

Management of Early-Onset Non-Exudative (Dry) Age-Related Macular Degeneration Through Ayurvedic Shodhana and Kriyakalpa: A Case Report

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ABSTRACT

Background: Age-related macular degeneration (ARMD) is a progressive neurodegenerative disease of the retina. While typically a geriatric condition, early-onset ARMD (before age 50) is an emerging clinical concern with limited therapeutic interventions in conventional medicine for the non-exudative (dry) form.

Methods: A 43-year-old male diagnosed with dry ARMD presented with painless, gradual diminution of vision in both eyes. The condition was diagnosed as Pitta Vidagdha Drishti based on Ayurvedic clinical features. Management followed an integrated Ayurvedic protocol comprising Shodhana (systemic purification via Nasya and Matra Basti), Shamana (internal medicine), and Kriyakalpa (targeted ocular therapies including Akshi Tarpana and Anjana).

Results: Post-treatment Optical Coherence Tomography (OCT) demonstrated a significant reduction in drusen count (from 4 to 1 in the left eye) and stabilized retinal thickness. Best Corrected Visual Acuity (BCVA) improved from 6/24 to 6/12 in the left eye.

Conclusion: Ayurvedic management effectively addresses both the functional and structural aspects of early-onset dry ARMD, providing a promising non-invasive strategy for retinal preservation.

Keywords: Early-onset ARMD, Pitta Vidagdha Drishti, Kriyakalpa, Akshi Tarpana, Optical Coherence Tomography.

INTRODUCTION

Age-related macular degeneration (ARMD) is a premier cause of irreversible central visual impairment, traditionally associated with the senescence of the retinal tissues [1]. It is characterized by the progressive deterioration of the macula lutea, the region responsible for high-resolution visual acuity and color perception. While globally recognized as a disease of the elderly—affecting approximately 8.7% of the population over age 60—recent clinical trends indicate a concerning rise in early-onset cases appearing in the fourth and fifth decades of life [2]. Projections suggest that the global burden of ARMD will escalate to 288 million by 2040, highlighting a significant public health challenge [3]. Modern ophthalmology categorizes the disease into two distinct types: the non-exudative (dry) and the exudative (wet) forms. Wet ARMD, involving choroidal neovascularization, is frequently managed with intravitreal anti-VEGF injections or laser photocoagulation [4]. However, the dry form—which accounts for nearly 90% of all cases—is characterized by the accumulation of drusen (extracellular metabolic deposits) between Bruch's membrane and the retinal pigment epithelium (RPE). Currently, conventional medicine lacks a definitive curative protocol for dry ARMD, with management largely limited to dietary supplementation (AREDS2 formula) and lifestyle modifications to slow progression [5].

In the Ayurvedic paradigm, ARMD finds a clinical correlation with Drishtigata Rogas, specifically Pitta Vidagdha Drishti [6]. According to Acharya Sushruta, the pathophysiology of this condition involves the vitiation of Alochaka Pitta (the functional metabolic unit of vision). When this vitiated Pitta interacts with the

Drishti (macular region), it results in Vidagdhatā—a state of metabolic inflammation and tissue degeneration. In a 43-year-old patient, this early manifestation represents Akaala Jara (premature aging) of the ocular tissues. Given the limitations of contemporary treatments for drusen regression, Ayurvedic interventions such as Shodhana (systemic purification) and Kriyakalpa (specialized ocular therapies) offer a vital therapeutic pathway [7]. These treatments aim to clear Srotoavarodha (channel obstruction) and provide Chakshushya (retino-protective) nourishment. This case report evaluates the efficacy of an integrated Ayurvedic protocol in improving visual acuity and reducing drusen count in a young adult with dry ARMD.

Case Report

A 43-year-old male patient, a resident of Jaipur and a software engineer by profession, presented to the Shalakyā Tantra Outpatient Department (OPD) at the National Institute of NIA, Jaipur. He reported a primary complaint of gradual, painless diminution of vision in both eyes, which had significantly interfered with his work and daily activities over the preceding two months.

Clinical History- The patient noted that while he had experienced mild visual fatigue for approximately two years, his central vision had deteriorated sharply in the last 60 days. He was diagnosed with Non-Exudative (Dry) ARMD by a private ophthalmologist 18 months prior. Despite consistent use of antioxidant supplements and lubricating eye drops, his visual acuity continued to decline. His history was negative for tobacco use, alcohol consumption, or significant systemic comorbidities such as Hypertension or Diabetes Mellitus. There was no reported family history of hereditary macular dystrophies. Screen time of patient was approx. 8 hours in a day.

Physical and Systemic Examination - At the time of admission, the patient's vitals were stable (Temperature: 36.7°C, Pulse: 90 bpm, Respiratory Rate: 20/min). General physical and systemic examinations of the respiratory, cardiovascular, central nervous, and gastrointestinal systems revealed no abnormalities.

Ashtavidha Pariksha - The Ashtavidha Pariksha (eight-fold examination) was conducted to determine the patient's physiological state [Table 1]:

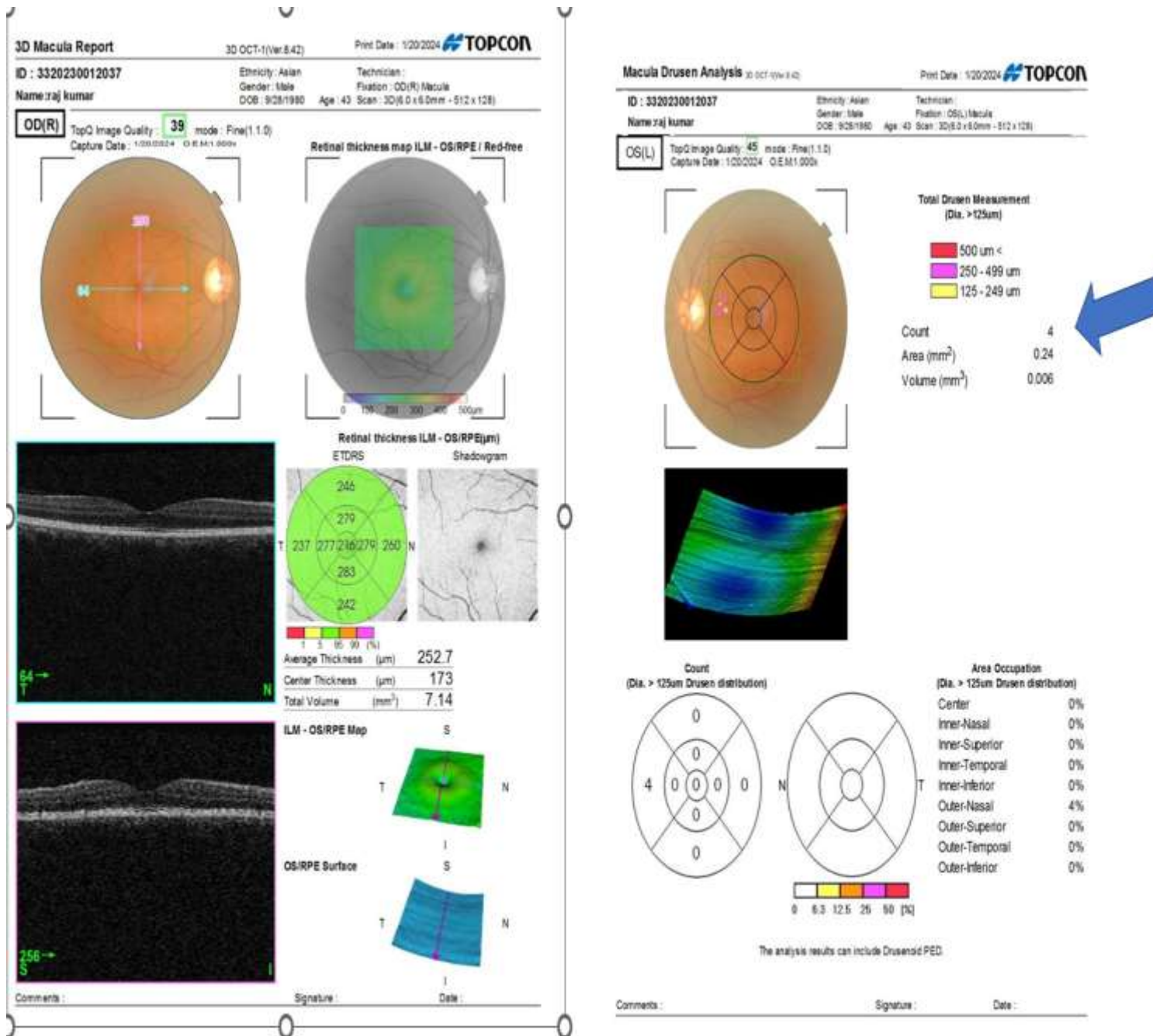
Table 1: Ashtavidha Pariksha (~eight-fold examination of patient)

Parameter	Observation
Naḍi (Pulse)	Kapha-predominant
Mala (Feces)	Sama (Presence of metabolic toxins)
Mutra Pravṛtti (Urination)	Samyaka (normal)
Jihva (Tongue)	Prakṛta (normal)
Sabda (Voice/Speech)	Spaṣṭa (clear)
Sparsa (Touch)	Uṣhṇa (warm)
Dr̥k (Vision/Eyesight)	Alpadrushti (Diminished vision)
Akṛti (Body Stature)	Madhyama (Moderate build)

Ocular Examination - A detailed baseline ocular assessment was performed before starting the treatment (BT):

- **Uncorrected Visual Acuity (UCVA):** Right Eye (RE) 6/18; Left Eye (LE) 6/36.
- **Best Corrected Visual Acuity (BCVA):** RE 6/12; LE 6/24.
- **Near vision:** RE N10; LE N24
- **Intraocular Pressure (IOP):** RE 15 mmHg; LE 16 mmHg.

- **Slit Lamp Examination:** Both eyes showed mild conjunctival congestion; however, the cornea, anterior chamber, iris, and lens were within normal limits (WNL).
- **Fundus Examination:**
 - **Right Eye:** Media clear, optic disc and retinal vessels WNL.
 - **Left Eye:** Media clear; presence of drusen and macular degenerative changes.
- **OCT Findings:** Confirmed retinal thinning, RPE changes, and a drusen count of 4 in the left eye [Figure 1].



OCT and fundus photo of Right eye

fundus photo of left eye
With drusen count - 4

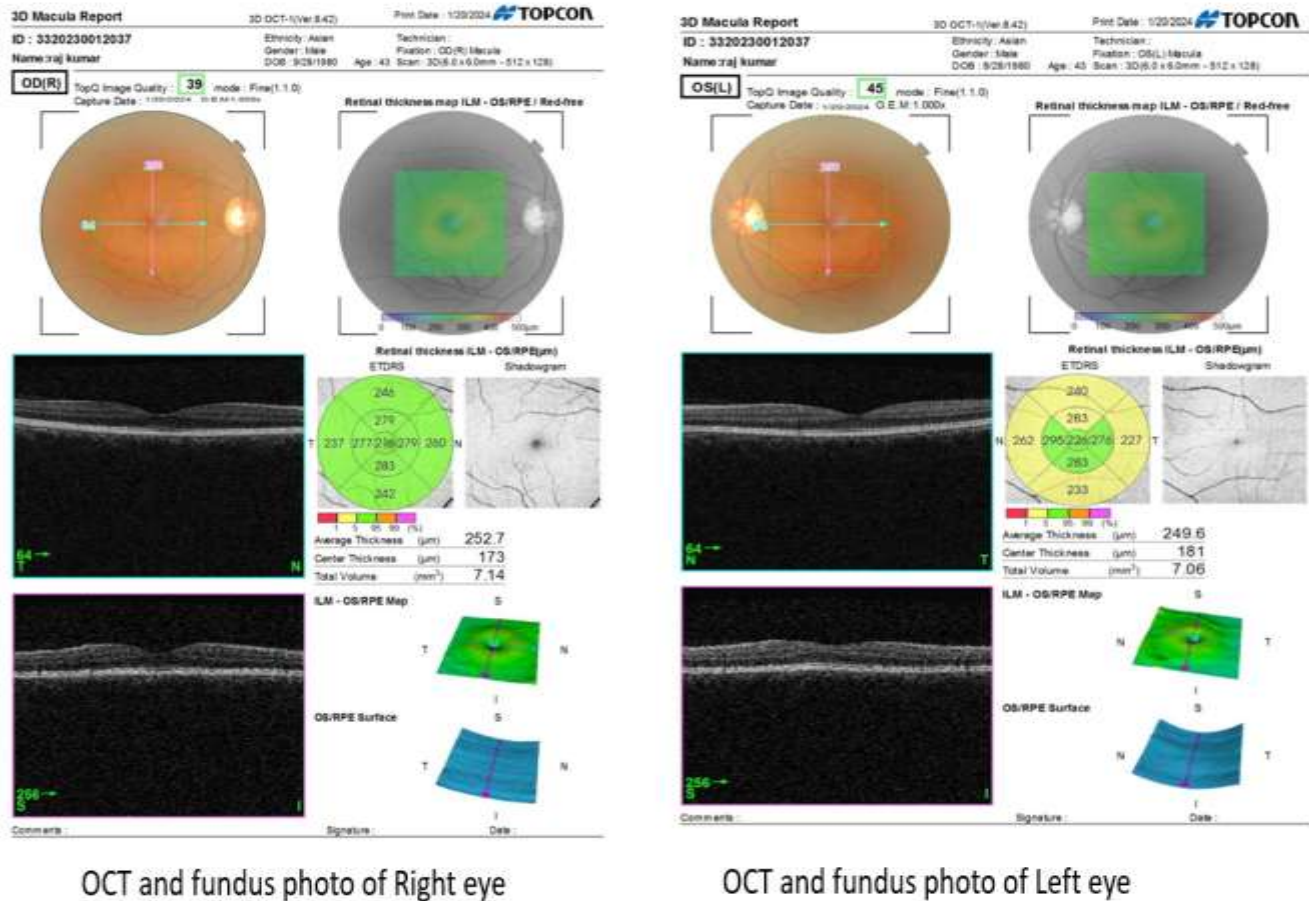


Figure 1. Colour fundus photographs demonstrate retinal thinning & RPE changes and drusen OS.

Intervention:

The patient was admitted for a 15-day Intensive Ayurvedic Ocular Care protocol. The treatment was categorized into three distinct phases to ensure systemic detoxification followed by localized nourishment.

Phase 1: Shodhana (Systemic Purification)- The purificatory phase of the intervention was initiated with a seven-day course of Marsha Nasya, involving the administration of eight drops of Anu Taila in each nostril daily to clear the Urdhvajatrugata channels and enhance drug delivery to the sensory organs. Simultaneously, to address the systemic Vata component and arrest the degenerative Kshaya of the retinal tissues, the patient received Matra Basti with 120 ml of Dashmoola Taila daily for seven days. This dual approach was designed to stabilize the Gut-Retina axis and ensure Sroto-shodhana (clean metabolic pathway) before the commencement of localized ocular therapies [Table 2].

Table 2: Systemic Shodhana Treatment (Marsha Nasya & Matra Basti)

Aushadi	Matra	Kala	Samay
Marsha Nasya with Anu taila	8-8 drops	Once a day	for 7 Days
Matra basti with dashmoola taila	120 ml	Once a day	for 7 Days

Phase 2: Kriyakalpa (Local Ocular Procedures)- The Kriyakalpa (localized ocular therapies) included three sittings of Akshi Tarpana with Patoladi Ghrita, retained for 15–20 minutes to provide lipophilic nourishment to the posterior segment and stabilize the retinal layers. This was complemented by the daily application of Ilaneer

Kuzhampu Anjana for 15 days to induce Lekhana (scraping) of the drusen deposits and improve macular clarity [Table 3].

Table 3: Kriyakalpa (Local Ocular Procedures) Protocol

Tarpana with patoladi ghrita	once a day	3 sitting of Tarpana
Anjana with Ilaneer Kuzhampu	once a day	Daily for 15 days

Phase 3: Shamana (Internal Medications)- The Shamana Chikitsa (internal management) was aimed at systemic metabolic correction and retinal rejuvenation. The patient was prescribed Punarnavadi Kashaya and Manjisthadi Kashaya twice daily before meals to enhance ocular microcirculation and clear metabolic toxins (Rakta-Prasadaka).

This was supported by Yogaraja Guggulu to stabilize Vata and mitigate sub-retinal inflammation, along with Triphala Churna at bedtime as a Chakshushya Rasayana (eye tonic) to provide long-term retino-protective benefits [Table 4].

Table 4: Shamana (Internal Medications) Chikitsa

Aushadi	Matra	Kala and Anupana	Samay
Punarnavadi Kashaya	30 ml	twice / day	Before meal for 1 month
Yogaraja guggulu	2-2 tab	Ushnodaka	After meal for 1 month
Triphala churna	3 gm	twice / day	after meal for 1 month
Manjisthadi Kashaya	30 ml	Twice /day	Before meal for 1 month

RESULTS

The patient demonstrated high compliance with the 15-day IPD protocol and the subsequent 30-day follow-up. No adverse effects or ocular discomfort were reported during the administration of Kriyakalpa or Shodhana therapies.

Functional Improvement (Visual Acuity)- Significant improvement was noted in both distance and near vision. The most profound changes occurred in the Left Eye (LE), which was the more symptomatic eye at baseline.

- **Distance Vision (BCVA):** The LE improved from 6/24 to 6/12, a two-line improvement on the Snellen chart. The RE improved from 6/12 to 6/9.
- **Near Vision (BCNV):** The LE improved from N/12 to N/8, while the RE reached N/6.

Structural Improvement (OCT Findings)- The most significant finding in this case was the objective evidence obtained through repeat Optical Coherence Tomography (OCT). The pre-treatment OCT of the left eye demonstrated four distinct soft drusen, appearing as focal elevations of the Retinal Pigment Epithelium (RPE).

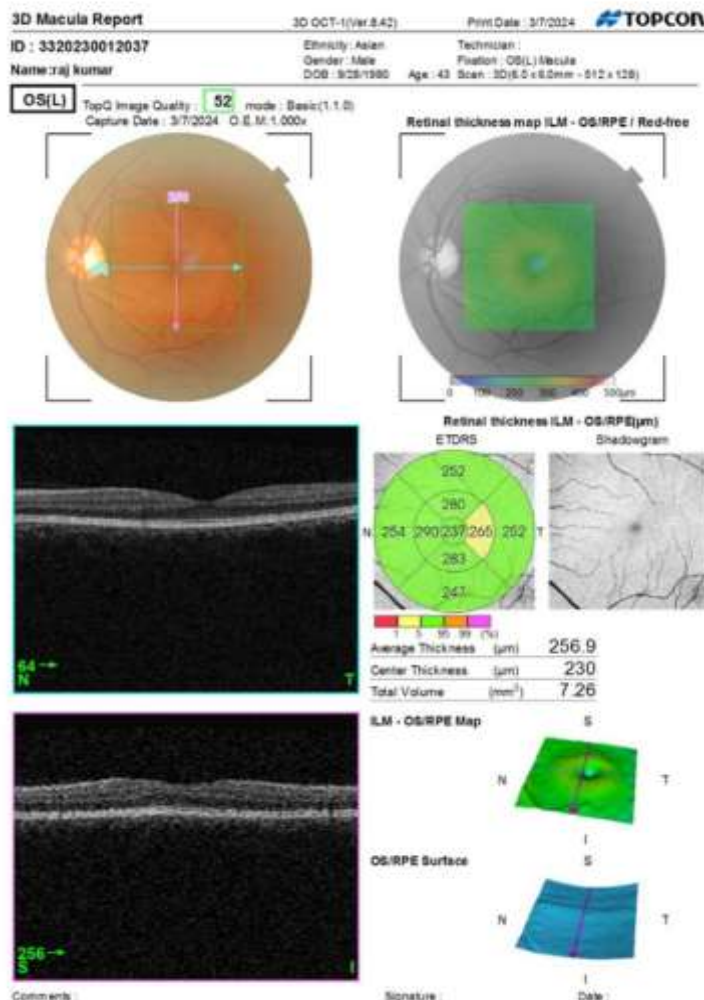
On post-treatment OCT evaluation, three of these drusen showed complete regression, with only one small and stable drusen remaining. In addition, there was noticeable stabilization of the RPE layer along with improved regularity of the ellipsoid zone, indicating possible recovery and restoration of photoreceptor integrity [Figure 2].

Subjective Outcomes- The patient reported a marked reduction in metamorphopsia (visual distortion) and a significant decrease in eye strain during digital device usage. The "dark spot" (scotoma) perceived by the patient in his central field of vision became less dense and reduced in size [Table 5].

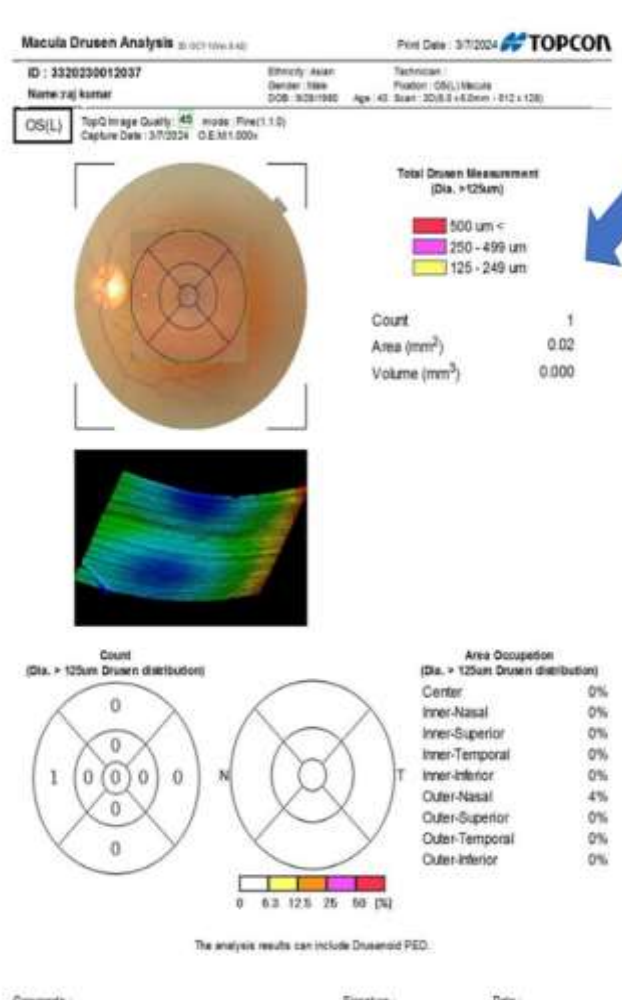
Table 5: Comparison of Visual Acuity (UCVA, BCVA, NV, BCNV) BT & AT

	RIGHT EYE		LEFT EYE	
	BT	AT	BT	AT
UCVA	6/24	6/18	6/36	6/24
NV	N/10	N/8	N/24	N/12
BCVA	6/12	6/9	6/24	6/12
BCNV	N/8	N/6	N/12	N/8

Figure 2: OCT demonstrate reduced drusen count in left eye and improved in macular thickness.



After treatment - OCT and fundus photo of Left eye



After treatment – drusen count of Left eye

Timeline: -The timeline of the case is depicted in Table 5.

Table 5: Timeline of Clinical Events and Interventions

Date / Period	Clinical Event and Interventions
July 2022	Initial diagnosis of Dry ARMD via OCT; started conventional antioxidant supplements.



Nov 2023	Patient reported gradual worsening of central vision and reading difficulty.
Jan 20, 2024	First Visit: Baseline ocular assessment and NIA Jaipur OPD diagnosis.
Jan 20 – Jan 27, 2024	IPD Phase 1: Shodhana therapies (Marsha Nasya and Matra Basti).
Jan 20 – Feb 03, 2024	IPD Phase 2: Kriyakalpa procedures (Akshi Tarpana and Anjana).
Feb 04 – Mar 04, 2024	Post-Discharge: Commencement of 30-day oral Shamana medications.
Mar 10, 2024	Final Follow-up: Repeat OCT and BCVA assessment to document outcomes.

DISCUSSION

The clinical success of this integrated protocol suggests a significant therapeutic synergism between systemic detoxification and localized bioavailability. The management was executed in three strategic phases to address the multifactorial nature of early-onset dry ARMD, primarily viewed as Akaala Jara (premature aging) of the retinal tissues. The initial phase utilized Marsha Nasya and Matra Basti to establish a clean metabolic pathway (Sroto-shodhana). Nasya with Anu Taila is classically indicated for Urdhvajatrugata disorders; scientifically, it is hypothesized to bypass the blood-brain barrier via the olfactory pathway, potentially enhancing drug delivery to the cranial sensory organs [8]. Simultaneously, Matra Basti with Dashmoola Taila was employed to stabilize Apana Vata [9]. Modern evidence supports this systemic approach through the "Gut-Retina Axis," wherein modulating the intestinal environment can reduce systemic low-grade inflammation—a known driver of retinal pigment epithelium (RPE) senescence and drusen accumulation [10].

The structural regression of drusen (from 4 to 1) is largely attributed to the localized action of Kriyakalpa procedures. While the Blood-Retinal Barrier (BRB) often restricts aqueous-based drugs, Akshi Tarpana with Patoladi Ghrita provides a lipophilic medium that facilitates the passive diffusion of active principles to the posterior segment [11]. The prolonged retention of medicated ghee nourishes the RPE cells, enhancing their phagocytic capacity to clear metabolic waste. This was complemented by Ilaneer Kuzhampu Anjana, which exerted a Lekhana (scraping) effect. The presence of Saindhava Lavana and Pippali in the Anjana likely induced a micro-osmotic gradient, promoting the mobilization and subsequent drainage of sub-retinal debris through the choriocapillaris [12].

Finally, the internal Shamana medications focused on long-term metabolic correction and retinal rejuvenation. Manjisthadi and Punarnavadi Kashaya acted as Rakta-Prasadaka, improving ocular microcirculation and stimulating Dhatvagni (tissue metabolism) to clear Ama (metabolic toxins) generated by systemic Mandagni [13]. The use of Yogaraja Guggulu provided essential anti-inflammatory support at the RPE-Bruch's membrane interface, mitigating the sub-retinal inflammation characteristic of dry ARMD [14]. This was supported by Triphala Churna, which, as a Chakshushya Rasayana, provided high concentrations of antioxidants like tannins and Vitamin C. These compounds scavenge free radicals and protect photoreceptor integrity from blue-light induced photochemical damage (photo-oxidation)—a crucial intervention for a software engineer with chronic digital screen exposure (Rupa-Atiyoga) [15].

Addressing Early-Onset ARMD: A 43-year-old software engineer represents a modern demographic suffering from Akaala Jara due to excessive digital strain and Mandagni. In this patient, impaired digestive fire led to the formation of Ama, which, coupled with the oxidative stress of high-energy blue light, manifested as drusen deposits in the macula. This case suggests that Ayurvedic protocols can effectively "reset" ocular metabolism and stabilize the RPE-photoreceptor complex. The stabilization of the Ellipsoid Zone (EZ) integrity alongside drusen regression, without signs of geographic atrophy, suggests a true rejuvenation of the neuro-sensory retina. This provides a vital therapeutic window for the working-age population who currently have limited curative options in conventional medicine for non-exudative ARMD.

CONCLUSION

This case report demonstrates that the integrated Ayurvedic management of Pitta Vidagdha Drishti can effectively reverse the structural markers of Dry ARMD. The regression of drusen count from 4 to 1, as

objectively confirmed by OCT, challenges the notion that Dry ARMD is an irreversible degenerative condition. The combination of systemic Shodhana and localized Kriyakalpa provides a robust, non-invasive strategy for preserving central vision and improving the quality of life in younger adults.

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