

AYURVEDIC APPROACH TOWARDS AGE RELATED MACULAR DEGENERATION: A CONCEPTUAL STUDY

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ABSTRACT

Age related macular degeneration (AMD) was responsible for 8.7% of all blindness worldwide in 2007, and this figure is expected to double by 2020 as a result of population ageing. The pathogenesis of ARMD revolves around oxidative and degenerative changes in retinal pigment epithelium (RPE) of macular region. Use of anti vascular endothelial growth factor agents, antioxidant vitamins, lutein, zeaxanthine and zinc in modern reduce the progression towards advanced stages but not helpful in breaking the pathogenesis of the disease with good vision. In this study an approach has been made to understand the pathology of disease through *Ayurvedic* point of view and to find a suitable management which could hamper the pathology and optimum therapeutic effect can be achieved.

Keywords: ARMD, *Ayurveda*, Management

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.¹ 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.² Age related macular degeneration (AMD) was responsible for

8.7% of all cases of blindness worldwide in 2007, and this figure is expected to double by 2020 as a result of population ageing. The risk of developing AMD is in excess of 35% by the age of 75, and is increased by a family history of the disease or environmental factors such as cigarette smoking, nutritional deficiency, excessive sunlight exposure and hypertension. It could also present as the late-onset of genetic

disease, but age is the most significant of all risk factors.³

Age-related macular degeneration is characterised by the build-up of cellular debris between the retina and choroid. This process is also associated with both hyper pigmentation and hypo pigmentation of the retina due to morphological changes. These early conditions alone are not associated with loss of central vision, but visual loss may occur if the disorder is allowed to progress causing retinal atrophy and eventually wet macular degeneration. There are two forms of this illness, wet and dry macular degeneration. Dry or atrophic macular degeneration accounts for 85% of AMD cases and is equally common in males and females.³ Dry macular degeneration is characterised by the accumulation of deposits of waste products or drusen beneath the RPE within Bruch's Membrane. Bruch's membrane is an acellular membrane beneath the RPE formed of 5 layers that acts as the barrier between the retina and the choroid. Nutrients and oxygen diffuse from the underlying choriocappillaris through Bruch's membrane to the RPE and retina, whilst waste products of metabolism are voided in the opposite direction into the choroid. Bruch's membrane undergoes many morphological changes with increasing age, including thickening, calcification, degeneration of collagen and elastic fibres and splitting. Transport between the retinal RPE and choroid can also be impaired by incomplete clearance of waste with age leading to the accumulation of lipid-rich metabolic products. This drusen can be seen as pale yellow dots upon fundoscopic examination. Wet or neovascular AMD is an alternative pathway of

early AMD progression where separation of the RPE and choroid layer alongside an increase in vascular endothelial growth factor (VEGF) stimulates angiogenesis of choroidal blood vessels into the retina beneath the macula. Angiogenesis begins with vasodilatation and increases in vascular permeability, followed by activation and proliferation of vascular endothelial cells. Accompanying degradation of the surrounding extracellular matrix facilitates endothelial cell migration, which assemble to form cords and develop lumens. Further differentiation and remodelling to accommodate local requirements eventually forms a complex vasculature. Choroidal neovascularisation breaches the normal anatomical barrier of Bruch's membrane and invades the sub pigment epithelial and or sub retinal spaces. These newly formed blood vessels are fenestrated and frequently bleed causing the macula to bulge or form a mound, often surrounded by small haemorrhages and tissue scarring. This ultimately leads to the separation of Bruch's membrane, the RPE and the retina from each other and so the accumulation of intraretinal fluid and generalised thickening of the retina or the formation of cystic spaces. These pathological manifestations cause the photoreceptors to become misaligned and eventually degenerative changes occur with cell loss and eventual fibrosis. These processes will present clinically as distortion of central vision and the appearance of dark spots.⁴

In *Ayurveda*, ARMD is correlated with *Pitta Vidagdha Dristi*, a *Pittaja Sadhya Dristigataroga* described in *Sushruta* and other *Ayurvedic* literatures. *Pitta Vidagdha Dristi* is a disease condition in which the vitiated *Pitta* is

confined to the third *Patala* of the *Dristi*. The third *Patala* is directly confined to *Medadhathu*, so when vitiated *Pitta* affects the functional aspects of *Medadhathu*, it manifests as *Pitta Vidagdha Dristi*. In this condition the main function of *Alochaka Pitta* i.e. vision in presence of light is impaired. So the symptom like day blindness is a prominent feature of this disease.⁵ Ageing is a *Vatapradhana* process in which degeneration of tissues takes place due to *Ama* formation i.e. free radicals. In eyes also this process continues. Due to *Prana* and *Apana Vayu Dushti* the normal process of nutrition and excretion hampers at the level of choriocapillaries. This leads to *Ama* formation in between the RPE and Bruch's membrane which causes *Srotas Avarodha* and leads to *Srotasvimargamana*. Also due to *Vata* aggravation there is vitiation of *Ranjaka Pitta* responsible for colour of rods and cones. This hampers the normal functioning of *Alochaka Pitta* and causes day blindness. It can also be correlated with *Vatika Timira* on the basis of symptoms like *Vyavid-dha Darshana* (images appeared to be curved), *Rajo-Dhumavrita* (blurred vision), etc.⁶ Hence, ARMD is nothing but *Vatika Timira* caused mainly due to vitiation of *Vata Pitta Dosha*, affecting *Rakta*, *Mamsa*, *Meda*, *Asthi* and *Majjadhatu* of *Dristi*. The line of treatment in ARMD cases should be *Vata Pitta Shamaka*, *Srotas Shodhan* and *Rasayanachikitsa*. In modern focal laser treatment has been shown in multiple studies to be able to disintegrate drusen, but in most cases has also increased the risk of choroidal neovascularisation. As a result, research is ongoing into the alternative use of large spot size

lower power laser treatment. As the full benefits of antioxidants on the pathology of AMD has not yet been proven, some ophthalmologists may advise patients to take vitamin, zinc or lutein supplements, but again there is no definitive proof at present that this is an efficacious prophylactic treatment.⁷ So its need of time to find an appropriate treatment to prevent this disease by working on its pathology.

DISCUSSION

ARMD is an age related eye disorder. *Vayu Dosha* is predominant in this age. So, for *Anulomana* of *Vayu*, *Basti* is the best treatment. Also there is *Srotoavrodha* due to formation of *Ama* which is the result of degenerative changes and degradation of anti-oxidants due to ageing. We need a drug that can do *Anulomana* of *Dosha* as well as act as *Rasayana*. *Triphala* is the drug of choice which is well known for both effects. *Basti* with *Triphala Kwath* could be the line of treatment for ARMD. A clinical study showed effectiveness of *Yapana Basti* with *Vayasthapanagana* Drugs in this condition as it is age related degeneration.⁸ *Sthiradi Niruha Basti* and *Yapana Basti* with anti oxidant, immunomodulator, anti-inflammatory *Rasayana* drugs may be administered as effective therapy in ARMD. In the context of *Netraroga Chikitsa*, according to *Sushruta* both *Timir* and *Adhimantha* are among eye diseases which can be cured with *Basti Chikitsa*.⁹ While describing the importance of *Basti Chikitsa*, *Acharya Sushruta* has mentioned "*Chakshyuhu Prinayati*".¹⁰ It indicates that the pharmacological action of *Basti* can penetrate the blood retinal barrier and may result in vision improvement by alle-

viating *Vata Dosha*, which is the prime *Dosha* for normal vision process including all *Indriya karma*. Pharmacologically *Basti* does both *Sodhana* (purification) and *Shamana* (alleviation) of vitiated *Doshas*. *Basti chikitsa* is indicated in diseases of all the three *Dosha* (*Vata*, *Pitta* and *Kapha*). In general, in treatment of *Timira*, *Vagbhatta* mentioned *Basti* as one of the treatment procedure along with *Murdhabasti*, *Tarpana*, *Alepana* etc.¹¹ Again he had mentioned *Niruha* and *Anuvasana Basti* procedure for *Vataja Timir*. The processed ghee prepared from *Dashmula kwatha* and *Ghrita* with four times of *Ksira* and *Triphala kalka* can be used for *Ghritapana*. Later *Virechana* should be done with *Triphala* and *Panchamula kwath* mixed with milk and castor oil. (A.S.Ut.16/17). According to *Sushruta*, *Virechana karma* with castor oil and milk was mentioned for *Vatika Timira* (Su.Sam.Ut.17/29-30). The *Nasya karma* can be done with following drug compounds like *Sthiradi ganasiddha taila*, *Madhuradi ganasiddha taila*, *Sita erandadi taila*, *Sahaswagandhadi taila*, *Matsyadi taila*, *Anu taila*, *Triphala* mixed with oil, etc (Su.Sam.Ut.17/33-34). *Nasya karma* provides strength to the *Indriya* and also does *Sroto-shodhana*. Other *Kriyakalpa* like *Putapaka*, *Anjana*, *Tarpana*, etc can also be applied. In later stages of disease, however the involvement of other *Doshas* i.e. *Rakta* and *Pitta* along with *Vata* is also visible as neovascularisation and bleeding are caused by abnormality of *Rakta* and inflammation is a feature of vitiated *Pitta*. So *Vata-pitta shamaka* treatment is to be given to patient in case of ARMD. Therapies which improve homeosta-

sis and ocular strength should be practiced. The *Rasayana Chikitsa* meant to nourish the body, to bring the *Doshas* back to balance and to regenerate the body. Oral medicines are prepared specifically to restore the lost balance and to provide the needed inputs to cure macular degeneration. Oral medicines e.g. *Saptamrita lauh*, *Triphla ghrita*, *Mahatriphla ghrita*, *Patoladi ghrita*, *Jivantyadi ghrita*, *Triphla churan*, *Shatavari churan* should be taken.¹²

CONCLUSION

Age Related Macular Degeneration is a degenerative disease associated with ageing that affects the macula and causes gradual loss of central vision. It is the leading cause of the vision loss and blindness in developed countries, in population above the age of 55 years. The overall results of modern treatment in both types of ARMD are not very encouraging. *Ayurvedic* treatment including *Basti*, *Virechana*, *Nasya*, *Rasayana Chikitsa* etc. play a significant role in controlling the disease and increases blood circulation and nourishes retina. The disease cannot be cured 100% but can be kept stable in that condition through *Ayurvedic* drugs and therapy.

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