

Ayurvedic management of pseudophakic cystoid macular edema: A case report

Case Report

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Abstract

After cataract surgery, pseudophakic Cystoid macular edema is one of the main challenges to deal with for an ophthalmologist. It is a painless condition in which swelling or thickening occurs in the central retina (macula). Surgical trauma triggers the cascade of inflammatory reactions, leading to the breakdown of the blood-retinal barriers that lead to increased retinal capillary permeability which further causes edema. A 65-year-old female patient visited Shalaky tantra OPD with complaints of diminished vision in the right eye for two months. After a fundoscopic examination, she was diagnosed with right eye pseudophakic cystoid macular edema. The diagnosis was confirmed with OCT findings of the right eye. Intravitreal injections are costly and do not guarantee the reduction in pseudophakic CME. The patient was given *Shamanaushadhis* like *punarnavasava vrihatavasakadi kwath*, *gokshuradi guggulu*, *chandrprabha vati* and *eranda taila* as *rechana dravya* along with *jalaaukavacharan* to reduce the edema caused by the fluid accumulation in the macular region. Significant improvement was seen in the patient's visual acuity along with the reduction in macular edema.

Key Words: Cystoid macular edema, *Shamanaushadhis*, *Eranda taila*, *Jalaaukavacharan*, OCT (Optical Coherence Tomography).

Introduction

Good vision is a vital fact for living a healthy and happy life as our eyes contribute to 80%

of information from the surrounding environment. The part of the retina which is responsible for high visual acuity is the macula. Macular disorders hamper the central vision and make activities requiring fine details like reading, and driving difficult. Cystoid Macular Edema is the leading cause of Central vision loss in the developed world. (1) The American Academy of Ophthalmology Preferred Practice Patterns defines Cystoid Macular Edema (CME) is retinal thickening of the macula due to a disruption of the blood-retinal barrier, this causes leakage in the perifoveal retinal capillaries and accumulation of fluid within the intracellular spaces of the retina, primarily in the outer plexiform layer. (2)

CME is a common pathologic result of the retina and occurs in a variety of pathological conditions like intraocular inflammation, central and branch retinal vein occlusion, Diabetic retinopathy, and most probably after cataract extraction. (2)

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Pseudophakic cystoid macular edema, also known as Irvine -Gass syndrome, was first reported by A.Ray Irvine Jr., MD in 1953 and later elucidated with fluorescein angiography by J. Donald M. Gass, MD, in 1969. (3,4) Despite advances in phacoemulsification for cataract extraction, pseudophakic CME remains the common cause of reduced vision following uncomplicated and complicated cataract surgery. (5) The incidence of pseudophakic CME with reduced vision measured by OCT is up to 14 percent. (6)

The pathogenesis of pseudophakic CME appears multifactorial based on experimental studies and clinical observations. (7) Proposed etiologic factors include inflammation, vitreous traction, and hypotony. (8,9) Of these the core mechanism is likely surgically induced anterior segment inflammation that results in the release of endogenous inflammatory mediators prostaglandins, cytokines, and other vasopermeability factors that disrupt the perifoveal retinal capillaries, resulting in fluid accumulation.

Reduced visual acuity following cataract surgery, metamorphopsia, central scotoma, and reduced contrast sensitivity is the most common clinical finding in pseudophakic CME. The onset is typically 4 to 12 weeks after surgery, reaching a peak incidence four to six weeks postoperatively. Clinical examination shows loss of the foveal depression and retinal thickening.

Currently, no standardized protocol exists for the prophylaxis and management of pseudophakic CME because of a lack of prospective randomized clinical trials. Therapeutic interventions are based on the

proposed pathogenesis of edema, mainly inflammation, and vitreous traction. In an attempt to reduce the risk of postoperative CME, all pre-existing ocular conditions should be controlled before cataract surgery.

Topical non-steroidal anti-inflammatory drugs are frequently used off-label in the prophylaxis and treatment of pseudophakic CME. Common side effects of topical NSAIDs include stinging, burning conjunctival hyperemia, and allergy. They can be toxic to the cornea, ranging from punctate epithelial erosions to corneal infiltrates or even melt. Delayed corneal epithelial healing has also been reported. In addition to NSAIDs, topical corticosteroids are commonly used in prophylaxis and treatment. Anti-VEGF with intravitreal bevacizumab (Avastin, Genetech) has been shown effective in refractory pseudophakic CME.(10)When medical therapy is ineffective in resolving pseudophakic CME, surgical intervention is often the next step which is quietly expensive. Such cases can be treated with ayurvedic treatment modalities which include internal medications and local procedures like leech application.

The correlation of CME exactly to the disease mentioned in Ayurveda is difficult but it can be considered under *Drishtigata roga*.

Case Report

Basic information of the patient, Age: 65Y, Sex Female. Religion: Hindu, Occupation: Housewife.

Chief Complaints

The patient complaints of diminished vision in her right eye which was operated for cataract five months before i.e. in the month of February 2021. Redness and Pricking sensation in the bilateral eye for 1-2 months.

K/C/O - Hypertension for 10-12 years under medication Nicardia Retard 20 mg.

History of present illness

The patient underwent right eye cataract surgery in the month of February 2021. She developed diminished vision in the right eye from the month of May. For this complaint, she consulted an ophthalmologist and was diagnosed with right eye macular edema in the right eye for which she was treated with topical NSAID and corticosteroid eye drops but did not find much relief. Now advised intravitreal injection Razumab. Being unable to afford the cost of treatment she approached Shalakyatantra Netra OPD of Dr. D. Y. Patil College of Ayurved and Research Centre Pimpri, Pune-18 on 10th July 2021.

History of past illness

The patient underwent right eye cataract surgery in February 2021. She was diagnosed with Cystoid Macular Edema in the month of May 2021.

Family history

No relevant family history was found.

Systemic examination

General Condition of patient was fair, Central Nervous System- Patient was conscious and oriented, Respiratory System- Air Entry Bilaterally Equal, Cardiovascular Examination- S1S2 normal, No any added sound, Per Abdomen – Soft, No tenderness.

Table:1 Examination

Head Posture	Normal Posture	
	Right. Eye	Left. Eye
Visual Acuity	10 ft counting fingers	6\18
Distant Vision	No improvement with pinhole	6\9
Pin Hole Vision		

Table 2: Distant direct ophthalmoscopic examination

Lt. Eye	Normal	
	Cystoid Macular Oedema	
Rt. Eye	Fundus	Pale
	Optic Disc	No demarcation at disc
	Macula	Macular edema
	Fovea	Loss of contour of the

Investigations

OCT imaging was done given in figure number 1

Diagnosis

Rt. Eye Pseudophakic Cystoid Macular Edema.

Materials And Methods

Treatment: After obtaining written informed consent, the patient was advised for *Shamanaushadhis* along with *rechana* and *jalaaukavacharan*. [Table 3].

Patient was given *Nitya rechana* with no specific *purva karma* as she was unable to follow proper *virechana*. In *pradhan karma* patient was made to take 5 ml of *eranda taila* with luke warm water. As *paschat karma* the patient was asked to take only *peya* in between *vegas* if she feels hungry.

She was advised to take only warm water to facilitate *pachana* of *rechana* drug. This was followed for 15 days.

Meanwhile 3 sittings of *Jalaaukavacharana* were done as per following :

Purvakarma

Patient was refrained from using fragrant soaps chemicals 2days prior to day of treatment.

Patient was made to lie down. Selected site being right *apanga pradesh* was washed with clean water and dried.

Preparation of leech was done by smearing paste of *haridra* and activated leech was transferred to vessel of water.

Pradhan karma

Active leech were made to bite and suck on right *apanga pradesh*.

Signs of proper bite were assessed.

Leech covered with a moist cotton cloth.

Patient constantly checked for onset of pain and itching on the site of bite.

Paschat Karma

Leech had fallen off on its own, no pain and itching observed for the patient.

Site of bite constantly wiped off until there was complete cessation of blood oozing.

Bite was smeared with a pinch of *haridra churna*.

Leech was made to vomit out the sucked blood by sprinkling *saindhava* on its mouth.

Then leech was transferred to a vessel of *haridra* mixed in water to check if leech was active.

Table : 3

<i>Shamanaushadhi</i>	<i>Punarnavasava</i> – 15 ml twice a day <i>Vrihatavasakadi kwatha</i> – 15 ml twice a day <i>Gokshuradi Guggulu</i> 500 mg twice a day <i>Chandraprabha Vati</i> - 500 mg twice a day All the above medicines were administered with lukewarm water	30 DAYS
<i>Rechana and Rejuvenation</i>	<i>Eranda Taila</i> - 5 ml with lukewarm milk at night	15DAYS
<i>Jalaukavacharan</i> (leech application)	<i>Jalaukavacharan</i> at right <i>apanga pradesh</i> Approximately 10-15 ml blood was drawn in one sitting of <i>jalaukavacharan</i> .	On the 7 th , 14 th , and 21 st days of treatment.

Observation and Results

A significant reduction in macular edema was seen in Optical Coherence Tomography imaging. (Figure no. 2)

Much improvement was observed both subjectively and objectively as shown below in the table:4

Table :4

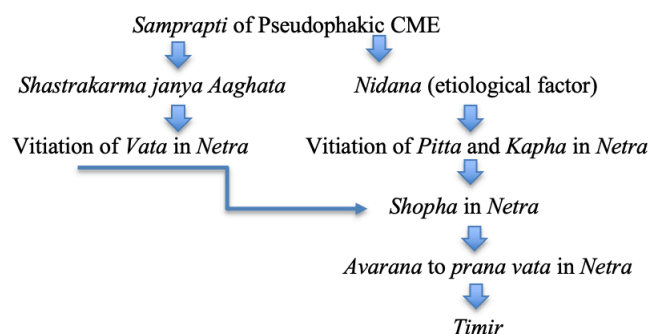
Visual acuity	Rt Eye
After 14 th day	6/24
After 21 st day	6/9P
After 30 th day	6/6P
Distant Direct Ophthalmoscopy (30 th day)	Edema around the macular region reduced. No cystic space around the foveal region was observed on 30 th day of treatment.

Discussion

A direct correlation between Cystoid Macular Oedema could not be found in ayurved.

According to ayurvedic analysis, *Kapha* and *Pitta* are the factors involved in the pathology of Macular Edema. The fraction of *Pitta* concerned with the eye is *Alochakapitta* and the fraction of *Kapha* concerned with the eye is *Tharpakakapha*. So, any factor which vitiates the *Alochakapitta* and *Tharpakakapha* is capable of developing Macular Edema in the eye. So, people with *Kapha-Pitta dosha*

are more liable for the development of macular edema. In pseudophakic CME *shastrakarmajanya*, *aaghat* (surgery-induced trauma) plays a vital role in the vitiation of *Vata dosha*.



The various *nidanans* and *nidanarthakara rogas* result in *mandya* in *rasa* and *raktadhatwagni*. Which result in the formation of *vikruta kapha* and *pitta*. *Pitta* being *sthanika dosha* here gets more intensely vitiated and an increased *sara*, *drava* and *teekshna guna* of *pitta* causes *rakta dushti* and further *vilayana* of the *sanchita Kapha*. This produces the *shopha* in *drishti*. The vitiated *kapha* and *pitta* further cause *avarana* and hamper the functioning of *prana vata* in *netra*. The *prakupita doshas* reach *triteeya patala* bringing about the manifestation of *timira lakshanas* that simulate the clinical presentation of cystoid macular edema.

The treatment is aimed at *Vata*, *Pitta shaman*, *Kapha*, *Rakta shodhan*, and *shothanashan*. This helped to maintain the circulation in the retina of the eye so that the accumulated fluid is eliminated and much improvement occurred in the vision of the patient.

Probable mode of action

- **Punarnavasava:** It was given for pacifying the *doshas*, especially *kapha* and *sama pitta*. It acts as *shothanashak* (anti - inflammatory) medicine and reduces macular edema. (11)
- **Vrihatavasakadi kwath:** Balances *vata* and *pitta*. Reduces edema. (12)
- **Gokshuradi Guggulu:** Acts as an anti-inflammatory drug. Nullifies the effects of free radicals i.e acts as an antioxidant which further inhibits the proliferation of macular edema. (13)
- **Chandraprabha Vati:** It balances *Vata*, *Pitta*, and *Kapha*. It improves blood circulation and oxygenation of blood which results in fast healing of the damaged cells. (14)
- **Jalaukavacharan:** It is the most convenient method of bloodletting. It helps in removing impure blood from the body and improves blood circulation. Thus, resulting in a reduction of swelling and fast healing of macular edema. Leech or *Jalauka* produces an enzyme in their saliva called hirudin. While attached, the leech actively removes some of the built-up blood which eases the pressure within the tissue. (15)

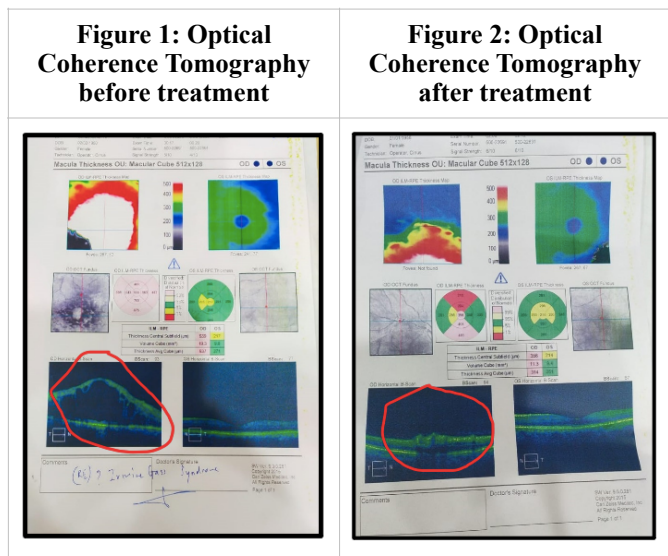
Results

By following all the prescribed medications it is evident that the vitiated *kapha* and *pitta doshas* were

pacified and improved the functioning of *prana vayu* which further reduced the inflammatory mediators and thus decreasing the overall macular edema from 559 micrometer cube to 356 micrometer cube as shown in [figure 1] and [figure 2] of Optical Coherence Tomography. For the diagnostic purpose and further research it is established fact that the current optical coherence tomography is ideal test in this case as it is non-invasive and more objective. Thus precise correlation and timely intervention has made this disease less grim and the visual acuity of the patient has improved significantly from 10 feet counting fingers to 6/6 partial of right eye.

Conclusion

Pseudophakic cystoid macular edema is known to be the most common cause of visual loss after cataract surgery. Ayurved has prevailed in recent times and its effect on ophthalmic diseases is not hidden from us. A well-planned combination therapy of Ayurveda inhibits the action of inflammatory mediators which are supposed to be the cause of Pseudophakic cystoid macular edema. Ayurvedic medicines and *raktamokshan* can be successfully used in the management of pseudophakic cystoid macular edema with better visual outcomes.



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