



Review Article

## AYURVEDIC PERSPECTIVE AND APPROACH IN AGE-RELATED MACULAR DEGENERATION

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### ABSTRACT

Age-Related Macular Degeneration (ARMD) is a bilateral, chronic, degenerative illness that primarily affects the macula while leaving the peripheral retina mostly unaffected. As it is the maculopathy affecting the central vision, people experience difficulty in day-to-day routine work and reduction in quality of life and bear depression. In Ayurveda, *Drishtigata Rogas* results in partial to complete loss of vision. *Pitta Vidagdha Drishti* is one of the diseases of *Drishtigata Roga*. As the underlying pathophysiology of the condition, *Pitta* (which is principally responsible for vision) vitiates and aggravates. When this vitiates and provoked *Pitta* affects the *Drishti* (macular portion of the retina), it eventually results in *Vidagdhatata* (inflammation, ulceration, and degeneration of the local tissue), it results in a clinical picture resembling the now-known age-related macular degeneration (ARMD). As it is described as an *Ashtrakrita Pittaja Vyadhi* and the treatment of this disease is given briefly in *Samhitas* it is important to conduct study on such topic and come to a proven beneficial Ayurvedic management. The Ayurvedic review of age related macular degeneration and its potential correlation with *Pitta Vidagdha Drishti* is the primary focus of this paper.

### INTRODUCTION

One of Ayurveda's eight branches, *Shalakyia Tantra*, focuses on the importance of the sense organs in health and sickness. The *Shalakyia Tantra* places a high priority on eye health and examines eye problems in great depth. Visual impairments are equivalent to erasing the world because the eyes are the windows to the outside world.

Age-related macular degeneration (ARMD) is a bilateral, chronic, degenerative illness that primarily affects the macula while leaving the peripheral retina mostly unaffected. It affects 30–50 million people and is the primary global cause of permanent vision impairment in the elderly, contributing to 8.7% of global blindness.<sup>[1]</sup> A recent research estimated that 288 million people will be affected by the illness by 2040, up from 196 million in 2020.<sup>[2]</sup> With an approximate 9% global incidence, ARMD is the third

most common cause of vision impairment, according to the WHO. ARMD is the most common cause of permanent blindness in affluent nations, with a prevalence ranging from 1.8% to 4.7% in India.<sup>[3]</sup> It occurs at a frequency of 0.05 percent before the age of 50 and rises to 11.8% after the age of 80.<sup>[4]</sup>

Acharya Sushruta has described 12 *Drishti Gata Rogas*. Overall, 94 eye disorders are documented in the Ayurvedic literature, 27 of which are related to vision, specifically ranging from minor visual disturbance to blindness. *Drishti Gata Roga*- related vision impairments are of utmost relevance and are still regarded as a prior topic of study in ophthalmology. *Pitta Vidagdha Drishti* (Day blindness), under *Drishtigata Rogas* one of the vision-related conditions, is characterized by the primary complaint that the affected individual initially sees things as yellow and later have problems with day vision but retains moderately good vision in the dark and at night. As the underlying pathophysiology of the condition, *Pitta* especially *Alochaka Pitta* (which is principally responsible for vision) vitiates and aggravates. When this vitiates and provoked *Pitta* affects the *Drishti* (macular portion of the retina), it eventually results in *Vidagdhatata* (inflammation, ulceration, and

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degeneration of the local tissue), it results in a clinical picture resembling the now-known age-related macular degeneration (ARMD).

## MATERIAL AND METHODS

Information about *Pitta Vidagdha Drishti* and age related macular degeneration were taken from Ayurvedic literature, their commentaries, and textbooks of modern ophthalmology, in that order. The databases PubMed and Google Scholar were used to evaluate previously published publications in this topic. Relevant information on specific topic has been collected from both indexed and non-indexed medical journals. The search strategy involved using keywords such as *Pitta Vidagdha Drishti* and *Drishtigata Roga*, with a special focus on Ayurveda.

## RESULTS

### Age Related Macular Degeneration

The main and most common cause of permanent blindness is ARMD. It is typical among people in the 40–70 age range.<sup>[5]</sup> As it is the maculopathy affecting the central vision, people experience difficulty in day-to-day routine work and reduction in quality of life & bear depression. ARMD not only affects mental health but also, these people are more prone to physical injuries because of compromise in the vision and also it causes economic burden because of screening, treatment, and rehabilitation expenses. After cataract, ARMD is the second reason for causing severe loss of vision in Asian nations like India.<sup>[6]</sup>

ARMD is classified into two types:

1. Non-exudative (Dry) ARMD or Atrophic ARMD
2. Exudative (Wet) ARMD or Neovascular ARMD

Dry type ARMD accounts for 90% of all cases that are diagnosed. The characteristic symptoms of Dry ARMD are progressively progressive vision loss and yellowish white slightly raised patches in the retina (drusen). Geographical atrophy (G.A.), a late stage that can potentially result in significant vision loss, is a slow degradation of retinal cells that can occur over time. Management of dry ARMD mainly includes vitamins, minerals and antioxidant supplementations (like lutein 10mg, zeaxanthin 12mg, vitamin C 500mg, vitamin E 400mg, zinc 25-50mg, copper 2mg)<sup>[7]</sup> cessation of causative factors like smoking and sunlight exposure, regular consumption of green leafy vegetables, refraction with increased near adds.

The most frequent cause of significant vision loss that occurs over weeks to months is wet ARMD. Surgical procedures and anti- VEGF therapy are used to treat this condition. The best-case scenario for therapies is to prevent additional vision loss rather than to improve vision. As of right now, dry macular degeneration has no known remedy.

As of now, numbers of researches have been carried out for the treatment of ARMD but no exact effective treatment is available till now. No FDA approved treatment protocol is present till date in modern medical science. Also, no proven advantage of vitamin supplementation (especially antioxidants) has been proposed<sup>[8]</sup> and potential damage has not been found out.<sup>[9]</sup> Apart from vitamin and antioxidant supplements, other interventions like laser photocoagulation, anti-VEGF injections, intravitreal steroids, etc are being implemented. But all these measures have their limitations. Even the laser photocoagulation treatment advised for ARMD does not support the treatment of soft drusens for preventing exudative ARMD. Many studies recommend strongly against laser application in the other eyes of patient who already have CNV in the other eye. Complications of laser photocoagulation accommodate radial expansion of RPE atrophy from the laser lesions, subretinal fibrosis,<sup>[10]</sup> choroidal neovascular membrane,<sup>[11]</sup> accidental burns to the fovea, choroidal and retinal bleeding, venous retinal occlusion and pre retinal macular membranes. Loss in visual acuity occurs following photocoagulation due to deposition of an orange-colored hyperfluorescent material in the subfoveal area.<sup>[12]</sup>

### *Pitta Vidagdha Drishti*

*Drishtigata Rogas* results in partial to complete loss of vision. The visual disturbance not only affects the physical state but also the emotional, social and financial state too. *Pitta Vidagdha Drishti* is one of the diseases of *Drishtigata Roga*. Due to excessive *Nidana Sevana* the vitiated *Doshas* reaches to the *Netra* through *Urdhwagami Sira* and causes *Dushti* in the *Drishti*. *Pitta Vidagdha Drishti* is characterized as *Peeta Drishti* (yellow discoloration of the *Drishti*) and *Peeta Rupa Darshana* (perception of every object in yellow colour). When the *Doshas* reaches the third *Patala*, the patient is not able to see at day time but can see during the night due to cold factor the *Pitta* gets pacify at night. As it is described as an *Ashatrakrita Pittaja Vyadhi* and the treatment of this disease is given briefly in *Samhitas* it is important to conduct study on such topic and come to a proven beneficial Ayurvedic management. Ayurveda has explained the principles of *Pitta Vidagdha Drishti* a thousand years back.

### General treatment protocol of *Pitta Vidagdha Drishti*/ARMD

*Nidana Parivarjana* is the first and foremost treatment.<sup>[13]</sup> In ARMD, accumulation of lipid and proteinaceous substance in Bruch's membrane is due to specific cellular responses to their environment. The cellular environment is determined by factors like, smoking, hypertension, diabetes mellitus, deranged

lipid profile, etc. So the aim of the treatment is *Vata-Pittaja/Pittaja Abhishyanda Nashaka Chikitsa* and also *Samprapti Vighatana Chikitsa* at different stages.

Following treatment principles should be adopted for the treatment of *Pitta Vidagdha Drishti/ARMD*

- *Vata-Pitta Hara Chikitsa*
- *Raktavaha Srotodushti Chikitsa*
- *Vatanulomana Chikitsa*
- *Shophahara Chikitsa*
- *Chakshushya Rasayana Sevana Chikitsa*

## DISCUSSION

### Concept of *Pitta Vidagdha Drishti*

With continuous indulgence in *Achakshushya Nidana*, the vitiated *Doshas* courses through *Siras* and reaches *Urdhwajatrugata* parts and sites in the first *Patala* of the *Netra* causing blurring of vision. As long as the *Doshas* get lodged in the *Patala* they further obstruct the nutritional supply and further involvement of *Dwitiya & Tritiya Patala* causing more deterioration of the vision. Due to excessive consumption of *Achakshushya Nidana*, *Apana Vayu*, *Vyana Vayu* and *Pachaka Pitta* gets vitiated. The *Vyana Vayu* is *Vyapya* in *Sarva Sharir*. The main reason of the *Urdhwagamana* of the *Doshas* is due to vitiation of *Pakwashayagata Apana Vayu*. This results in *Agnimandya* and formation of *Ama*. As by nature, *Ama* is responsible for causing *Srotorodha* which results in *Dhatu Dushti* or *Sanchayavastha*. When continuous intake of *Nidana* is followed than the *Doshas* get *Prakutpita (Prakopavastha)* and starts to spread in the body and to *Urdhwajatru* parts through *Sira (Prasaravastha)*. There is *Pratiloma Gati* of *Apana Vayu* and along with *Viguna Pitta & Kapha Dosh* it reaches the *Netra* and develops the disease of *Netra Bhaga* where there is *Khavaigunaa*. At this stage, the main *Doshas* getting vitiated are *Prana Vayu* and *Alochaka Piita* causing diseases related to *Drishti*. These *Doshas* get localized in the *Drishti (Sthanasanshraya)* and causes yellow coloration of the *Drishti (Drishti Bhavet Peeta)* and patients see every object in yellow colour (*Vyaktavastha*).

### Involvement of *Patala* in *Pitta Vidagdha Drishti*

The involvement of the third *Patala* resembles most with the ARMD clinical picture. As discussed earlier in the literary review section the cortical part of the lens and retina can be considered in it. Anterior and Posterior Polar cortical cataract, as well as nuclear involvement along with the macular area of retina, can be taken in the third *Patala* giving features of ARMD. The changes in lens cause yellowish colour and xanthopsia as seen in *Pitta Vidagdha Drishti* is due to

the involvement of the macular area, where *Alochaka Pitta* is situated.

### AMA & ARMD

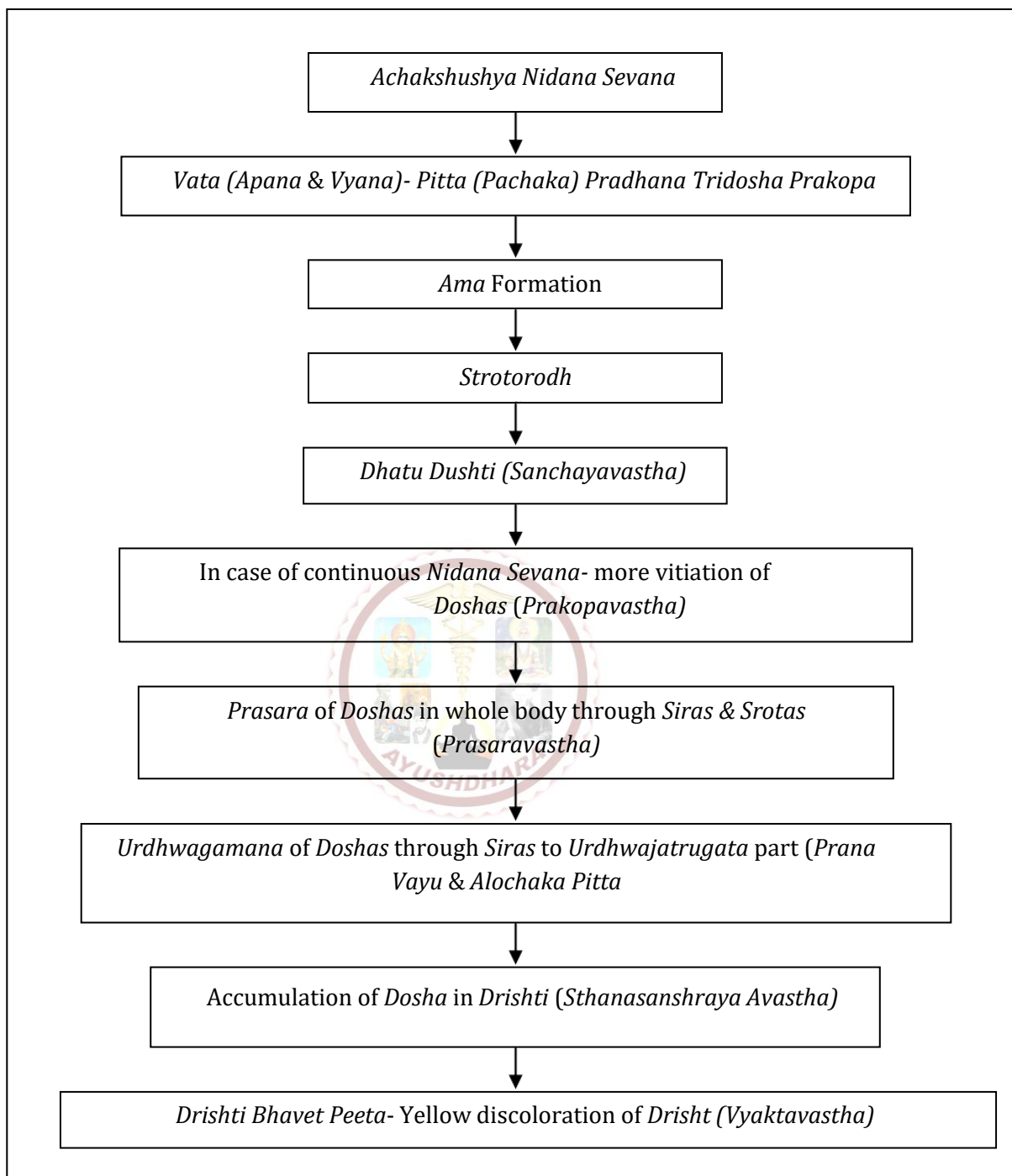
*Netra Roga Nidana/ Agnimandya Janaka Nidana* cause *Prakopa* of *Vata, Piita & Kapha*. This causes *Agni Daurbalya* at the level of *Jatharagni, Bhutagni* and *Dhatwagni*. This causes improper digestion and improper division of food into *Prasada Bhaga* and *Mala Bhaga* in which the *Mala Bhaga* is produced in high quantity. Also, there is improper metabolism of *Rasa Dhatu* which causes *Utpatti* of *Ama* in *Amashaya*. This *Ama* after entering the circulation does *Sthansanshraya* in different parts of the eye where there is *Khavaigunya* because of *Achakshushya Nidana Sevana*. In eyes it causes the production of free radical and other pathology resulting in degenerative eye disorders namely Age related macular degeneration [14] and senile cataract. [15] And as retina is susceptible to ROS (Reactive Oxygen Species) due to elevated energy demand and prolonged light exposure. In ARMD, the outer segments of the photoreceptor are partially digested by the enzymes and precipitates within the RPE cells resulting in degeneration. This loss of function of a lysosomal enzyme can be explained due to the presence of *Ama* or *Mandagni* at the tissue level involved in process of digestion of outer segment photoreceptors.

### Chikitsa/Treatment

Thousands of years ago, Ayurveda elaborated on the therapeutic methods and treatment principles of *Pitta Vidagdha Drishti*. It is known as *Ashastrakrita Pittaj Vyadhi*, according to Sushruta. *Pitta* that has become vitiated localizes in the *Drishti* of *Pitta Vidagdha Drishti*, turning it yellow. All objects are perceived as yellow by the patient. (i.e., both *Drishti & Darshan* becomes yellow). It is comparable to the presence of drusen in the macula, which is the key diagnostic indicator for the dry variety of ARMD. The fundamental course of treatment, according to Ayurvedic literature, is comparable to *Pittaja Abhishyanda*, while the specific course of treatment for *Pitta Vidagdha Drishti* involves *Nasya, Parisheka, Anjana, and Putapaka*. An ailment known as *Kshayaja* condition affects the tissues of the eyes and is known as *Pitta Vidagdha Drishti*. In *Vridhavastha, Vayu Dosh* is primarily dominated in compare to other *Doshas*, while vitiated *Pitta Dosh* is primarily responsible for *Pitta Vidagdha Drishti*. *Vata-Pitta* pacifying therapies will therefore be introduced in light of the *Dosh* involvement. Overall, *Vata-Pitta* pacifying therapies will there. Ayurveda is well known for its effective role in age related problem. *Rasayana Chikitsa* is one of the best treatments modalities in Ayurveda. As a result, they will balance both the implicated *Vata Dosh* and

the dominant *Pitta Dosh*. The medications employed in *Rasayana* contain antioxidants that block the creation of free radicals and the oxidation process. These compounds also serve as anti-aging, nootropic, and stress-relieving substances, which enhances the

quality of deteriorated ocular tissues. With the help of an *Ayurvedic* method, the alterations may be postponed.



**CONCLUSION**

One of Ayurveda's eight branches, *Shalakya Tantra*, places a high priority on eye health and examines eye problems in great depth. ARMD is a maculopathy that affects central vision, patients who have it often have a lower quality of life, struggle with daily tasks, and incur significant financial burdens on their families due to the high expense of their medical

care. *Pitta Vidagdha Drishti* (Day blindness), under *Drishtigata Rogas* one of the vision-related conditions, is characterized by the primary complaint that the affected individual initially sees things as yellow and later have problems with day vision but retains moderately good vision in the dark and at night. As the underlying pathophysiology of the condition, *Pitta*

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