

A RAY OF LIGHT ON AYURVEDIC MANAGEMENT OF OCULAR HYPERTENSION: CASE REPORT

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INTRODUCTION

Ocular Hypertension is defined as an IOP > 21 mm Hg without any evidence of glaucomatous optic nerve damage or visual field defects. There is no underlying ocular or systemic cause of elevated intraocular pressure¹. The exact pathophysiology of elevated intraocular pressure (IOP) in ocular hypertension is not known. Individuals with ocular hypertension are 8 times more susceptible for the development of primary open angle glaucoma (POAG) as compared to normal subjects. Therefore, early diagnosis and initiation of ocular hypotensive medication in high risk group may reduce the incidence of POAG and subsequent visual disability. The prevalence of ocular hypertension increases with age and it varies in different ethnic groups. The prevalence of ocular hypertension varies in different ethnic groups. Its prevalence increases with age. Highest prevalence of 12.6% was reported amongst Afro-Caribbean population in one study². In the Framingham Eye Study conducted in Whites, its prevalence was 6.2% amongst under 65 age group, while 8.7% in individuals above 75 years of age³. In southern India prevalence of 1.1% in individuals above 40 years of age has been reported⁴.

Aim and Objectives

1. To explore pathogenesis of ocular hypertension in Ayurvedic terms
2. To evaluate the effect of ayurveda in the management of ocular hypertension

CASE REPORT:

A 51 years old female known case of hypothyroidism since 6 years has approached Shalakya OPD of Government Ayurveda Medical College, Bengaluru with complaints of headache, blurring of vision and few floaters since 3 years. Her past history was suggestive of accidental finding of raised IOP during routine eye check-up prior to her cataract surgery before 3 years. She was put under Bromodinine eye drops twice a day since she was diagnosed with raised IOP i.e. since past 3 years. Also she is wearing spectacles for distant vision since 30 years.

History of present illness: Patient noticed progressive blurring of vision for both distant and near vision in Right eye before 3 yrs. After consulting an ophthalmologist at private hospital she was diagnosed with development of immature cataract in RE for which she was operated in 2010. Again after 3 years of it she developed blurring of vision in LE with floaters in both the eyes. She also developed

frontal headache which was increasing in intensity on stress. She consulted the same doctor and diagnosed with immature cataract in LE. On routine checkup of eye before cataract surgery she was diagnosed with increased IOP in both the eyes. She then prescribed with topical Bromodinine eyedrops (antiglaucomatous drops). She came to OPD enquiring about Ayurvedic solutions for her condition. Ayurvedic treatment was started on 01.07.2017 after detailed assessment of her visual functions and fundus examination.

Past history: Patient was a k/c/o Hypothyroidism since 6 years, on medication -Tab Levothyroxine 75 mg OD

Past ocular history: Phacoemulsification with IOL done to both eyes, RE- 2010 (before 8 years), LE – 2014 (before 4 years)

Family History: Nothing significant

EXAMINATION:

General physical examination:

Built – Moderate built and nourishment
 Pallor - Absent
 Icterus - Absent
 Clubbing - Absent
 Lymphadenopathy - Absent
 Edema - Absent
 Cyanosis - Absent
 Tongue - Alipta

Clinical findings:

Patient was afebrile
 Blood pressure - 130/90 mm of Hg
 Temperature - 98.6°F
 Pulse Rate - 92/min
 Respiratory rate- 16/min
 Height - 158 cm
 Weight - 58 kgs
 Systemic examination of Respiratory, Circulatory, Digestive systems etc were within normal limits

Ashta staana pariksha:

Naadi - Vata pitta , druta (fast pulsating)

Jihwa - Alipta
 Mala - Once a day
 Mootra - Prakruta varna,3-4/Day
 1/Night
 Shabdha - Prakrutha
 Sparsha - Prakrutha
 Drik - Vikrutha, heena - reduced
 Akriti - Madhyama

Dashavidha pariksha:

Prakruti - pitta- kapha
 Vikruti - vata pradhana tridoshaja netra vikara

Involved praana and vyana vayu,
 alochaka pitta, tarpaka kapha
 saara - Madhyama
 samhanana - Madhyama
 pramana - Height- 156.4 cm
 Weight- 58 kgs

Satva - Madhyama
 Satmya - sarva rasa satmya, madhura rasa and Abhishyanda ahara sevitha.
 Ahara shakti -
 Abhyarvarana shakti- Madhyama
 Jarana shakti - Madhyama
 Vyayama shakti- Madhyama
 Vaya - 51 years

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

Table 1: visual acuity of patient

Visual Acuity	DV Without	DV With Spectacles	NV Without	NV With Spectacles	Pinhole
RE	6/18	6/9	N12	N6	6/9
LE	6/24	6/9	N12	N6	6/12

Table 2: Ocular examination

STRUCTURE	EXAMINATION	RIGHT EYE	LEFT EYE
Eye Lids	Position	Normal	Normal
	Movements	Normal	Normal
Lacrimal Apparatus	Lacrimal sac & puncta	Normal	Normal
	Regurgitation test	Negative	Negative
Eye ball	Position	Normal	Normal
	Movement	Normal	Normal
Conjunctiva	Bulbar conjunctiva,	No abnormalities	No abnormalities
	Palpebral conjunctiva	No pallor	No pallor
Sclera	Discolouration,	Normal	Normal
	Inflammation	Normal	Normal
Cornea	Transparency	Normal	Normal
	Reflex	Normal	Normal
AC	Depth	Deep	Deep
Pupil	Colour	Jet black	Jet black
	Size	3mm	2mm
	Reaction	normal	normal
Lens	Transparency	Jet black Iridodonesis +	Jet black Iridodonesis +
IOP	Schiotz tonometer	29mm Hg	25 mm Hg

Amsler grid: Normal reading in both eyes in all the quadrants (no distortion)

Table 3: Confrontation test:

	Right eye	Left eye	Normal values in degrees
Above (superior)	50 degrees	50 degrees	50 degrees
Below (inferior)	70 degrees	70 degrees	70 degrees
Medial (nasally)	60 degrees	60 degrees	60 degrees
Lateral (temporally)	100 degrees	100 degrees	100 degrees

Table 4: Slit Lamp Biomicroscopy

	RE	LE
LENS	JET BLACK	JET BLACK
AC	DEEP	DEEP
PURKINJE IMAGE TEST	2 IMAGES	2 IMAGES

Table 5: Fundus examination findings:

	RE	LE
MEDIA	clear	clear
FUNDUS	Fundus glow + Normal	Fundus glow + Normal
VESSELS	Normal A:V ratio 2:3	Normal A:V ratio 2:3
MACULA	FR+	FR+
OPTIC DISC	Pink,C:D ratio 0.3 NRR -Normal	Pink, C:D ratio 0.3 NRR-normal

Investigations:

Humphrey's perimetry shows preserved visual fields in all the quadrants.

THERAPEUTIC INTERVENTION:

The interventions are tabulated in **Table 6**

Days	Procedure	Medicine used	Duration	Posology	Anupana
1	<i>Agnideepana</i> <i>Amapachana</i>	<i>Vaishwanara choorna</i>	3 days	10gm before food	<i>Ushna jala</i>
2 to 4	<i>Snehapana</i>	<i>Guggulu tiktaka gruta</i>	3 days	D1- 30 ml D2- 60 ml D3-90 ml	<i>Ushna jala</i>
5 to 6	<i>Sarvanga abhyanga</i>	<i>Ksheera bala taila</i>	2 days		
5 to 6	<i>Bashpa sweda</i>		2 days		
7	<i>Virechana</i>	<i>Trivruth lehya</i>	1 day	40gm	60ml <i>ksheera</i>
8 to 14	<i>Samsarjana kaala</i>				

IOP Changes:

BT – RE: 22.4 mm Hg, LE: 22.4 mm Hg

AT – RE: 20.6 mm hg, LE: 20.6 mm hg

Table 7: Treatment given after Shodhana karma

Days	Treatment	Medicine used	Duration	IOP after treatment in (mm Hg)	Visual acuity after treatment
15 To 21 Day	<i>Netra Seka</i>	<i>Triphala kwata</i>	7 days	RE-20.6 LE-22.4	DV: RE- 6/18, LE- 6/24 NV: RE- N12, LE-N12
15 to 21 day	<i>Bidalaka</i>	<i>Triphala kalka</i>	7 days	RE-20.6 LE-22.4	DV: RE- 6/18, LE- 6/24 NV: RE- N12, LE-N12
23 day	<i>Jaloukavacharana</i>		1 st sitting	RE-20.6 LE-22.4	DV: RE- 6/18, LE- 6/24 NV: RE- N12, LE-N12
38 th day	<i>Agnikarma</i>		1 st sitting	RE-15.9 LE-17.3	DV: RE- 6/18, LE- 6/18 NV: RE- N12, LE-N12
53 rd day	<i>Jaloukavacharana</i>		2 nd sitting	RE- 17.3 LE- 20.6	DV: RE- 6/18, LE- 6/18 NV: RE- N12, LE-N12
68 th day	<i>Agnikarma</i>		2 nd sitting	RE- 17.3 LE-20.6	DV: RE- 6/18, LE- 6/18 NV: RE- N12, LE-N12

- *Jaloukavacharana* and *Agnikarma* done alternatively once in 15 days and IOP were recorded once in 15 days.
- Bromodine drop was stopped in tapering doses after 30th day of treatment

Table 8: showing results after *Jaloukavacharana* and *agnikarma*:

Treatment	IOP after treatment (in mm Hg)	V/A after treatment
<i>Jaloukavacharana</i> 2 nd sitting	RE-20.6 LE-22.4	DV: RE- 6/18, LE- 6/24 NV: RE- N12, LE-N12
<i>Agnikarma</i> 2 nd sitting	RE-20.6 LE-22.4	DV: RE- 6/18, LE- 6/24 NV: RE- N12, LE-N12
<i>Jaloukavacharana</i> 3 rd sitting	RE-20.6 LE-22.4	DV: RE- 6/18, LE- 6/24 NV: RE- N12, LE-N12
<i>Agnikarma</i> 3 rd sitting	RE-15.9 LE-17.3	DV: RE- 6/18, LE- 6/18 NV: RE- N12, LE-N12
<i>Jaloukavacharana</i> 4 th sitting	RE- 18.5 mm Hg LE- 21.9 mm Hg	DV: RE- 6/18, LE- 6/18 NV: RE- N12, LE-N12
<i>Agnikarma</i> 4 th sitting	RE- 17.3 LE- 15.9	DV: RE- 6/18, LE- 6/18 NV: RE- N12, LE-N12
<i>Jaloukavacharana</i> 5 th sitting	RE- 20.6 LE- 21.9	DV: RE- 6/18, LE- 6/18 NV: RE- N12, LE-N12
<i>Agnikarma</i> 5 th sitting	RE- 20.6 LE- 21.9	DV: RE- 6/18, LE- 6/24 NV: RE- N12, LE-N12

Table 9: *Shamanoushad* is given to the patient:

Sl. No	Medicine	Duration	Posology	Time	Anupana
1	<i>Punarnavasava</i>	3 months	30ml	Thrice a day/after food	<i>Ushna jala</i>
2	<i>Chandraprabha vati</i>	3 months	1 tab	Thrice a day/After food	<i>Ushna jala</i>
3	<i>Shiropichu</i> with <i>ksheerabala taila</i>	1 month		Twice a day	
4	<i>Pratimarsha nasya</i> with <i>Anutaila</i>	3 months	2 drops	Twice per day	

RESULTS:

There was improvement in visual acuity and reduction IOP in both eyes (table no.7 &8). Fundus examination findings were unchanged without cupping. Visual field analysis shown no defects. Visual acuity and IOP was maintained during the follow-up period also. Subjective improvement in clarity of vision was observed, intensity of floaters, headache got reduced.

DISCUSSION

There is no direct reference of ocular hypertension available in our classics. In this study effort has been made to understand the pathophysiology of ocular hypertension in terms of Ayurveda and the treatment modalities applied to break the pathology of disease

at different levels. Normal outflow of aqueous depends upon the integrity of outflow structures especially in the trabecular meshwork (TM) which determines Intra Ocular Pressure (IOP). The exact pathology of elevated IOP in OH is not known. Myocilin (MYOC) gene mutation have been found and determined to cause protein misfolding, making TM cell dysfunction leading to raised marked elevation of IOP⁵. So, the mechanism of pathogenesis can be interpreted in terms of ayurveda as when *doshas* moves throughout the body they manifest disease where there is *khavaigunyata* (defect in bodily paths)⁶. Here *khavaigunyata* of TM leading to manifestation of disease by *sangha* of *doshas*.

Also due to defect of TM there will be reduced activity of proteolytic factors and the matrix metalloproteinases (MMP's), leading to increased extra cellular matrix deposition and decreased cellularity of TM causing resistance to aqueous outflow in turn leads to raised IOP⁷. So in terms of Ayurveda when there is *dhatwagnimandya* (reduced activity of proteolytic factors) it leads to formation of *ama/malasanachaya* (deposition of matrix)⁸, it causes *srotorodha* (resistance to aqueous outflow) leading to *margavarodhajanya vata prakopa* (raised IOP)⁹.

Another interpretation is *preenana* (nourishment) is the main function of *rasa dhatu*. Here aqueous has

the same function, it nourishes the structures of eye. So *rasavaha sroto dusti lakshana* is *srotasamrodha*¹⁰ (blockage of outflow of aqueous).

Agnimandya, *malasanchya*, and *rasavaha srotodushti* seem to play a significant role here. The therapeutic interventions contemplated against these factors can be studied for their role in modifying the pathogenesis of disease. Hence, treatment modalities adopted here helps for the *samprapti vighatana* and also to treat the cause. Mode of action of treatment and its interpretation has been explained in table no. 10

Mode of action of different treatment given in **Table 10**

Treatment	Karma	Interpretation
<i>Agnideepana</i> and <i>ama-pachana</i> with <i>vaishwanara choorna</i>	Reduces the <i>srotorodha</i> caused due to <i>dhatwagnimandya</i> , giving rise to <i>malasanchaya</i>	Proper drainage of aqueous by reducing deposition of unwanted material at TM
<i>Virechana</i>	<i>Srotoshodhaka</i> , <i>vatanulomana</i> , <i>prati-marga harana chikitsa</i> , <i>shothahara</i>	Arrest pathogenesis of disease (reduces further worsening of disease), Reduces capillary block
<i>Seka</i>	<i>Ropana</i> , <i>stambhana</i>	<i>Seka Karma</i> improves the vascular supply by vasodilation and helps in faster and effective absorption. As it used in <i>Sukhoshna</i> form it leads increased blood flow which enhances absorption of drugs. Degradation of the absorbed material with the help of essential enzymes (<i>Pachana</i> by <i>Bhrajakagni</i>) leads new metabolites formation which pacifies <i>Doshas</i> .
<i>Bidalaka</i>	<i>Shothahara</i> , <i>vedanahara</i>	Mechanical action of pressure helps in reducing IOP by vasodilatation and increased aqueous drainage, The tissue contact time and bioavailability of the drugs used in procedure <i>Bidalaka</i> is more, so large absorption of drugs takes place therefore it provides quick relief in subsiding the symptoms.
<i>Aschyotana</i>	First line of treatment, <i>shothahara</i>	Increases circulation, instant effect
<i>Jaloukavacharana</i>	<i>Srotoshodhaka</i> , <i>raktashodhaka</i> , <i>pit-tahara</i>	Salivary contents acts as vasodilator, anti inflammatory
<i>Agnikarma</i>	<i>Sroavarodhahara</i> ,	Inhibit release of P- substance and blockade of transmission pain sensation occurs, local thermotherapy increases tissue metabolism and excrete toxins.
<i>Shamanoushadis</i>	<i>Shothahara</i> , <i>chakshushya</i> , <i>drusti prasada</i> , <i>tridosahara</i>	

CONCLUSION

Thus, it can be concluded that Ayurvedic approaches are helpful in managing IOP without anti glaucomatous drops or medicines of contemporary medicine in early stages. Considering such beneficial activities of Ayurveda approaches there is a need to undertake researches to generate evidences at large scale. Ultimately help serve the society with economic and cost effective procedures.

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