INTRODUCTION

RD is classified based on the mechanism of fluid accumulation into rhegmatogenous, tractional, and exudative. From a clinical standpoint, this classification may be modified to group the tractional and exudative varieties under secondary RD and the rhegmatogenous variety under primary RD. Rhegmatogenous RD occurs secondary to a full-thickness defect in the sensory retina; tractional RD occurs when the NSR is pulled away from the RPE by contracting vitreo-retinal membranes in the absence of a break; and exudative RD is due to subretinal fluid derived from the vessels of either the NSR, the choroid, or both.

A macular hole is a full-thickness defect or loss of the neuro-retinal tissue in the macula involving the fovea. Causes include idiopathic (83% of cases, usually in women aged 60-80 years), traumatic (5%), and others (cystoid macular edema, vitreo-macular traction, rhegmatogenous RD, post-surgical myopia, post-LASER treatment).

Both RD and the macular hole may be considered as Kacha (diminished vision), a Drishigata 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).

METHODOLOGY

The efficacy of an Ayurvedic treatment protocol to manage
rhegmatogenous RD and the resultant macular hole was assessed in this report. It was prepared according to the Case Report (CARE) guidelines to ensure transparency and effectiveness in reporting. Institutional ethical clearance was not required for this study. As the patient is underage, written informed consent was obtained from his mother prior to detailing his case.

**CASE PRESENTATION**

An 8-year-old boy presented with a 3-week complaint of blurring of vision and presence of a stationary black spot in his right eye (OD), as revealed by his mother. The patient sustained a sports-related injury 8 months ago when a football collided with his forehead. The trauma was accompanied by bleeding, redness of the eye, and swelling above his right eyelid. 3 weeks ago, he started experiencing a black spot in his visual field and blurring of vision OD. He was diagnosed with retinal detachment with macular hole OD and was advised surgery, which he declined. He came to Sreehareeyam for alternative options.

The child was born into a non-consanguineous family. His height is 139cm and his current weight is 38kg. His personal history readings (bowel, appetite, micturition, and sleep) were also normal. Review of systems and vital signs were normal.

Unaided distant visual acuity (DVA) was counting fingers (CF +ve) OD and LogMAR 0 in his left eye (OS); and his near vision was N36 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 a macular hole, elongated optic disc, and a subtotal rhegmatogenous retinal detachment (Figure 1a). Optical coherence tomography (OCT) scanning OD showed a dome-shaped elevation under the retina, suggestive of retinal detachment (Figure 1b).

**Therapeutic Intervention**

The patient underwent 2 courses of treatment. One was from May 5th, 2019 to May 24th, 2019, and the other was from December 28th, 2019 to January 8th, 2020. He was administered oral medicines such as Kvatha (herbal decoction), Guтика (herbal tablets), and Ghṛta (medicated ghee or clarified butter) (Table 1), and external therapies for both the eyes (Netra Kriya Kalpa) and the head (Table 2). As he was under 10, Panchakarma (bio-purification) was not attempted due to his age.

All medicines, except Geriforte, were manufactured at Sreehareeyam Farmherbs India, Pvt. Ltd., the hospital’s GMP-certified drug manufacturing unit. Geriforte was manufactured at The Himalaya Drug Company, based in Bengaluru, India.

**Outcome Measures**

The patient was prescribed medicines at discharge after both courses of treatment (Table 3) and advised regular follow-ups.

DVA at discharge after the first course of treatment was LogMAR 1.778 OD and LogMAR 0 OS, and NVA was maintained. Pupillary reactions were maintained OD and OS. Fundus examination OD showed a reduction in the macular hole (Figure 2a). OCT scanning OD showed absorption of the vitreous from the retina and lowering of the structure towards its normal position (Figure 2b).

The same findings in VA and pupillary reactions were observed at admission for the second course of treatment. Fundus examination and OCT were not done. DVA at discharge after the second course of treatment showed LogMAR 1.477 OD and LogMAR 0 OS. Fundus examination OD showed further reduction of the macular hole, (Figure 3a), and OCT scanning showed further lowering of the retina to its normal position (Figure 3b). A timeline of events for this case is provided in Table 5.

**DISCUSSION**

Rhegmatogenous RD is characterized by the presence of a retinal break held open by vitreo-retinal traction. Predisposing factors include lattice degeneration, snail-track degeneration, degenerative retinoschisis, and pathological myopia, in which the risk of RD is higher when the refractive error is more. Afferent pupillary defect (Marcus Gunn pupil) is present in eyes with extensive detachment.

A causal role of RD attributed to a macular hole can only be made if the detachment involves the posterior pole, or if more extensive, is seen to have advanced from a posterior pole RD. This is because it is difficult to determine whether a macular hole is of partial or full-thickness and if the hole is responsible for retinal detachment.

This patient’s condition was explored along the lines of Kachagra according to Ayurveda. Kachagra as an entity unto itself was described by Vagbhata. He considered it as that in which the Doshas afflict the third Patala (layer) of the eye. Gross deterioration of vision is the hallmark symptom of Kachagra and, by its nature, is Yapya (controllable). The improvement of the vision of this patient indicated that the Doshas were being expelled from the third Patala.

**Pathyakshadhatryadi Kashaya**, indicated in the Patalagata Rogas (diseases of the layers of vision), is Kapha-Pitta Samaka (relieves Kapha and Pitta) and Cakshushhya (healthy
Vasudeva Guggulu is indicated in hydrophthalmia. Gulu, Vasa, and Vainateya Ghrta is prepared from Ananta Ghrta, Chaulmugra, and rose water, and is indicated in pediatric eye diseases. Sunetra Junior is prepared from Amalaki, Jivanti, and Ananta Ghrta, and is indicated in retinal diseases. An ayurvedic protocol to manage rhegmatogenous retinal detachment and the resultant macular hole - a case report

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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Abbreviations:
RD: retinal detachment
DVA: distant visual acuity
NVA: near visual acuity
OD: oculus dexter
OS: oculus sinister
OU: oculus uterque
NSR: neurosensory retina
RPE: retinal pigment epithelium

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### Table 1: Oral Medicines

| Medicine                        | Dosage | Anupana (post-prandial beverage) | Time            | Duration                  |
|---------------------------------|--------|-----------------------------------|-----------------|---------------------------|
| Pathya Shadanga Kvatha<sup>3</sup> | 40mL   | Lukewarm water                    | 6am and 6pm     | 06/06/2019 - 24/06/2019   |
| Sudarsanam Gutika               | 3g     | Pathya ShadangaKvatha             |                 |                           |
| Pathya Punarnavadi Kvatha       | 40mL   | Lukewarm water                    | 6am and 6pm     | 07/06/2019 - 24/06/2019   |
| Vidaryadi Kvatha<sup>6</sup>    | 40mL   | Lukewarm water                    | 6am and 6pm     |                           |
| Vainateya Ghrita<sup>*</sup>    | 5g     | Lukewarm water                    | At night         | 26/12/2019 - 02/01/2020   |
| Geriforte<sup>+</sup>           | 1 tablet| Lukewarm water                    | Twice a day after food |                           |

### Table 2: External Therapies

| Treatment                      | Medicine                          | Method of Administration                                                                 | Duration               |
|--------------------------------|------------------------------------|------------------------------------------------------------------------------------------|-------------------------|
| Talapoticchil                  | Vasa Lakshadi Churna               | A paste prepared by mixing 60g of the powder and 300mL of the decoction was applied on a plantain leaf, which was kept face down over the head, obviating a small circular hole in the center. | 06/06/2019              |
|                                | Vasa Triphaladi Kvatha             |                                                                                         |                         |
| Purampada                      | Mukkadi Purampada                  | A paste prepared from the medicine was applied over the eyelid, obviating the lashes.    | 06/06/2019 - 14/06/2019 |
|                                |                                    |                                                                                         | 26/12/2019 - 02/01/2020 |
| Ascyotana                      | Drops prepared from Ocimum sanctum Linn., Veroniacinerea-Less., and honey | 1 drop of the medicine was instilled from a height of 2 Angula(2 fingers) in both eyes.  | 07/06/2019 - 13/06/2019 |
|                                | Ananta Ghrita<sup>*</sup>           |                                                                                         |                         |
|                                | Vinayakanjana<sup>*</sup>          |                                                                                         |                         |
|                                | Vinayakanjana<sup>*</sup> and honey|                                                                                         |                         |
| Bandhana (after Ascyotana)     | Flowers of Jasminum grandiflorum Linn. |                                                                                     | 16/06/2019 - 20/06/2019 |
|                                |                                    | The flowers were placed on the closed eyes with the stalks pointed outwards. Then, the eye was bandaged with a Cora cloth, with pieces of cotton inside it |                         |
|                                |                                    |                                                                                         | 26/12/2019 - 27/12/2019 |
| Siroveshtana<sup>°</sup>       | Vasa Lakshadi Churna               | 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. | 07/06/2019 - 12/06/2019 |
|                                | Vasa Triphaladi Kvatha             |                                                                                         |                         |
| Sirolepa                       | Biophytum sensitivum and Cynodon dactylon C. Fisher | 60g of the powdered ingredients were made into a paste and applied to the forehead.  | 07/06/2019 - 16/06/2019 |
| Lepa                           | Powders of Pueraria tuberosaWilld., Laccifer laccra Kerr., and extract of Aloe vera (Burmf). | 30g of powder is mixed with the extract to form a paste. This is applied over the forehead. | 27/12/2019 - 31/12/2019 |
| Sirodhara                      | Laksha Kera and Kshirabala Taila    | The oils are poured in a thin stream over the head from a coconut shell with a hole in the center. | 29/12/2019 - 31/12/2019 |
| Netra Picu<sup>°</sup>          | Murivenna                          | 15mL of each medicine was taken in a bowl and warmed. Sterilized pieces of cotton are taken and the lukewarm medicine is put in. This was then placed over the closed eyes. | 18/06/2019 - 22/06/2019 |
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Table 2: (Continued)

| Treatment | Medicine | Method of Administration | Duration |
|-----------|----------|--------------------------|----------|
| Avaguntana (Pinda Sveda) | Ocimum sanctum Linn. | 5g of the medicine was made into a bolus the size of a fruit of Emblica officinalis Gaertn. This was gently pressed over the closed eyelids to do fomentation. | 23/06/2019 - 24/06/2019 |
| Anjana* | Sunetra Junior* | One drop of the medicine was instilled into the inner canthus from a height of 2 Angulas (fingers). The patient was asked to move the eyeball in a circular manner. | 23/06/2019 - 24/06/2019 |

Table 3: Discharge Medicines

| Medicine | Dosage | Time | Prescription Date |
|----------|--------|------|-------------------|
| Khadirarishta* | 10 mL | 1/2 hour after food | 24/06/2019 |
| VainateyaGhrta* | 1/2 tablespoon | 1/2 hour after food | 24/06/2019 |
| Sunetra Junior* | 1 drop in both eyes | Morning and evening | 24/06/2019 |
| Vinayakanjana* | 2 drops over the closed eyelid | Bedtime | 24/06/2019 |
| Pancatikta Guggulu* | 1/2 tablet | 1/2 hour after food | 24/06/2019 |
| Vidaryadi Kvatha | 40mL | 6am and 6pm | 02/01/2020 |
| Geriforte^ | 1 tablet | 1/2 hour after food | 02/01/2020 |

*Patented medicines of Sreedhareeyam Ayurvedic Eye Hospital and Research Center
^Patented Medicine of The Himalaya Company, based in Bengaluru, Karnataka, India
°Treatment protocols of Sreedhareeyam Ayurvedic Eye Hospital and Research Center

Table 4: Timeline of Events

| Date | Event |
|------|-------|
| January 2019 | • Patient sustains an injury by a football colliding with his right eye. resulting in bleeding, redness of the eye, and a swelling over the right eyelid. The symptoms subside. |
| April 2019 | • Develops a stationary black spot along with blurring of vision OD.  
| | • Gets diagnosis of rhegmatogenous RD with macular hole OD and is advised surgery, which he declines. |
| May 9th, 2019 | • Consults Sreedhareeyam Eye Hospital and is advised inpatient management. |
| June 6th, 2019 | Admitted for a course of inpatient management  
Uncorrected DVA: CF +ve OD, LogMAR 0 OS  
Near Visual Acuity: N36 OD, N6 OS  
Pupillary Examination: Afferent pupillary defect OD, normal direct and consensual reactions OS  
Posterior Segment: macular hole, elongated optic disc, and a subtotal rhegmatogenous retinal detachment OD, normal findings OS  
OCT: dome-shaped elevation OD  
Pathya ShadangamKvatha and SudarsanamGutikaare started.  
Talapoticchil is done.  
Purampadais started. |
| June 7th, 2019 | Pathya PunarnavadiKvathiis started.  
Ascyotana with drops prepared from Tulasi, Sahadevi, and honey is started  
Stroveshtanaand Sirolepa are started. |
| June 12th, 2019 | Stroveshtana is stopped. |
Table 4: (Continued)

| Date               | Event                                                                                                                                 |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| June 13th, 2019    | Ascyotana with drops prepared from *Tulasi, Sahadevi*, and honey is stopped; the same procedure is started with *Ananta Ghrta* and *Vinayakanjana.* |
| June 14th, 2019    | *Purampada* is stopped.                                                                                                               |
| June 16th, 2019    | *Bandhana* is started.                                                                                                                |
| June 18th, 2019    | *Netra Picu* is started                                                                                                               |
| June 20th, 2019    | Ascyotana and *Bandhana* are stopped.                                                                                                  |
| June 22nd, 2019    | *Netra Picu* is stopped.                                                                                                               |
| June 23rd, 2019    | *Avaguntana* and *Anjana* are started.                                                                                                 |
| June 24th, 2019    | All treatments and oral medicines are stopped.                                                                                         |
|                    | Uncorrected DVA: LogMAR 1.778 OD, LogMAR 0 OS                                                                                          |
|                    | NVA: N36 OD, N6 OS                                                                                                                     |
|                    | Pupillary Examination: Afferent pupillary defect OD, normal direct and consensual reactions OS                                        |
|                    | Posterior Segment: reduction in the macular hole OD, normal findings OS.                                                            |
|                    | OCT: reduction in the dome-shaped elevation OD; normal findings OS.                                                                  |
| December 26th, 2019| Uncorrected DVA: LogMAR 1.778 OD, LogMAR 0 OS                                                                                         |
|                    | Near Visual Acuity: N36 OD, N6 OS                                                                                                      |
|                    | Pupillary Examination: Slight afferent pupillary defect OD, normal direct and consensual reactions OS.                                |
|                    | *Vidaryadikvatha, Vainateya Ghrta* and *Geriforte* are started.                                                                       |
|                    | *Purampada, Anjana, Ascyotana with Vinayakanjana* and honey, and *Bandhana* are restarted.                                           |
| December 27th, 2019| Ascyotana and *Bandhana* are stopped.                                                                                                  |
|                    | *Lepa* is started.                                                                                                                     |
| December 29th, 2019| *Sirodhara* is started.                                                                                                               |
| December 31st, 2019| *Lepa* and *Sirodhara* are stopped.                                                                                                   |
| January 2nd, 2020  | All treatments and medicines are stopped.                                                                                              |
|                    | Uncorrected DVA: LogMAR 1.477 OD, LogMAR 0 OS                                                                                         |
|                    | Near Visual Acuity: N36 OD, N6 OS                                                                                                      |
|                    | Pupillary Examination: Slight afferent pupillary defect OD, normal direct and consensual reactions OD.                               |
|                    | Fundus examination: further reduction of the macular hole OD.                                                                        |
|                    | OCT: Retina is further lowered toward its normal position OD.                                                                        |

*Figure 1a and 1b*: Fundus photograph and OCT scan OD at admission before the first course of treatment.
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**Figure 2a and 2b:** Fundus photograph and OCT scan OD at discharge after the first course of treatment.

**Figure 3a and 3b:** Fundus photograph and OCT scan OD at discharge after the second course of treatment.