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CASE REPORT

Ayurvedic Management of Polypoidal Choroidal Vasculopathy (PCV) -A Case Report

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Abstract

Polypoidal Choroidal Vasculopathy (PCV), a subtype of neovascular Age-related Macular Degenerationn (AMD) is a disease characterized by persistent, recurrent serous leakage and hemorrhage in the macular area, mostly seen in the elderly population. While contemporary science offers anti Vasculo Endothelial Growth Factor (VEG-F) monotherapy and combination with Photodynamic Therapy (PDT), the outcomes of these remain doubtful. Repeated anti-VEG-F injections not only cause a financial and mental burden on the patients with no or very little visual outcome. Chronicity paves the way to complete loss of vision due to exudative retinal detachment. Symptoms like *Raktavatdristi* (to visualize things as if through a column of blood), *Pashyatiaasyamanaasikam* (unable to recognize the faces of people around) and *aaviladarshanam* (blurred vision) were suggestive of *Raktaja Timira* (an eye disease caused by *Raktadosa*) associated with *Kaphadushti*), according to Ayurveda.

A 77-year-old male patient diagnosed with PCV sought Ayurvedic treatment after being advised to undergo anti-VEG-F therapy for the 3rd time in a row. His treatment comprised internal medicines consisting of *Mahatiktakakashaya, Guduchyadikashaya, Chandraprabhavati* and *Avipathichurna;* external treatments like *Pratimarshanasya* with *Anu tailam* and *Gandusha* with *Triphalakashaya; Kriyakalpa* (eye treatments) like *Seka, Vidalaka, Aschotana and Anjana karma.*

At the end of 3 months of Ayurvedic treatment, his visual acuity in the right eye improved to 6/6, Optical Coherence Tomography (OCT) affirmed complete normalcy of the macula and Fundus examination confirmed the absence of neovascularization. Ayurvedic treatment is effective in reversing the process of neovascularization, thereby bringing about the marked visual outcome in PCV. Such patients should be encouraged to adopt Ayurvedic treatment instead of expensive and invasive treatment procedures like intra-vitreal injections even when the absolute effects of these remain doubtful.

Keywords: Anjana Karma, Neovascular Age-related Macular Degeneration, Posterior Vitreous Detachment, Raktajatimira, Seka

1. Introduction

PCV is a subtype of neovascular Age-related Macular Degeneration (nAMD) seen particularly in Asians. Both PCV and nAMD share many common clinical features and risk factors, but also have different epidemiological and clinical characteristics, natural history, and treatment outcomes that point to distinct pathophysiological processes[1]. Chui Ming, *et al.*, followed 32 eyes to evaluate the long-term natural history of PCV in untreated patients. They concluded that in half of them, the vision deteriorated significantly, mainly due to hemorrhage and scarring and there may be sub-types of PCV with divergent natural history[2]. Previous studies have suggested a disparity in response to anti-VEG-F agents between PCV and AMD; thus, the preferred treatment for PCV remains unclear. Recent researches provide novel insights into the pathogenesis of PCV and suggest that it belongs to a spectrum of conditions characterized by pachychoroid, involving the choroidal vessels[3]. It associates the type 1 neovascularization that happens in these choroidal vessels with an abnormal branching with aneurysmal dilations

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referred to as polyps[4]. The conventional system of medicine treats this condition through mono anti-VEG-F therapy or its combination with PDT. Despite their effectiveness in halting the process of neovascularization, these may be associated with systemic adverse events and devastating ocular complications[5].

From the Ayurvedic point of view, the main symptom that the patient presented was *Raktavatdarshana* (visualizing things as if through a column of blood) besides *Aaviladarshana (*blurred vision) and unable to recognize the face of people around. These showed the involvement of *Rakta* and *Kaphadosas*[5]. So, the line of treatment adopted here involved *Pitta Kaphashamana* and *Raktaprasadana* (purifying Rakta dosa).

1.1 Patient Information

A 77-year-old, non-diabetic, non-hypertensive South Indian male patient noticed a blurring of vision and approached an ophthalmologist who diagnosed him with Posterior Vitreous Detachment (PVD) secondary to PCV in his right eye and advised anti-VEG-F therapy. One month later, during a follow-up visit, he was diagnosed with subretinal bleeding secondary to PCV and was given anti-VEG-F therapy for the second time. In the subsequent follow-up after a month, his condition was found to be the same, with an additional vitreous hemorrhage post-anti-VEG-F injection and was advised vitrectomy with silicon oil insertion. The previous treatments had caused a lot of financial burden on the patient and he opted for Ayurvedic management. This was the first occurrence of an eye problem for the patient and he did not have any family history of the same.

Upon Ayurvedic consultation, the patient complained that his right eye visualizes things as if through a column of blood. He visualized everything around him to be blackish-red in color, so he could not recognize the face of people clearly. However, his left eye was comparatively normal in terms of vision.

1.2 Clinical Findings

As the consultation was done through video conferencing, the patient could not be examined but the reports given to him after his visit to the Ophthalmologist just 10 days prior to Ayurvedic consultation were used to evaluate his condition.

Prashnapariksha (interrogation) revealed that the daily regimen of the patient involved *Divaswapna* (sleep during the day time), intake of spicy food, daily intake of sour fruits like lemon and taking head shower during the afternoon.

Sthanika Pariksha (local examination) did not show any abnormalities of *Netra* (eyes) externally. *Rogi pareeksha* (examination of the patient) confirmed *Mandagni* (reduced digestive fire), *Upaliptajihwa* (coated tongue), *Anavabadha mala* (normal bowel movements), normal *Shabda* (voice) and *Sparsha* (tactile sense) and *Kapha Pitta* constitution.

1.3 Diagnostic Assessment

Fundus picture and Optic Coherence Tomography (OCT) revealed, Pigment Epithelial Detachment (PED) secondary to PVD with subretinal bleed in the inferior arcade and vitreous hemorrhage with an ILM-RPE thickness of 290 µm in the temporal and 301 µm in the inferior macular sectors, in the right eye. His Best Corrected Visual Acuity (BCVA) was recorded to be 6/60. However, his left eye appeared normal with few drusenoid changes in the macula. Figure 1 shows the findings before the start of Ayurvedic treatment.

From the Ayurvedic perspective, since there were no *Raga prapti* (change in color of the eye), *Raktaja Timira* (an eye disease caused by *Raktadosa*) was differentiated from *Raktaja Kacha*(an eye disease caused by *Raktadosa* causing redness of eyes).

1.4 Therapeutic Intervention

The patient has been prescribed the following Ayurvedic medicines:

- *Mahatiktakakashaya* – 10 ml + 20 ml of warm water, before food in the morning.
- *Guduchyadi kashaya* – 10 ml + 20 ml of warm water, before food in the morning.
- *Tab. Chandraprabhavat*i - 1 tablet daily (100 mg) before food in the morning.

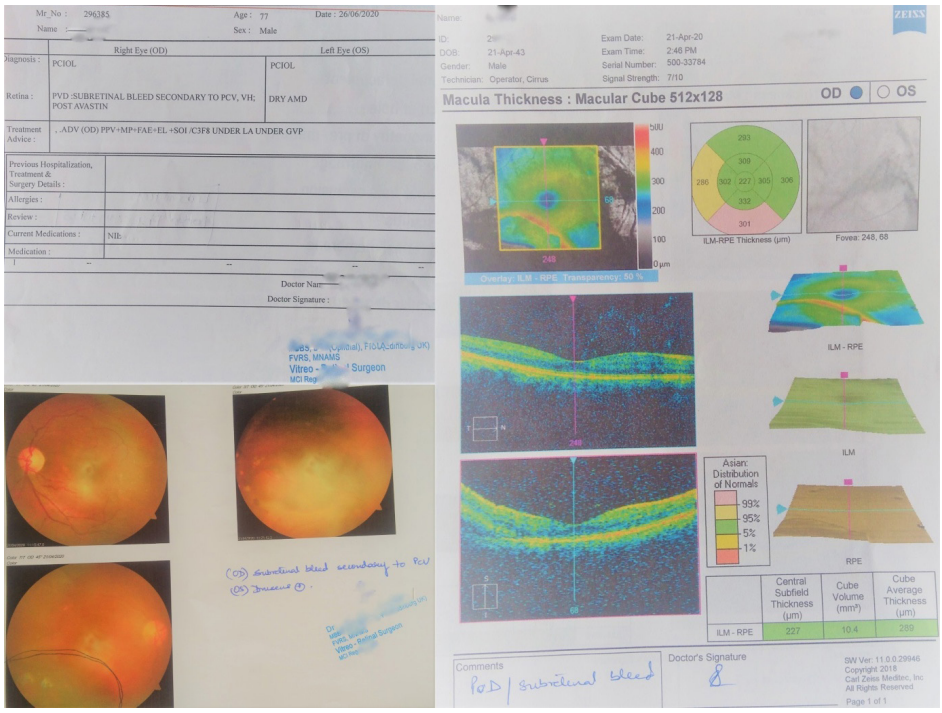

Figure 1. Shows the findings in the patient before treatment.

- *Punarnavadi kashaya* – 10 ml + 20 ml of warm water after food in the evening.
- *Manjishtadi kashaya* – 10 ml + 20 ml of warm water after food in the evening.
- *Avipathi churna* – 1 tsp (5 mg) mixed with warm water after food in the evening.
- *Drakshadikashaya* – 20 ml + 20 ml of warm water, before food in the morning and evening.
- *Triphalachurna* – 1 teaspoon + ½ tsp of honey + 1/4th tsp of plain ghee at bed time.

Other treatments involved:

- *Anu tailam* - 5 drops in both nostrils twice daily.
- *Gandusha* (gargle) with *Triphalakashaya* mixed with madhu (honey) and *Saidhava* (rock salt) twice daily.

The successive order of internal medicines along with their possible effects has been mentioned in Table 1. The patient also underwent some *Kriyakalpa* (eye treatments) procedures, which included:

- *Seka* (pouring of medicated liquid on the closed eyes) with *Yastimanjishtadikashaya.*
- *Vidalaka* (application of medicinal paste around the eyes) with *Yastyadilepa.*
- *Aschotana* (eye drops) with *Utpaladikashaya.*
- *Anjana karma* (application of collyrium) with *Elaneerkozhumb* once daily.

Later, as his condition improved suggesting *Pitta* and *Rakta Dosas* to have attained normalcy, all the medicines were stopped and *Drakshadikashaya* was prescribed in a dose of 20 ml + 40 ml of warm water, twice daily, to maintain this normalcy. However, *Anu tailam* in the form of nasal drops and *Elaneerkozhumb* in the form of collyrium was further continued. The successive order of treatments along with their possible effects has been enlisted in Table 2.

Table 1. List of internal medicine with their possible effects

Serial No.	Medicine	Dose	Duration	Possible effect
1.	*Mahatiktakakashaya*	10 ml + 20 ml of warm water- once daily	55 days	*Pitta vatashamana* (alleviates *Pitta and vatadosa)*
2.	*Guduchyadikashaya*	10 ml + 20 ml of warm water- once daily	55 days	*Pitta vatashamana* (alleviates *Pitta and vatadosa)*
3.	*Punarnavadikashaya*	10 ml + 20 ml of warm water- once daily	55 days	*Shophahara* (alleviates swelling)
4.	Manjishtadikashaya	10 ml + 20 ml of warm water- once daily	55 days	*Raktapradaka (*purifies *Raktadosa)*
5.	*Drakshadikashaya*	20 ml + 40 ml of warm water - twice daily	41 days	*Pitta shaman* (alleviates *Pitta dosa)*
6.	*Chandraprabhavati*	1 tablet with *Punarnavadikashaya*-once daily	55 days	*Kapha pitta hara* (alleviates *kapha* and *pittadosa*)
7.	*Avipathichurna*	1 teaspoon with *Mahatiktakakashaya*	96 days	*Pitta vatashamana* (alleviates *Pitta and vatadosa)*
8.	*Triphalachurna*	1teaspoon + 1/4th teaspoon of ghee +1/2 teaspoon of honey.	60 days	*Chakshushyarasayana* (eye rejuvenator).

Table 2. List of treatments with their possible effects

Serial No.	Treatment	Duration	Possible effect
1.	*Pratimarshanasya* (nasal drops) with *Anu tailam.*	96 days	*Tridosashamana* (alleviates all the 3 *dosa*s of the body).
2.	*Gandusha* (gargle) with *Triphalakashaya* + *Saindhava* + honey	96 days	*Srotoshodhana* (unclogs the internal channels of the head and neck).
3.	*Seka* (pouring of medicated liquid on the closed eyes) with *Yastimanjishtadikashaya.*	7 days	*Pitta shaman* (alleviates *Pitta dosa)*
4.	*Vidalaka* (application of medicinal paste around the eyes) with *Yastiyadilepa.*	7 days	*Pitta shamana*(alleviates *Pitta dosa)*
5.	*Aschotana* (eye drops) with *Utpaladikashaya.*	7 days	*Pitta shaman* (alleviates *Pitta dosa)*
6.	*Anjana karma* (application of collyrium).	60 days	- *Pitta shamana* (alleviates the *pittadosa*). - *Ropana* (healing).

Diet and regimen: Diet and regimen play a very important role to abet the effect of treatments. Here, the patient was advised to follow a diet and regimen which would help to balance *Pitta, Rakta and Kaphadosas*. Food like spicy, sour, oily, fermented and refrigerated ones were advised to be avoided. Regimens like day sleep, going out in sun, waking up till late at night and visualizing bright, shining objects were all to be avoided.

1.5 Follow-up and Outcomes

After 54 days of treatment, the patient reported improvement in vision with the ability to distinguish the face of people around him. Fundus examination revealed the absence of subretinal bleed and OCT showed PED with an improvement in ILM-RPE thickness of 277 µm in the temporal and 280 µm in the inferior macular sectors in the right eye. His vision had also improved to 6/9. A 3rd month (97th day) follow-up revealed further improvement in vision to 6/6. Fundus examination affirmed the absence of subretinal bleeding, PVD and neovascularization. OCT showed PED inferno temporally to the fovea, the macula to be normal and a few RPE changes. Figure 2 shows the changes in OCT after 3 months of Ayurvedic treatment. A 6th month eye examination showed no relapse of the condition and the visual acuity was maintained at 6/6. Table 3 enlists a timeline of events.

Table 3. Timeline of events

27.04.2020	Patient c/o blurring of vision and consults an Ophthalmologist. BCVA-6/60, 6/9 Fundus examination reveals PVD with subretinal bleed secondary to PCV in Right eye; undergoes 1st dose of Injection Avastin.
27.05.2020	Follow-up visit- Fundus examination reveals PVD with subretinal bleed secondary to PCV in Right eye; undergoes 2nd dose of Injection Avastin.
26.06.2020	Follow-up visit- Fundus examination reveals PVD with subretinal bleed secondary to PCV, Vitreaous hemorrhage post-Avastin injectionin Right eye; advised 3rd vitrectomy and silicon oil insertion.
13.07.2020	Ayurvedic consultation.
17.07.2020	Medicines started- *Mahatiktakakashaya, Guduchyadikashaya, Manjishtadikashaya, Punarnavadikashaya, Chandraprabhavati, Avipathichurna; Pratimarshanasya with Anu tailam, Gandusha with triphalakashsya mixed with Saindhava and honey.*
29.07.2020 to 04.08.2020	Eye treatments done - *Seka, Vidalaka, Aschotana*.
05.08.2020	Started *Anjana karma* with *Elaneerkozhumb*; also *Triphalachurnam* + ghee + honey at bedtime - internally.
09.09.2020	Visit the Ophthalmologist. Sub retinal bleed resolved, PED persistent.
10.09.2020	All previous internal medicines stopped. Prescribed *Drakshadikashaya; Avipathichurna, Anu tailam, Anjana karma, triphalachurna continued.*
21.10.2020	Follow-up OCT shows normal macula. Visual acuity- 6/6 (both eyes)
04.06.2021	Visual acuity- 6/6 (both eyes), no recurrence of PCV.

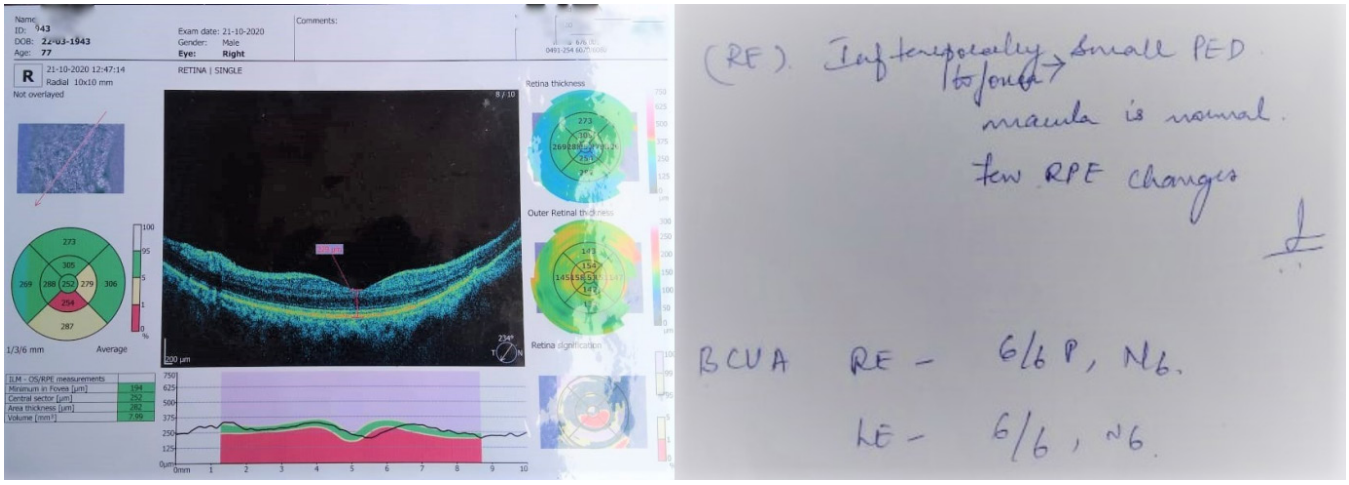

Figure 2. Shows the findings in the patient after treatment.

2. Discussion

2.1 Strengths and Limitations

The patient had undergone 2 intravitreal injections in the past, which did not yield a good visual outcome. It had also caused vitreous bleeding. This made the patient mentally devastated and weak. This was a major limitation in the case. However, the patient being non-diabetic and non-hypertensive and strictly adhered to all the diet regimens and timely medicine intake as instructed, were the strengths of the case. The COVID-19 pandemic engendered lockdown and restricted medical consultation only through telephonic and video conferencing media. For the same reason, the unavailability of in-patient care was also the apparent limitation of the methodology.

2.2 Rationale behind Ayurvedic Intervention

***Samprapti* (pathophysiology)**- From the Ayurvedic point of view, this was a case of *Raktapradhana Pitta kaphajadrishtiroga*. The *dushita Ratkadosa* had attained *Atipravritti* (excessive mobility) and *Vimargagamana* (altered route of mobility) in the *netra* (eyes), resulting in neovascularization and hemorrhage. Moreover, *Abhishyandatwa* of *Raktadhatu* (pathological process causing the oozing of fluids from the internal channels of the body) resulted in *Shopha* (edema) in the macular area, seen as PED. So, the treatments were expected to act as *Pitta Kaphashamana*, *Raktaprasadaka* (purifies Rakta humour) and *Shopha hara* (alleviates edema).

Mahatiktakakashaya[5] and *Guduchyadikashaya*[6] contain drugs like *Saptachada* (*Alstoniascholaris R.BR*), *Ativisha (Aconitum heterophyllum WALL.EX ROYLE), Aragwadha (Cassia fistulaL.), Amrita (Tinospora cordifolia WILLD.), Patha (Cissampelos pareira L.), Musta (Cyperus rotundusL.), Katukarohini (Picrorhizakurroa ROYLE EX BENTH), Ushira (Vetiveriazizanioides L.NASH),* etc which are *Tikta rasa pradhana* (bitter in taste) and of *Sheetaveerya* (cold attribute) in nature. They alleviated the *Pitta Vata and Raktadosas. Manjishtadikashaya*[7] which contains *Manjishta (Rubia cordifoliaL.), Triphala, Vacha (Accorus calamus L.), Devadaru (Cedrus deodara ROXB.)* etc., acted as *Raktaprasadaka* (purifies Rakta humour) and *Punarnavadikashaya*[5] which has *Dasamula* (a group of ten roots), *Shunti (Zingiber officinale ROXB.) and Guggulu (Commiphoramukul HOOK. EX. STOCKS.)* as ingredients along with *Chandraprabhavati*[6] made up of *Shilajith (Asphaltumpunjabinum), Guggulu, Karpura (Cinnamomum camphora L. PRESL), Ativisha (Aconitum heterophyllum WALL.EX ROYLE), Haridra (Curcuma longa L.)* etc were *Shopha hara* (pacifies edema). *Prartimarshanasy*(nasal drops) with *Anu tailam* did *Dosashamana*[7] (pacify the humours) while *Gandusha* (gargle) with *Triphala* (combination of *Haritaki-TerminaliachebulRETZ.and WILLD, Vibhitaki-terminalia bellerikROXB. and Amalaki-Emblica officinalis GAERTN*), mixed with honey and *Saindhava* (rock salt) helped to remove *Abhishyandatwa* (pathological process causing the oozing of fluids from the internal channels of the body). *Anjana karma* (application of collyrium) was done with *Elaneerkozhumb*[9], which is a tailored medicine for *Pitta Raktapradhananetraroga* (eye diseases predominant of Rakta and Pitta humours of the body). It is made up of drugs like *Daru haridra (Beriberisaristat DC.), Triphala, Karpura (Cinnamomum camphora L.PRESL), saindhava and Narikelajala* (tender coconut water). It alleviated the *Dosas* (humours of the body), thereby arresting further neovascularization and hemorrhage. Also, the *Ropana* (healing) property of this *Anjana* helped in the gradual healing of the lesion, thereby improving the vision. Latter, as his vision improved, all the above internal medicines were stopped and he was prescribed *Drakshadikashaya* along with *Avipathichurnam* for *Pitta shaman* (alleviate Pitta humour). He was asked to take one teaspoon of *Triphalachurnam* along with ¼ teaspoon of plain ghee and ½ teaspoon of honey at bedtime. *Triphala* is the best *Chakshushyarasayana* (eye rejuvenator), as are ghee and honey. *Acharyas* have devised this combination to be consumed by a patient suffering from eye diseases[5]**.** These helped to rejuvenate the damaged cells of the macula, thereby retaining the normal vision after the treatment.

3. Conclusion

The reversal of pathology which was not attained by 2 consecutive anti VEG-F injections was achieved by Ayurvedic intervention. Complete reversal of the pathological process of neovascularization, resolution of sub retinal bleed in the macular region and there by prevention of retinal detachment, were all accomplished through Ayurvedic intervention, that too in a very brief time. Thus, Such patients should be encouraged to adopt Ayurvedic treatment instead of expensive

and invasive treatment procedures like intra-vitreal injections even when the absolute effects of these remain doubtful. However, clinical trials with large samples can furthermore help to establish the potential of Ayurvedic treatment in cases of PVD.

4. Patient Perspective

I noticed blurred vision in my right eye and went to an Ophthalmologist. He told me I had developed bleeding in the eye and advised injection. When I went for follow up 1 month after the injection, I was told that the bleeding was still present and that I take another shot of the injection. A month later, he advised me to undergo a surgery in to replace the gel in my right eye with oil as the condition had not improved. With already 2 injections taken and no improvement, I was not interested to continue the same, as the Ophthalmologist was not sure of improvement of the condition even after the oil replacement surgery. So, I opted for Ayurvedic treatment. The Doctor prescribed me few *kashayas,* tablets, nasal drops and a medicine for gargle. I also underwent eye treatments like *Netra dhara*, *Lepa* on eyes and *Anjana karma*. She advised me to follow a strict diet and regimen. After 1.5 months of treatment, I went back to the Ophthalmologist, who was surprised to find that the bleeding in my eye was arrested, my vision had improved considerably and I could read many more lines on the chart than before. The scan report also showed moral improvement. At the end of 3 months, when I went back to the Ophthalmologist, he was astonished to find that I could read all the lines in the chart and the scan report confirmed complete normalcy of my eyes. I am thankful to God for guiding me to take Ayurvedic medicines.

5. Informed Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images are made available for verification by the Editor of the Journal.

6. Acknowledgement

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7. Conflict of Interest

None declared.

8. Sources of Funding

None declared.

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