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Research Article

STUDY ON AGE RELATED MACULAR DEGENERATION (DRY TYPE) IN CONTEXT TO *PITTA VIDAGDHA DRISHTI* AND ITS *AYURVEDIC* MANAGEMENT

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ABSTRACT

Age Related Macular Degeneration (ARMD) is the leading cause of the vision loss and blindness in people above 50 years of age. ARMD is characterised by central vision loss, distorted or blurred vision, decreased visual acuity, Central or para-central blind spot (scotoma). An almost similar clinical condition to ARMD is seen in *Pitta Vidagdha Dristi.* Dry ARMD is more prevalent (90%) and slower in progress than Wet ARMD. The *Ayurvedic* management of *Pitta Vidagdha Drishti* is similar to *Pittaja Abhishyanda*. With this background a specific line of treatment for the *Pitta Vidagdha Drisht in Sushruta Samhita* is adopted. In this study, total 22 patients, 12 in group A (*Triphala Ghrita, Saptamrita Lauha, Rasayana Churna* and *Shatavari etc.*) & 10 in Group B (Control) were registered. The duration of therapy was of 3 months in both the groups. Group A showed better results on ARMD when compared with that of Group B especially on perception of flashes of light (72.23%) & dim light adaptation problem (45.23%). So ARMD (Dry type) can be better managed by *Ayurvedic* treatment group than the Modern multivitamin group.

KEYWORDS: Age Related Macular Degeneration, *Pitta Vidagdha Drishti*, *Nasya*, *Tarpana*, *Triphala Ghrita.*

INTRODUCTION

Age related macular degeneration (ARMD) is a degenerative disease associated with aging that affects the macula and causes gradual loss of central vision, which is needed for seeing objects clearly in day to day activities. The disease is most often clinically apparent after 50 years of age and is considered to be the leading cause of blindness in the developed and developing countries.[33]ARMD is the most common cause of irreversible visual loss which increases with age. The Indian prevalence has been reported as 1.1% from South India and 4.7% in North Indian study.[1] Dry ARMD is more prevalent (90%) and slower in progress than Wet ARMD. The most common causes of ARMD (Dry type) are sun light exposure, arteriosclerosis, smoking, oxidative damage, photic damage, inflammation, High fat intake etc. Drusen is the diagnostic sign and optical coherence tomography is the diagnostic tool for ARMD (Dry type).The diagnosis of ARMD is being increasingly made due to enhanced patient awareness, increased life expectancy, and path-breaking innovation in medical equipment in diagnosis. The challenge therefore lies in preserving and improving existing vision by diagnosing and treating lesion at an even earlier stage. However, since none of the available treatment options are absolute in terms of efficacy and safety and also because of their high cost, it becomes very important to individualize therapy according to the patient and disease profile.[1]

Pitta Vidagdha Drishti is a disease which comes under the *Drishtigata Rogas- vision related diseases group of classification* in *Ayurvedic classics*. In this disease, impairement of *Drishti* manifested as *Vidagdhata* caused by *Vitiated Pitta*. The word *Vidagdhata* in this context means partial destruction reflected as

functional impairment of visual apparatus / *Drishti*.[2]

Tarpana is the foremost procedure for *Drishtigata Rogas* and provides *Vata-Pitta Shamaka* properties and nourishment to the eyes and improves visual acuity. Along with oral drugs, *Nasya yoga* is also described for *Pitta Vidagdha Drishti* because nose is the gateway of drug administration in case of *Urdhwajatrugata Rogas*. Till now no work on *Pitta Vidagdha Drishti* in context to ARMD has been done. So, an attempt is made to co-relate, access and manage the symptoms of *Pitta Vidagdha Drishti* w.s.r. to ARMD (Dry type).

Drug selection

Though the aliment is a consequence of modern invention, *Ayurveda*, the ancient science of life can be great help in dealing the modern senile aliments by its preventive and therapeutic principles. Considering the *Dosha* involvement on the basis of symptom, *Ayurvedic* remedies can be used to treat the condition. Therapeutic measures like *Kriyakalpa, Samana Aushadhes, Chakshusya* and *Rasayana*, etc., which improve the homeostasis and ocular strength can be practised. *Pitta Vidagdha Drishti* can be managed by *Ayurvedic Chakshusya* and *Vata-Pitta* pacifying therapies. *Triphala Ghrita*[5], *Saptamrita Lauha*[6], *Rasayana Churna*[7] and *Shatavari*[8] are the formulations which have been extensively used for various eye disease and senile disorder. *Triphala Ghrita* selected for *tarpana* and *Khirasharpi* for *Nasya* in context to *Pittaja Abhisyanda Chikitsa.* All the drug are taken from the pharmacy of Gujarat ayurved university, Jamnagar, Gujarat.

- *Triphala Ghrita* is used for both local and internal administration in many forms for treating many of the ocular conditions.
- *Triphala* acts as the best *Rasayana* and *Chakshusya* drug without much discomfort.[3]

Aims and Objectives

The present study has been undertaken with the following aims and objectives -

(1) To study the disease *Pitta Vidagdha Drishti* and ARMD conceptually and to trace the relation between the two.
(2) To evaluate the efficacy of *Ayurvedic* treatment in dry type of ARMD.
(3) To assess the toxic/adverse effect of the treatment if any.

MATERIALS AND METHODS

Patients

Patients attending the O.P.D. and I.P.D. of Department of *Shalakya* (*Netra Roga* unit), I.P.G.T. & R.A. hospital, G.A.U., Jamnagar with signs and symptoms of Age related macular degeneration (*Pitta Vidagdha Drishti*) were selected for the present study.

Grouping

In the present study total 22 patients were registered and 21 patients completed the treatment i.e. 11 in group A and 10 in group B. In Group A & Group B, 1-1 patient had only one eye. So, total number of eyes in Group A was 21 and in Group B 19 eyes.

Inclusion criteria

Patients having signs and symptoms of ARMD (Dry type) / *Pitta Vidagdha Drishti*.

Exclusion criteria

(1) Patients having other ocular pathologies like glaucoma, high myopia, mature cataract, pan retinal degenerations etc. were excluded.
(2) Patients having systemic diseases like hyper-cholesterolemia, renal disorder, liver disorder and other debilitating diseases.

Criteria for diagnosis

Subjective: (Refer Table: 1 for Gradation Index)

(1) Difficulty in day vision
(2) Diminished vision
(3) Distorted vision
(4) Perception of black spots in the field of vision
(5) Perception of flashes of light
(6) Perception of objects as yellowish
(7) Problem for adaptation with dim light

Table 1: Table showing Gradation Index

Difficulty in Day Vision

Grade 0	:	No difficulty in day vision.
Grade 1	:	Difficulty in distance vision but no interference with routine work.
Grade 2	:	Occasionally interference with day to day working.
Grade 3	:	Cannot do any work in bright day light.

Diminished Vision

Grade 0 : No diminished vision.
Grade 1 : Dimness in vision but without imitating(inhibiting) activities
Grade 2 : Sometime difficulty in performing routine work
Grade 3 : Unable to go out independently.

Distorted vision (This is assessed by using an Amsler's grid)

Grade 0 : No distorted vision
Grade 1 : Lines are crooked or bent
Grade 2 : Boxes appeared different in size and shape from each other
Grade 3 : Boxes and Lines are wavy, missing.

Perception of black spots

Grade 0 : No perception of black spot.
Grade 1 : Occasionally interfering with routine work.
Grade 2 : Regular interfere with routine work.
Grade 3 : Cannot perform routine work.

Dark adaptation

Grade 0 : Adaptation to darkness within few seconds
Grade 1 : Slow dark adaptation within 10 seconds
Grade 2 : Slower dark adaptation within 20 seconds
Grade 3 : Slowest dark adaptation after 1 minute

Xanthopsia: +ve/-ve

Perception of flashes of light: +ve/-ve

Objective

(1) Visual acuity 6/12 or less
(2) Pin hole 6/18 or less
(3) Fundus showing macular degeneration
(4) Amsler's Grid aberration
(5) Ishihara's colour vision testing
(6) Optical coherence tomography

Criteria of assessment

Subjective

Improvement in the subjective symptoms.

Objectives

(1) Improvement in distant vision
(2) Improvement in pin hole
(3) Improvement in the fundus changes
(4) Optical Coherence Tomography changes
(5) Amsler's grid aberration changes

GROUPING

- **Group 1**- Treatment group - where in *Ayurvedic* treatment was given.
- **Group 2**- Control group - where in antioxidant, multivitamin modern drug was given.

The research drug taken as standard control is tablet, which is a combination of vital anti-oxidants, minerals and vitamins. It contains

Vitamin C	150mg
Rutin	50mg
Zinc oxide equivalents to element Zinc	22 mg
Vitamin B2	6 mg
L-Glutathione	5 mg
Manganese sulphate equivalent to elemental Manganese	5 mg
Lutein	2.5 mg
Cupric oxide equivalent to elemental Copper	2 mg
Zeaxanthin	0.5 mg
Sodium selenite equivalent to elemental Selenium	55 mg
Vitamin A (as bête carotene)	6000 IU
Vitamin E (powder form)	50 IU
Vitamin D3	200 IU

DURATION: 3 months

DRUGS & DOSES

Group 1: A 5 days course of *Deepana, Pachana*, followed by *Koshtha Shodhana* with *Erandabhristha Haritaki* and then followed by the treatment.

(1) For *Nasya*

With *Kshirasarpi*[9] (Milk cream)-3-3 drops

(2) For *Tarpana*

With *Triphala Ghrita* -10ml in each eye x 1sitting

(3) For internal use

i) *Rasayana Churna* - 2 gm
Saptamrita Lauha - 1 gm
Shatavari Churna - 2 gm
Along with *Madhu* at bed time.
ii) *Triphala Ghrita* - 10ml at bed time with milk

SCHEDULE OF *NASYA* & *TARPANA*:

Patient was subjected to undergo 1 sitting of *Nasya* for 7 days, followed by 7 days of *Tarpana* in a month, with a gap of 7 days after *Nasya* and *Tarpana*. *Pratimarsha Nasya* was continued in between the post *Nasya Karma* interval periods and during the *Akshi Tarpana karma*. Rest six days giving only oral medication.

FOLLOW UP

- 1 month after the course of the treatment.

Statistical Analysis

The obtained data on the basis of observations were subjected to statistical analysis in terms of mean, standard deviation, standard error and 't' test were conceded at the level of $p<0.001$ as highly significant, $p<0.01$ as significant, and $p<0.05$ as insignificant.

CRITERIA FOR OVERALL ASSESSMENT OF EFFECT OF TREATMENT

Assessment was done on the basis of special proforma through following. Scoring pattern and was analyzed statistically with the help of P value.

Cured: 100 % relief of the complaints and no recurrence during the follow up.

Marked improvement: 75% and up to 100% relief in the complaints.

Moderate improvement: 50% and up to 75% relief in the complaints.

Mild improvement: 25% and up to 50% relief in the complaints.

Unchanged: less than 25% relief in the complaints.

OBSERVATIONS

In the study, maximum patients i.e.86.37% were above 50 years of age, 68.18% were males, 77.27% were from urban areas,50% belonged to lower middle class, 77.27% were vegetarians, 54.55% had regular bowel habit, 77.27% had normal maturation, 63.64% had disturbed sleep, 100% patients were habituated to tea, 45.45% patients had a chronicity of 1-2 years, history of prolonged sunlight exposure and past ocular history could be cited in 59.09% and 36.36% patients respectively. Maximum patients (63.64%) had *Vata-Pitta Prakriti*. On chief complaints, majority all patients had difficulty in day vision and diminished vision, 88.10% patients had perception of flashes of light, 95.24% had problem for adaptation with dim light, 26.19% had distorted vision and 21.43% patients had perception of black spots in the field of vision.

Maximum patient's i.e. 21.43% had visual acuity of 6/18 and 6/60 or less, 26.19% and 21.43% patients had visual acuity for pinhole of 6/60 or less and 6/18 respectively. Distant vision and near vision best corrected was found 6/18(30.95%) and N/8 (59.52%) respectively. On fundus examination and OCT all patients had pathological changes in the macula and general background (100%). In Amsler's grid chart maximum i.e. 73.81% patients had normal findings.

DISCUSSION

Effect on Group A-Trial group on chief complaints of 11 patient's eye of ARMD *(Pitta Vidagdha Drishti)*

Right eye

- Statistically insignificant results were observed in the relief of difficulty in day vision.
- Insignificant clinical improvement was observed in distorted vision while assessing the effect in 04 eyes (33.33%).
- 22.22% relief was found clinically in perception of black spots in the field of vision in 06 eyes. This value is statistically insignificant at the level $p<0.10$.
- While assessing the effect in 09 eyes, highly significant clinical improvement was observed in perception of flashes of light (66.67%).
- Statistically highly significant results were observed in the relief of problem for adaptation with dim light ($p<0.001$).
- Statistically results were not applicable in diminished vision & perception of objects as yellowish.

Left eye

- Statistically insignificant results were observed in the relief of difficulty in day vision (18.75%), diminished vision (8.33%), perception of black spots in the field of vision (25.00%) and distorted vision (50.00%).
- Highly significant clinical improvement was observed in perception of flashes of light (77.78%) and problem for adaptation with dim light (45.00%)
- Statistically results were not applicable in perception of objects as yellowish.

Effect on Group B-Control group on chief complaints of 10 patient's eye of ARMD *(Pitta Vidagdha Drishti)*

Right eye

- Insignificant clinical improvement was observed in diminished vision while assessing the effect in 10 eyes (6.25%).

- Statistically insignificant results were observed in the relief of perception of flashes of light.
- 6.25 % relief was found clinically in problem for adaptation with dim light in 09 eyes. This value is statistically insignificant at the level p<0.10.
- Statistically results were not applicable in difficulty in day vision, distorted vision, perception of black spots in the field of vision & perception of objects as yellowish.

Left eye

- Statistically insignificant results were observed in the relief of difficulty in day vision (12.50%), diminished vision (14.29%), distorted vision (33.33%), perception of black spots in the field of vision (37.50%) and problem for adaptation with dim light (7.14%).
- Statistically results were not applicable in perception of objects as yellowish and Perception of black spots in the field of vision.

Effect of Group A-Trial group on Amsler's grid chart of 11 patients of ARMD/PVD

- Statistically insignificant results were observed in the Rt eye (50.00%) and Lt eye (25.00%).

Effect of Group B-Control group on Amsler's grid chart of 10 patients of ARMD/PVD

- Statistically insignificant result in Lt eye (33.33%) and results were not applicable in Rt eye.

Table 2: Effect of Group A-Trial group on OCT of 11 patients of ARMD/PVD

Group A	No. of Eyes	Mean		Mean ± SE	%	S.D.	't'	P
		BT	AT					
RE	11	1.00	0.64	0.36 ± 0.15	36.36	0.50	2.39	>0.02
LE	10	1.00	0.60	0.40 ± 0.16	40.00	0.52	2.45	>0.02

- Statistically significant result in Rt eye (36.36%) and Lt eye (40.00%).

Table 3: Effect of Group B-Control group on OCT of 10 patients of ARMD/PVD

Group B	No. of Eyes	Mean		Mean ± SE	%	S.D.	't'	P
		BT	AT					
RE	10	1.00	1.00	0.00 ± 0.00	0.00	0.00	NA	
LE	09	1.00	1.00	0.00 ± 0.00	0.00	0.00	NA	

- Statistically results were not applicable in OCT in control group.

Table 4: Overall effect of therapy Group A

No. of Eyes	Mean		Mean ± SE	%	S.D.	't'	P
	BT	AT					
21	23.10	19.43	3.67 ± 0.60	15.88	2.74	6.12	<0.001

- There was 15.88% of improvement in the symptom with t-value 6.12, which is statistically highly significant at p<0.001.

Table 5: Overall effect of therapy Group B

No. of Eyes	Mean		Mean ± SE	%	S.D.	't'	P
	BT	AT					
19	22.60	21.90	0.70 ± 0.18	3.10	0.80	3.81	<0.01

- There was 3.10% of improvement in the symptom with t-value 3.81, which is statistically significant at p<0.01.

Table 6: Comparative overall effect of Group A and Group B

No. Of Eyes	% relief		Diff of means	't'	P
	Group A	Group B			
40	15.88	3.10	3.035	4.656	<0.001

- Group A showed better results on ARMD when compared with that of Group B. The difference was statistically highly significant with the 't' 4.656. (p<0.001)

Pitta Vidagdha Drishti has drawn attention of ancient physicians which is evident from the fact that its description, symptomatology and management are available in literature. Even though the disease *Pitta Vidagdha Drishti* has been considered as a curable disease if the treatment is given well in time otherwise the disease results in further deterioration and ultimately blindness ensues.

The mode of action of the drug can be understood based on the inherent properties of all the drugs.

The clinical trial drugs have predominance of *Madhura* (81.81%), *Kashaya* (63.63%), *Tikta* (45.45%) and *Katu Rasa* (27.27%), *Ruksha Guna* (45.45%), *Guru Guna* (36.36%), *Laghu Guna (*36.36%) and *Snigdha Guna* (36.36%), *Sheeta Virya* (63.63%) & *Ushna Veerya* (36.36%) and *Madhura Vipaka* (100%).

Considering the *Doshakarma*, the trial drugs are *Tridosha Shamaka* (45.45%), *Pitta Shamaka* (18.18%), *Kapha Shamaka* (27.27%), *Vata-Pitta Shamaka* (9.09 %) and *Rakta-Pitta Samaka* (9.09%) by virtue of its *Rasa, Guna, Virya* and *Vipaka*. Thus, the overall effect of the compound drug is *Tridosha Shamaka* and hence it disintegrates the pathology of the disease *Pitta Vidagdha Drishti*, which is *Pitta-Vata* dominant in its manifestation.

Most of the drugs of *Triphala Ghrita, Rasayana Churana, Saptamrita Lauha, Satawari* are Anti-oxidant, immunomodulatory, Free radical scavenging effect, hypoglycaemic, adaptogenic, hypocholesterolaemic, capillary strengthening, anti-atherosclerotic effect[4]. So, it is direct effect on disease pathology and relieves the symptoms. As a result of the action of the drug, it is assumed that the drug is effective in breaking down the aetiopathogenesis of the disease.

CONCLUSION

Incidence of disease is common in Geriatric patients i.e. *Vriddhavastha*. *Vata – Pitta Prakopaka Nidana* has a vital role in disease pathogenesis of *Pitta Vidagdha Drishti*. *Dhumanishevanat* (smoking) & *Ushnaabhitaptasya /Atapa sevana /Baskara darshana* (excessive sunlight exposure) play a major role as a risk factor in ARMD/ *Pitta Vidagdha Drishti*. *Kopa, Shoka Manasika Bhavas* also play a important role in causing & progression of ARMD/ *Pitta Vidagdha Drishti*. Excessive exposure to sunlight may be the reason for *Drishti Vidagdhata.* Drusen is a pathognomic sign for ARMD (Dry type). According to literature, the pathogenesis of ARMD (Dry type) and *Pitta Vidagdha Drishti* is almost similar. Features of 3rd *Patalagata Timira* are also related with retinal disorders. *Divam na pashyati, Drishti Peeta varnani, Nisham cha pashyati* - these features are strongly in co-relation with the symptoms and signs of ARMD (Dry type). But, we can also say that ARMD is a part of *Pitta Vidagdha Drishti*. *Sharira - VP prakriti* and *Rajashika Manas prakriti* contributes a major role for the disease pathology. *Vidaha* / degeneration of *Drishti* (Retina/Macula) is suggestive of *Pitta- Vata* pathology at *Alochaka Pitta* site. Age and Risk factors are main causes. So, only external medicine is not sufficient to cure ARMD (Dry type). On observing the effect of therapy in symptoms like perception of flashes of light (72.23%) & dim light adaptation problem (45.23%) in ARMD (Dry type) can be better managed by *Ayurvedic* treatment group than the Modern multivitamin group. Modern ophthalmology does not have FDA approved treatment modality till date whereas *Ayurveda* has elaborated on treatment principle and therapeutic procedures of *Pitta Vidagdha Drishti* thousands of years back. Patient who had 6/60 DVA, did not improve with pin hole after giving best correction. It suggests that in advanced stages of ARMD (Dry type) bringing back vision normalcy is not possible. It reflects that the degenerative process in initial phase only can be reversed to some extent by *Ayurvedic* treatment. Effect of therapy may be due to *Dipana* and *Koshtha Shodhana* followed by *Shamana* therapy with *Kshirasarpi Nasya & Tarpana* with *Triphala Ghrita (Urdhvanga Snehana)* which is *Pitta Shamaka, Brimhana* and *Rasayana*. Maximum result is not only due to internal use of drugs, *Triphala Ghrita, Saptamrita Lauha,* and *Rasayana Churna*, but topical use of *Tarpana* with *Triphala Ghrita & Nasya* with *Kshirasarpi* has major role to reverse the pathology of ARMD (Dry type) to some extent.

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