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# A Case Study on Primary Open Angle Glaucoma and its Ayurvedic Management

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## ABSTRACT

Primary open angle glaucoma (POAG) is a leading cause of blindness with no known cure. Management of the disease focuses on lowering intraocular pressure (IOP) with current classes of drugs like prostaglandins analogs, beta blocker, alpha-agonists and carbonic anhydrase inhibitors. These treatments may not help all the patients. Some patients continued to experience deterioration in the optic nerve even though their IOP's are within normal range. Considering which options from basic pathophysiology can play a significant role in the management of this disease. In this case study, Ayurvedic treatment was done. A female patient of 56 years visited *Shalaky Netra* OPD complaining of both distance and near vision since 8 months. She was diagnosed case of POAG since 4 years. She was given *Deepana, Pachana, Sadyovirechana, 2 sittings of Tarpana, Putapaka, Nasya, Jaloukacharana, Anjana, Agnikarma* along with *Shamanoushadis*. There was improvement in visual acuity in both eyes along with significant reduction of intra-ocular pressure. Visual field analysis showed improvement in retinal sensitivity. Thus it can be concluded that Ayurvedic approach is helpful in giving a complimentary treatment protocol for primary open angle glaucoma.

**Key words:** Primary Open Angle Glaucoma, Nasya, Tarpana, Putapaka, Jaloukacharana.

## INTRODUCTION

Primary open angle glaucoma (POAG) involves a spectrum of disorders typified by a characteristic optic neuropathy and field loss in eyes with open drainage angles. It is currently a leading cause of blindness worldwide and in future should become even more important as populations age throughout the world. Recently, we have witnessed a number of exciting advances in glaucoma. Development have occurred

regarding diagnosis, treatment, genetics and the relationship of intraocular pressure (IOP) to disease progression.

Glaucoma is the second most prevalent eye condition, after cataracts<sup>[1],[2]</sup> known to cause blindness worldwide. About 66.8 million people worldwide are afflicted with glaucoma. An estimated 4.4 million Americans have glaucoma and over 120,000 of these people are rendered blind as a result.<sup>[3]</sup> The actual etiology of the condition remains unknown. There is no known cure.

Glaucoma consists of many eye disorders, such as congenital glaucoma, secondary glaucoma, primary open angle glaucoma, primary closed angle glaucoma, normal tension glaucoma. These disorders destroy the optic nerve which sends visual information to the brain, leading to blindness. POAG accounts for around 70% of the total glaucoma cases worldwide.

Management of POAG has focused on reducing IOP. The American academy of Ophthalmologist recommends that in treating POAG, the target IOP

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should be a 25% reduction of the baseline or untreated IOP and that it should be subsequently managed on an individual basis.

Since the IOP is the only modified risk factors to prevent the progress of the disease, most of treatment modalities are directed towards its reduction. But the Neuro degeneration continues after lowering IOP and this has lead to exploration of the neuroprotective treatment strategies. The progressive visual function loss can be successfully tackled and controlled by procedures using *Chakshushya Dravyas* which act upon the pathogenesis of the disease and strengthens the ocular tissues. An ideal anti glaucoma treatment should sustain sufficient reduction in intra ocular pressure for longer duration preserve visual fields, devoid of side effects and at the same time complaints with currently available treatment strategies.<sup>[4]</sup> In this case of POAG, Ayurvedic treatment done along with conventional treatment.

## A CASE REPORT

A 56 yrs female patient, residing in Bengaluru, Karnataka (India) came to the Shalakya OPD, Government Ayurvedic Medical College, Bengaluru, Karnataka, with complaints of Gradual painless diminution of distance as well as near vision in both eyes since 4 years.

### Chief Complaints

- Gradual painless diminution of distance as well as near vision in both eyes since 4 years.
- Peripheral vision loss in both eyes.
- Delayed dark adaptation in both eyes.

### Associated Complaints

- Headache
- Nausea
- No flashes/floaters

### History of present illness

Patient was apparently asymptomatic before 4 years later developed gradual painless diminution of

distance as well as near vision in both eyes, After consulting an ophthalmologist at private hospital she was diagnosed with development of senile immature cataract in both eye, advised by ophthalmologist to undergo for surgery, later she developed peripheral vision loss in right eye, delayed dark adaptation in both eyes along with associated symptom frontal headache with varying in intensity from mild to severe, accompanying with Nausea, she again consulted the same ophthalmologist and diagnosed with increased IOP in both eyes, she then prescribed with Latanoprost eyedrops, not got much relief so she came to our Shalakya OPD for further treatment on 02/12/17, on next day Ayurvedic treatment was started after detailed assessment of her visual functions and fundus examination.

### Past History

She was also K/C/O of Diabetic and Hypertension and was on oral hypoglycemic and Anti-hypertensive medicine since last 5 years.

### Past Ocular History

There was no any significant history.

### Family History

There was no any significant history.

### Personal History

There was no any significant history.

### On Examination

General physical examination:

- Built - Moderate built and nourishment
- Pallor - Absent
- Icterus - Absent
- Clubbing - Absent
- Lymphadenopathy - Absent
- Edema - Absent
- Cyanosis - Absent
- Tongue - Not coated

**Systemic examination**

**CVS**

- S1, S2 heard
- No added sounds
- No murmurs

**RS**

- Chest - Bilaterally symmetrical
- Normal vesicular breath sounds heard
- No added sounds

**PA**

- Soft
- No Organomegaly
- No abnormalities detected

**CNS**

- Oriented to time and place
- No abnormalities detected

**Clinical Findings**

- Pulse - 76/min
- Resp. rate - 18/min
- Blood pressure - 130/90mmHg

**Table 1: Visual Examination**

Without Glass	Distance Vision	Near Vision
OD	6/18	N10
OS	6/12	N10
With Glass	Distance Vision	Near Vision
OD	6/18	N8
OS	6/9P	N8

- **Colour Vision Test** : Normal Reading.
- **Amsler Grid** : Normal Reading in both eyes in all quadrants.

**Table 2: Ocular Examination**

Parts	OD	OS
Eyelids, Eye lashes	No abnormalities	No abnormalities
Conjunctiva	No abnormalities	No abnormalities
Sclera	No abnormalities	No abnormalities
Cornea	Clear	Clear
Ant. Chamber	Deep	Deep
Pupils	Normal - Reactive PERRLA	Normal - Reactive PERRLA
Lens	SIMC+	SIMC+
IOP	21.3mmHg	17.3mmHg

**Table 3: Slit Lamp Bi Microscopic Examination**

OD	OS
Early cataractous changes	Early cataractous changes

**Table 4: Fundus Examination**

Examination	OD	OS
Fundal glow	Reduced	Reduced
Fundus		
Media	Clear	Clear
Vessels	Normal AV Ratio 2:3	Normal AV Ratio 2:3
Optic disc CDR	Cup disc 0.5 Showed an acquired optic nerve	Cup disc 0.7 Showed an acquired optic nerve
Macula	FR+	FR+

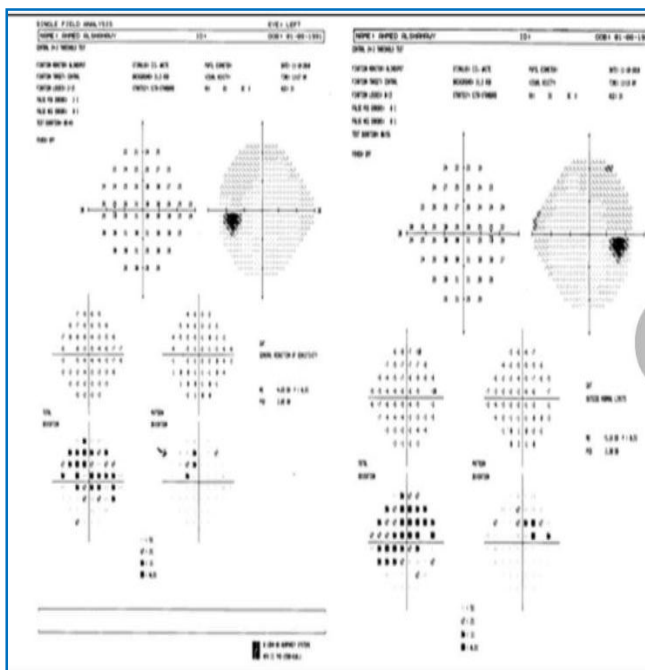
**Table 5: Direct Ophthalmoscope**

Direct ophthalmoscope revealed advanced POAG in both eyes.

OD	OS
An acquired optic nerve pit	An acquired optic nerve pit

Table 6: Visual Field Analysis

OD	OS
Paracentral Scotoma+	Pracentral Scotoma+



**Note:** Visual field showing Right and Left Para Central Scotoma

**Diagnostic Assessment**

- Laboratory investigation and other hematological findings before treatment revealed were within normal limit.
- IOP measurement was done with Scheziot tonometry was little increased level.
- Visual acuity for near /distance vision done using Snellens distant vision chart and Jaegers near vision chart.
- Detailed assessment of Ant chamber of eye was done with slit lamp biomicroscopy with ant. Chamber angle depth.
- Fundus examination : which confirmed the diagnosed of advanced POAG in both eyes, showed an acquired optic nerve pit in both eyes with cup disk ratio asymmetry was 0.5 and 0.7 in right and left eye respectively.
- Visual field analysis : Showed Nasal Para central scotoma in both eyes.

Table 7: Treatment Given

Date	Procedure	Medicine Used	Durati on	Dose
3-5 <sup>th</sup>	Deepana-Pachana	Tab. Chitrakadi Vati	3 days	1 TID/BF
6 <sup>th</sup>	Sadyovirechana	Gandharvasti Taila	1 day	60ml with hot milk
7-13 <sup>th</sup>	Marsha Nasya	Anutaila	Next 7 days	10 drops each nostrils
21-27 <sup>th</sup>	Tarpana	Patoladi Gritha	After gap of 1 week of Nasya for 7 days	
28-29 <sup>th</sup>	Putapaka	Lekhana Putapaka	2 days	
6 <sup>th</sup>	Jaloukacharana	Shuddha Jalouka	1 day - 20 min	
25 <sup>th</sup>	Agni Karma	Shalaka Yantra		
2-9 <sup>th</sup>	Nasya-Tarpana	Nasya with Anutaila Tarpana with Patoladi Gritha	7 days	
20 <sup>th</sup>	Jaloukacharana	Shuddha Jalouka	1 day - 20min	
5 <sup>th</sup>	Agnikarma	Shalaka Yantra		

Table 8: *Shamanoushadi*

SN	Medicine	Duration	Dose
1	<i>Punarnavadi Kashaya</i>	2 months	15ml thrice a day after food
2	<i>Narikelanjana</i> <i>Triphala Kashaya</i> eye wash	2 months	1 drop twice a day
3	<i>Pratimarsha Nasya</i> with <i>Anutaila</i>	1 month	2 drops twice a day
4	Tab. <i>Saptamrita Loha</i>	2 months	1 tab thrice a day
5	<i>Katakaphala + Chandrodaya Varti</i> drops	2 months	2 drops thrice a day

## RESULTS AFTER TREATMENT

### Subjective Parameter

- Improvement in blurriness of vision
- Improvement in dark adaptation
- Improvement of peripheral vision loss

### Objective Parameter

- Visual acuity : Table no 9, improvement in visual acuity.
- Fundus Examination findings were in changed with no progression of cupping.
- Intraocular pressure : Table no 10, Reduced and maintained during follow up period also.
- Visual field perimetry test, showed mild improvement in retinal sensitivity with no further progression of defects.

Table 9: Visual Acuity after treatment

Treatment	Distant Vision	Near Vision
1 <sup>st</sup> sitting <i>Nasya, Tarpana, Putapaka</i>	OD-6/12P OS-6/12	OD-N10 OS-N10

1 <sup>st</sup> Sitting of <i>Jaloukacharana</i>	OD-6/12P OS-6/12	OD-N8P OS-N10
1 <sup>st</sup> Sitting of <i>Agnikarma</i>	OD-6/12P OS-6/12	OD-N8P OS-N10
2 <sup>nd</sup> Sitting of <i>Nasya, Tarpana</i>	OD -6/12 OS-6/9P	OD-N8 OS-N10
2 <sup>nd</sup> Sitting of <i>Jaloukacharana</i>	OD-6/12 OS-6/9P	OD-N8 OS-N10
2 <sup>nd</sup> Sitting of <i>Agnikarma</i>	OD-6/12 OS-6/9P	OD-N8 OS-N10

Table 10: IOP Readings

Treatment	OD	OS
1 <sup>st</sup> Sitting of <i>Nasya, Tarpana, Putapaka</i>	21.3mmHg	17.3 mmHg
1 <sup>st</sup> Sitting of <i>Jaloukacharana</i>	20.6mmHg	17.3 mmHg
1 <sup>st</sup> Sitting of <i>Agnikarma</i>	20.6mmHg	17.3mmHg
2 <sup>nd</sup> Sitting of <i>Nasya, Tarpana</i>	17.3mmHg	17.3mmHg
2 <sup>nd</sup> Sitting of <i>Jaloukacharana</i>	17.3mmHg	15.9mmHg
2 <sup>nd</sup> Sitting of <i>Agnikarma</i>	17.3mmHg	15.9mmHg

Table 11: Visual during intake of *Shamanoushadi* and Follow-Up period.

Duration	Distant Vision	Near Vision
After 1 month	OD-6/12 OS-6/9P	OD-N8 OS-N10
After 2 month	OD-6/9P	OD-N8

	OS-6/9	OS-N8P
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**Table 12: IOP readings during intake of Shamanoudhadi and Follow-Up period.**

Duration	OD	OS
After 1 Month	17.3mmHg	15.9mmHg
After 2 Month	17.3mmHg	15.9mmHg

## RESULT

There was improvement in Visual acuity and IOP in both eyes. Fundus examinations findings were unchanged with no progression of cupping, Visual field analysis showed mild improvement in retinal sensitivity with no further progression of defects V/A and IOP maintained during follow-up period also.

## DISCUSSION

Chronic glaucoma gradually reduces your peripheral vision, but by time you notice it, permanent damage may already have occurred. If your IOP remains too high, the damage can progress until significant loss of your peripheral vision develops, and you will only be able to see objects that are straight ahead. Left untreated, it can lead to blindness.

Majority of the risk factors and pathological mechanisms involved in pathogenesis glaucoma indicate the role *Vata* dysfunction which regulates the activities of other two *Dosha* viz. *Pitta* and *Kapha*. In the later stage of glaucoma all three *Doshas* then abnormal while *Vata* continue to play a predominant role. *Agnimandya*, *Malasandya*, *Margavarodha*, *Pranavaha* and *Rasavaha Srotodusti* and *Vyadhikshamatva*<sup>[5]</sup> also seem to play a significant role in glaucomatous damage.<sup>[6]</sup> These aspects should be kept in mind while selecting therapeutic intervention. *Deepana*, *Pachana*, *Sadyovirechana* was done to relieve *Agnimandya* both at *Kshata* (gastro intestinal) and *Dhatu* level and to bring *Vata Doshanulomana*, having *Samagni* is the base for being healthy and to have proper metabolism and absorption of the drug and action of the other procedures in managing POAG are as follows.

**Shirovirechana** - Done with *Anutaila* owing to its properties of *Indriyasrota Pravasa* i.e. Permeating into minute channels and *Margvishodhana*.

**Tarpana** - *Ghrita* is supreme in *Jangama Sneha* and is, *Ojovardhaka*, *Vayasthapana*, *Deepana* and *Dhatuposhaka Balavardhaka*. By virtue of its *Sanskaranuvartana* property, it attains the properties of ingredients without losing its own.<sup>[7]</sup> *Charaka* in *Sutrasthana Snehadhyaya* quoted that, '*Snehoanilam Hanti*' which means that *Snehana* is the supreme treatment for *Vata Dosh*. According to *Charaka*, *Ghrita* is effective in subsiding *Pittaja* and *Vataja* disorders; it improves *Dhatu*s and is overall booster for improving *Ojas*.<sup>[8]</sup>

**Putapaka**<sup>[9]</sup> - *Putapaka* procedure is very necessary in the *Netra Rogas* because it is meant to facilitate the absorption and assimilation of *Grita* after *Tarpana*, it empowers the eyes and helps to improve the vision<sup>[10]</sup> as in *Timira* (Refractive error), *Kacha* (Immature cataract) etc. It improves the strength of eyes. It helps to cure the diseases and also prevent complications.

**Agnikarma**<sup>[10]</sup> - Disease which is not curable by *Bheshaja*, *Sastra*, *Ksarakarma* in that place *Agnikarma* plays major role to cure those disease. *Agnikarma* is one of the methods to control Hemorrhage when other procedure is failed, *Vata Kaphaja Vyadhis*<sup>[11]</sup> are best managed by this as *Vata* and *Kapha* possess *Sheeta Guna*, for this to neutralize the *Vata Kapha Dosh* require opposite *Guna* treatment that is *Ushna Chikitsa*, *Ushna Guna* and *Agni* having *Anyonyasritabhava*, hence *Agnikarma* virtue of its *Ushna*, *Tikshna*, *Sukshma* and *Laghu* property breaks *Srotovarodha*, which produced by *Vata* and *Kapha Dosh*. Thus *Kapha* and *Vata Dosh* are neutralized. It also acts like *Dosha Dushya Vighatana Karaka* because *Ushna Guna* performs two functions. Firstly by stimulating i.e., *Utklesha* of *Dhatu* (localized *Ama*) is digested and secondly *Ushna Guna* dilated the channels of *Srotas*. Due to this *Srotovarodha* is removed (clearing the respective *Srotas* channel), which was formed by *Dosha Dushya Samurchana* in *Khavaigunya* at *Dhatu* (tissue).

**Anjana** - Anjana is a method in which the medicine is applied along the inner surface of eye lid. *Narikelanjana* can be mixed with honey and can be applied in the eye for *Kapha Sodhana* as eye is glaucoma it will be *Vata* predominant and normally eye is *Pitta* predominant in nature and should be protected from *Kapha Dosha*. Action of *Anjana* can be attributed to - dissolving the accumulated vitiated *Kapha* and drains it out, it dilates the blood vessels and increase the blood flow and maintaining of *Netra Srotas* intact.<sup>[12]</sup>

### CONCLUSION

Thus, it can be concluded that Ayurvedic approaches are helpful in managing degenerative disease like primary open angle glaucoma. This study also emphasizes that Ayurveda can play a significant role in the integrated management of this condition, considering such beneficial activities of Ayurveda approaches, there is a need to undertake collaborate researches to generate evidence at large scale.

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