases.

Exact correlation of DME in classics is not possible. Hence, we need to develop patient specific strategic treatment protocol based on *Deha, Desha, Kala, Roga, Rogi, Vaya*, etc factors. However, the plan of care may be generalised rather protocol.

Written informed consent should be obtained from the patient regarding guarded visual prognosis and consent to perform *Kriyakalpa / Panchakarma* procedures which is a mandatory protocol as per NABH standards for the safety of patient as well as doctor.

Mode of Action: This case was diagnosed as *Kaphaavrutta Vata* as *Doshic* status and hence, initially started with *Ama Pachana* procedure followed by *Koshtashodhana* in order to begin with *Basti*. This will clear the static *Mala* in *Koshta* as well as enlightens the *Agni* and benefits through giving maximum outcome through forthcoming treatments.

Specifically, *Basti* was planned in order to address the *Pradhana Doshha Vata*. For *Vata Vyadhi*, *Basti* is ultimate treatment. Also, it takes care of underlying *Kapha Doshha* too. Hence, *Tridosha Shamaka Dashamoola* [7] was used along with *Go Arka* as *Lekhana* to remove *Avarana* of *Kapha* in the vicinity

Vikrit Vata. Matra Basti [8] with *Dhanwantaram Taila* is known for its neuro-protective, anti-inflammatory action.

Ksheera Seka which has a great role in reducing inflammation at any level in eyes. It is being praised as an *Atyaayika Chikitsa of Netra*. The circular movement of the fluid over the blinking eyes improves circulation and promotes healing by reducing oxidative stress and inflammatory markers. Moreover, the drugs used in *Seka* were fortified with *Haridra* [9], *Yashtimadhu* [10] and *Shigru* [11] which are most commonly known anti-inflammatory drugs with their deeper penetration.

Bidalaka [12] is an ideal *Kriyakalpa* and praised as most potent procedure in *Netra Chikitsa*. Drugs used in this formulation include *Gairika*, *Yashtimadhu* and *Bibhitaki* are known for their *Shothahara* and *Rasayana* properties.

In our experience, it was observed that, in spite of reduction in edema, vision improvement is entirely different issue. Both issues i.e., vision and macular edema may or may not correlate in spite best individualised fabricated treatment protocol. Hence, best corrected vision should be considered for evaluating case outcome. Moreover, *Ayurveda* treatment protocol [13] gives positive impact over non-sufferer eye. Patient claim improvement in clarity and contrast of vision in both suffering and non-suffering eyes.

Patient tolerated all treatment well and **No Adverse Effects** were seen.

Strengths: A case of DME was treated with an integrative approach of diagnostics and therapies which

is the need of hour. Standard parameters were used to assess the improvement.

Limitations: Being a single case study the treatment protocol cannot be generalized.

Take away lesson: Proper assessment of disease condition with a planned integrative approach has given promising results. As per the condition of patient the assessment and treatment should be done for proper patient care.

5. CONCLUSION :

Considering *Doshic* status planning of strategic treatment helps in reducing inflammatory markers in turn reduces macular edema and thus helps in restoring visual acuity to its normalcy. In this case as the patient had cataract, the visual acuity will be a subjective criterion for improvement. The OCT 4parameter, the RPE thickness changes reveal the objective changes. Ayurvedic therapies have shown effective changes in these readings. With these post treatment condition chances of post cataract complications also reduces and will give best visual correction.

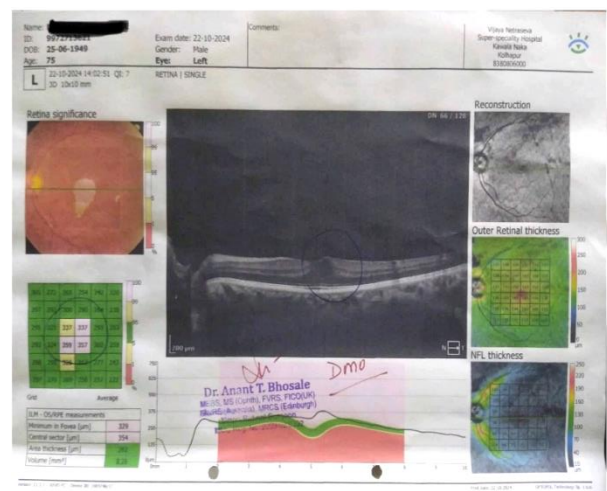


Figure 1.1-Before treatment

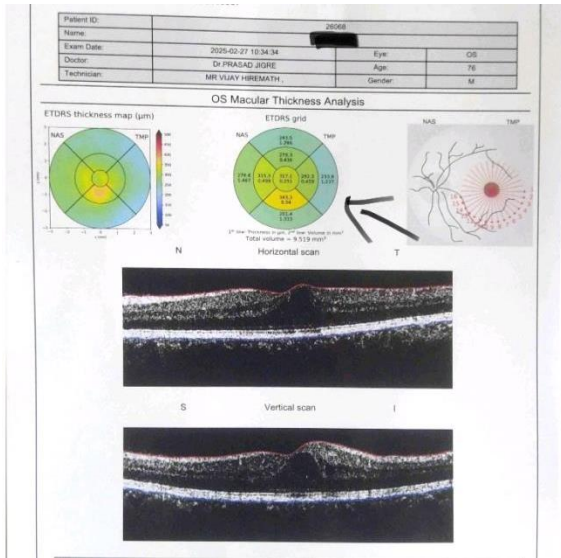


Figure 2.2- After treatment

Declaration of Patient Consent – The authors confirm that they have acquired a patient consent form, in which the patient or caregiver has granted permission for the publication of the case, including accompanying images and other clinical details, in the journal. The patient or caregiver acknowledges that their name and initials will not be disclosed, and sincere attempts will be undertaken to safeguard their identity. However, complete anonymity cannot be assured.

Patient perspective - Living with diabetes has been a journey of constant vigilance. In the past few days, I experienced blurry vision and got to know about the severity of my condition. Hesitant about invasive procedures and frequent injections, I approached Ayurveda for a holistic approach. Now, with this treatment, not only my eyes but my overall health feels improved. I'm also diagnosed with cataract, and I value being informed and involved about the whole treatment protocol. I'm hopeful that my surgery, complemented by a holistic approach, improves the quality of my life.

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