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An Ayurvedic management of Retinal Pigment Epithelial Detachment - A Case Study

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ABSTRACT

Introduction: Retinal pigment epithelial detachments (PEDs) are characterized by separation between the RPE and the inner most aspect of Bruch's membrane. The space created by this separation is occupied by blood, serous exudate, drusenoid material, fibro vascular tissue or a combination. The symptoms of RPE detachment can be considered under *Drustigata Rogas* mentioned by *Sushrutha*. This is a case study of a 73year old male patient who was diagnosed with PED with Subretinal fluid in Right eye since 8 months. **Materials and methods:** The subject who approached *Shalakya Tantra* OPD of Government Ayurveda Medical College Bengaluru with symptoms of diminished vision for both near and far objects in right eye associated with flashes in front of eye since 8 months, patient underwent two courses of inpatient management, which included *Ayurvedic* oral medicines, and external therapies for the eyes *(Kriyakalpa*) and head. **Results:** Signs of improvement in visual acuity and optical coherence tomography (OCT) were observed at the end of both treatments. **Conclusion:** The main aim of management was to preserve and give a better quality of vision for the patient. The results indicate the potential of Ayurvedic treatments to manage and maintain vision in REP detachment.

Key words: *RPE detachment, Kriyakalpa, Drishtigata Roga, Case Study.*

INTRODUCTION

Retinal pigment epithelial detachments (PEDs) are characterized by separation between the RPE and the inner most aspect of Bruch's membrane. The space created by this separation is occupied by blood, serous exudate, drusenoid material, fibrovascular tissue or a combination.[1]

The classification of PEDs in AMD can be divided based on their contents. Categories include drusenoid, serous, vascularized, or mixed components. Drusenoid PEDs are seen mostly in non-neovascular or dry AMD. Serous PEDs are typically associated with the neovascular or wet form of AMD, but their natural history is relatively more favorable. Vascularized PEDs associated with Type 1 (sub-RPE) neovascularization and wet AMD, in contrast, have a greater risk of vision loss. In eyes with AMD, it is not uncommon to see more than one type of PED.[2]

Proper anatomical apposition between the retina, the RPE, and Bruch's membrane is crucial for nutritional support of the photoreceptors, retinol metabolism, phagocytosis of the photoreceptors outer segments, and formation of the outer blood-retinal barrier.

The forces maintaining normal adhesion between the RPE and Bruch's membrane are not well understood. Under normal conditions, there exists a net bulk flow of fluid towards the choroid from the vitreous, with its generation dependent upon hydrostatic and osmotic

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forces within the two bodies. Both the RPE and the retina produce resistance to this fluid flow. The RPE has greater resistance due to its limited hydraulic conductivity, subsequently; a vector force is generated pushing it against Bruch's membrane.[3]

The attachment of the RPE basement membrane to Bruch's membrane is possibly supplemented by regions of hemidesmosomes containing fine filaments of laminin, proteoglycans and collagen types IV and V.[4]

Age-related deposition of lipids, such as cholesterol esters, triglycerides, and fatty acids in Bruch's membrane may change its permeability altering retinochoroidal flow. Fluid may accumulate in the sub- RPE space, unable to pass through Bruch membrane, resulting in RPE elevation.

Currently no treatment for serous PED is proven effective, nor are recommendations for treatment guidelines established. Several strategies, however, have being used to treat vascularized PEDs, including laser photocoagulation, photodynamic therapy (PDT), intravitreal steroids and anti-VEGF therapy. The results from the VIP trial indicated that PDT could significantly reduce the risk of moderate and severe vision loss among patients with subfoveal occult CNV.[5]

Another treatment modality, described recently by Costa et al as a pilot trial, is photothrombosis at the neovascular ingrowth site using ICG visualization followed by laser application to feeder vessels. Occlusion of the feeder vessel with cessation of leakage, restoration of macular architecture and visual improvement were induced in two patients with CNV associated with PEDs.[6]

PED may be considered as *Kacha* (diminished vision), a *Drishtigata Roga* (disease of vision) according to *Ayurveda*, due to their common symptom of profound vision loss. In *Kacha*, the patient sees objects above but not below, objects are perceived as though covered by a thin cloth, and vision gradually diminishes. Management is repeated administration of *Sneha* (drinking of fats), *Asra-visravana* (bloodletting), *Reka* (purgation), *Nasya* (nasal medication), *Anjana* (collyrium), *Murdha-Basti* (retention of oil over the head), *Basti Kriya* (enema), *Tarpana* (retention of fat over the eye), *Lepa* (application of paste), and *Seka* (pouring of liquids over the eye).[7]

OBJECTIVES

1. To understand the pathophysiology of Retinal pigmental layer detachment.
2. To find a better *Ayurvedic* approach in PED.

CASE REPORT

Basic information of the patient

Age: 73 years

Gender: Male

Religion: Hindu

Occupation: Retired employee

Socioeconomic status: Middle class

Chief complaints

A 73-year-old male patient complaining of reduced vision in right eye associated with flashes in front of eyes visited *Shalakya Tantra* OPD, GAMC Bangalore on January 10/2020. He was systemically reviewed and eye examination was done. His reports suggested right eye PED with Sub retinal fluid, left eye being normal. He has undergone intravitreal steroidal therapy for the right eye 3 times, but did not find any improvement in the vision, hence approached GAMC for further management.

Unaided distant visual acuity (DVA) was counting fingers (CF +ve) OD and 6/24 in his left eye (OS); and his near vision was N60 OD and N6 OS.

Anterior segment examination revealed normal findings in both eyes (OU). Pupillary examination revealed an afferent pupillary defect OD and normal reflexes OS.

Fundus examination OD revealed drusens

Optical coherence tomography (OCT) scanning OD showed PED with sub retinal fluid (Figure 1a).

History of Past Illness: K/C/O Mild pulmonary Artery Hypertension, Hyperlipedimia

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Personal history

***Aharaja*:** Diet predominantly of *Madhura* and *Snigdha Ahara.*

***Viharaja*:** Day sleep for 1 to 2 hours regularly.

Treatment history

Intravitreal steroidal therapy - 3 sitting for right eye.

Examination

- *Asta Sthana Pareeksha*
  1. *Nadi: Prakruta,* 78/min
  2. *Mutra: Prakruta,* 4 to 5 times/day, once at night
  3. *Mala:* constipated
  4. *Jihwa: Lipta*
  5. *Shabda: Prakruta*
  6. *Sparsha: Prakruta*
  7. *Druk: Prakruta*
  8. *Akruti: Kaphavatala*
- Vitals were normal.
- Respiratory system, Gastro intestinal system, Central nervous system and musculoskeletal system have shown no abnormality.

Treatment

The patient underwent 2 courses of treatment. One was from January 11th, 2021 to January 17th, 2021, and the other was from February 11th 2021 to February 17th 2021. He was administered oral medicines such as *Kvatha* (herbal decoction), *Gutika* (herbal tablets) and *Ghrta* (medicated ghee) (Table 1), and external therapies for both the eyes *(Netra Kriya Kalpa*) and the head (Table 2). As he was above 70 years, *Panchakarma* (bio-purification) was not attempted.

Table 1: Oral medication advised from 10/01/2021 to 25/02/2021

SN	Medicine	Anupana	Dosage
1.	*Pathya Punarnavadi Kashaya*	With luke warm water	20ml BD after food
2.	*Sapthamrutha Loha*	with honey	2 tab at night
3.	*Triphala Gritha*	With warm milk	10 ml At bed time

Table 2: External therapy advised from 10/01/2021 to 17/01/2021

SN	Therapy	Medicine used
1.	*Aschothana*	Freshly extracted *Tulasi Swarasa* mixed with *Madhu* [2 drop in each eye]
2.	*Bidalaka*	*Triphala Choorna, Laksha Choorna* mixed with luke warm *Triphala Kashya*
3.	*Puspabandhan*	Rose petals
4.	*Shiroveshtana*	*Laksha Choorna* and *Vasa Choorna* [30g of powder was made into a paste by mixing with the decoction. A Cora cloth was immersed in 100ml of the decoction and the paste was smeared over the cloth. The cloth was applied over the forehead from one ear to the other and tied over the head]
5.	*Pindi*	With *Vasa Lakshadi Choorna* mixed with luke warm *Triphala Kashya*
6.	*Takradhara*	With *Laksha, Vasa*, *Musta* and *Amalaki Kashaya* mixed with buttermilk.

RESULT

After 1st course of management

Distant VA OD after 1st course of treatment was improved from CF+ to 6/60, left eye remained same 6/24 OS.

Near VA OD showed good improvement from N60 to N24.

After 2nd course of management

Distant VA OD 6/24, OS 6/12

Near VA OD N12, OS N6

OCT findings showed reduction in sub retinal fluid and reattachment of the RPE layer. [Figure 1, 2, 3 and 4]

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Figure 1: OCT Showing PED with SRF OD - Before Treatment

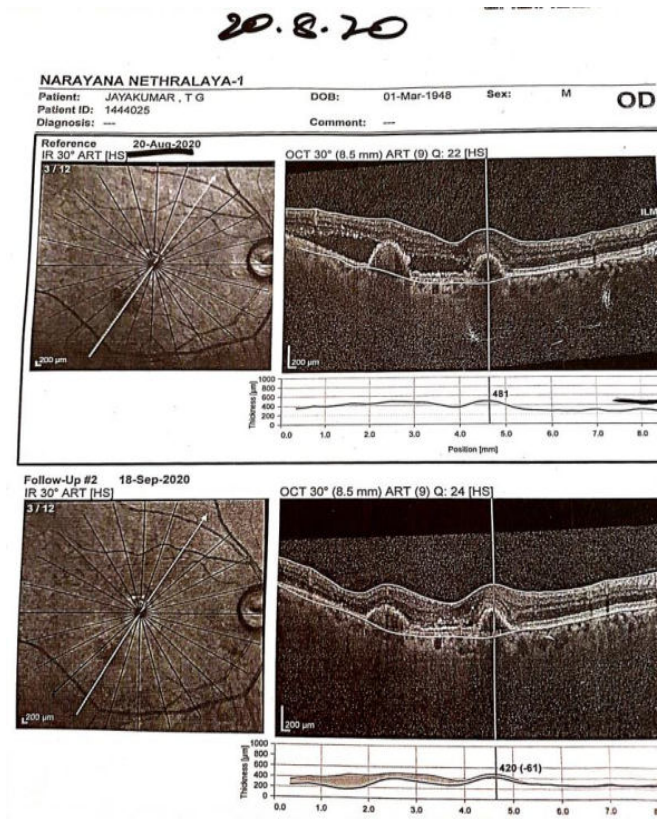


Figure 2: After first course of treatment

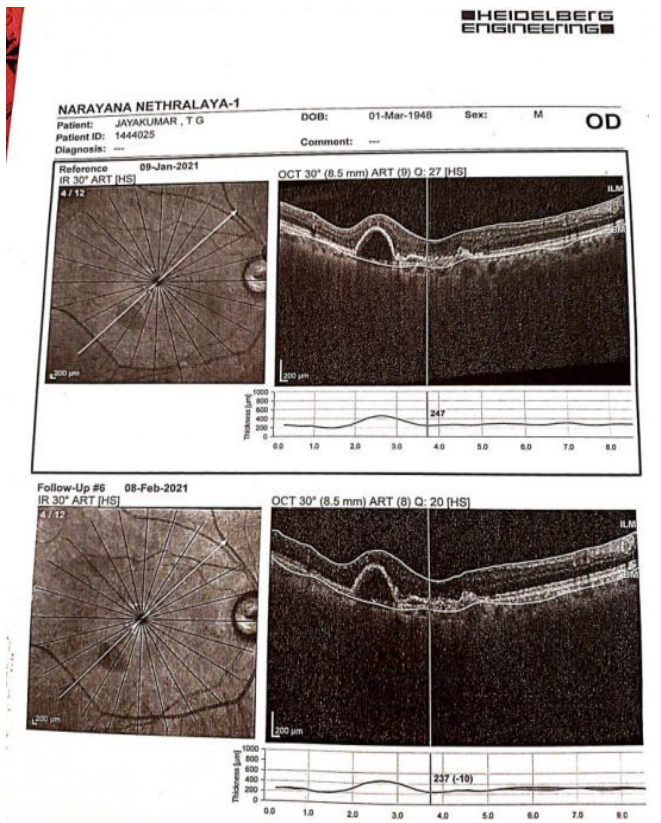


Figure 3: Report suggesting improvement after therapy

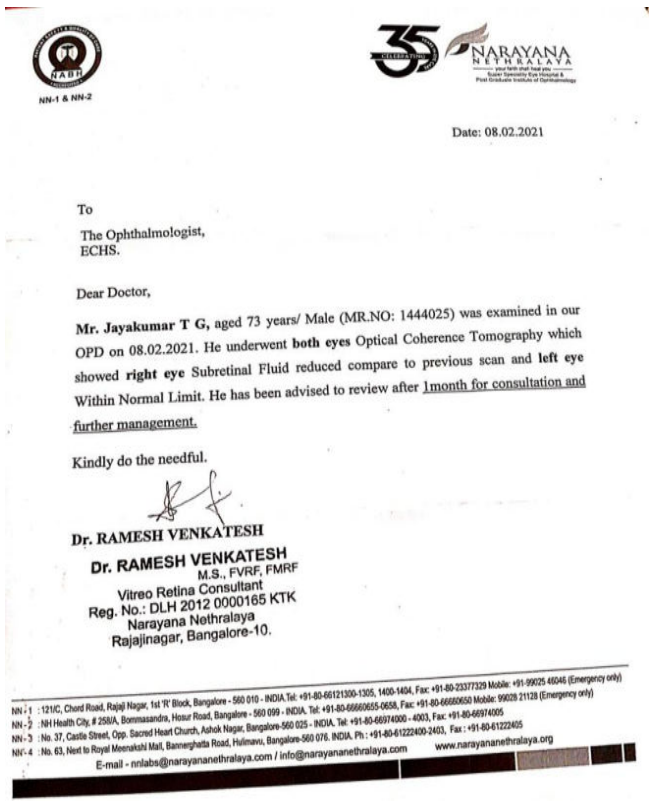
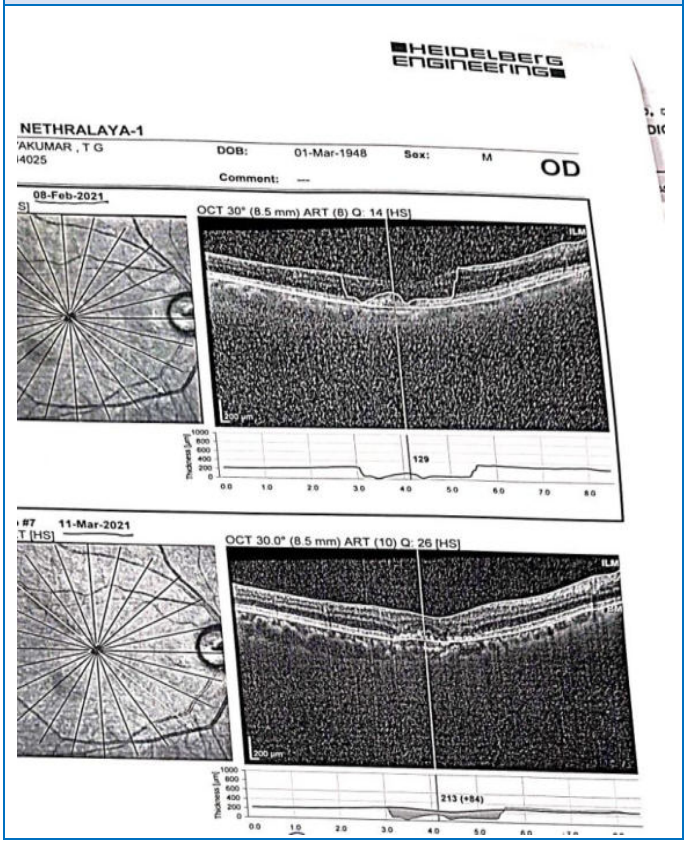


Figure 4: OCT - OD Showing complete reduction SRF and reattachment of RPE Layer



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Discussion

Local therapeutics was employed in this case as the patient was old for *Pancakarma* treatments. *Bidalaka* created a counter-pressure gradient that significantly pushes the retina to its original position. *Ascyotana* enabled the absorption of the medicines to reach the target tissues by such parameters as height and temperature of the medicines and reduce sub retinal fluid by *Kaphahara* action. *Siroveshtana* enabled absorption of the essential elements through the skin and hair follicles, thus bypassing barriers and reaching the target tissues. *Laksha*, one of the main ingredients in the medicines for head treatments, helped the retina restore itself to the rest of the eye by its properties of *Pitta-Kapha Nasaka* (diminishing *Pitta* and *Kapha*), *Sandhaniya* (binding*), Balya* (strengthening), and *Ropana* (healing). *Pathya Punarnavadi Kashaya* normalized *Vata Dosha* in this case by enhancing the expulsion of the waste and movement of *Doshas* out of the body and eye.[7]

Conclusion

The main challenge, in this case, was restoring vision and reattaching the retina. It was partially successful in both parameters, as vision marginally improved and the retina showed signs of reattachment. Results were a concerted effort brought about by the combined effect of both oral medicines and external therapies. Repeated courses of treatment may aid to further reattach the retina and give back some eyesight to the patient. The results may be validated and analyzed by large-scale studies and trials.

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