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Ayurvedic perspective on Age Related Macular Degeneration w.s.r. to *Vataja Timira*

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ABSTRACT

The deterioration of vision in elderly people is a major health problem. Aging of the eye affects all structures of the eye. By the age of fifty, one in every three has some vision impairing eye disease. Currently, the rates of eye disease such as cataract, macular degeneration, diabetic retinopathy and glaucoma are highest in the older group. End stage (blinding) i.e. Age Related Macular Degeneration (ARMD) occurs in about 1.7% of all individual aged over 50 years and in about 18% over 85 years. Even though numbers of treatment modalities are available in modern medicine, unfortunately the results of most of these have been disappointing. Clinical features of ARMD imitate *Vataja Timira*. Ayurveda has significant role to play in the treatment of ARMD in both dry and wet types. Ayurvedic herbal medicines prevent a deterioration of the retina as well as the optic nerve, and provide micronutrients to the macula which transmits the sensation of vision to the brain.

Key words: ARMD, Age Related Macular Degeneration, *Vataja Timira*.

INTRODUCTION

ARMD is an age related disease of world wide prevalence. End stage (blinding) i.e. Age Related Macular Degeneration (ARMD) occurs in about 1.7% of all individual aged over 50 years and in about 18% over 85 years.^[1]

Certain risk factors which may affect the age of onset or progression include heredity, nutrition, smoking, hypertension, exposure to sun light, hyperopia, blue eyes and cataract particularly nuclear opacity.^[2] Macular degeneration is caused when part of the retina deteriorates. The retina is the interior layer of

the eye consisting of the receptors and nerves that collect and transmit light signals from the eye into the optic nerve, then to the brain for interpretation of vision.

ARMD is a condition characterized by degeneration of light sensitive cells of the central region of the retina - the macula which malfunctions and eventually dies, resulting in gradual decline and loss of central vision. ARMD is of two types Non exudative or atrophic ARMD and Exudative ARMD. Non exudative is responsible for 90% cases. Exudative ARMD is also called wet or neovascular ARMD. It is responsible for only 10% cases.^[3]

Etiology

ARMD is the most common cause of irreversible visual loss in the developed world. The exact cause is still unknown. Certain risk factors which may affect the age of onset or progression is given below.

Risk factors

1. Age
2. Race - The condition is more prevalent in Caucasians
3. Positive family history

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4. Cataract - Particularly nuclear opacity
5. Smoking
6. Obesity
7. Hypertension

Pathogenesis

Loss of central vision in ARMD is the result of changes that occur in response to deposition of abnormal material in Bruch's membrane. The material is derived from the RPE and its accumulation is thought to result from failure to clear the debris discharged into this region. Drusen consist of discrete deposits of abnormal material located between the basal lamina of the RPE and the inner collagenous layer of Bruch's membrane. Thickening of Bruch's membrane is compounded by excessive production of basement membrane deposited by the RPE.

Clinical Types

ARMD is classified in to two types

- Non exudative ARMD or Atrophic ARMD
- Exudative ARMD

Non Exudative or Atrophic ARMD

It is also called dry or geographic ARMD and is responsible for 90% of cases. It typically causes mild to moderate gradual loss of vision. Patients may complain of distorted vision and difficulty in reading due to central shadowing.

Signs include focal hyper pigmentation or atrophy of the RPE in association with macular drusen. Sharply circumscribed, circular areas of RPE atrophy associated with variable loss of the choriocapillaries. Enlargement of the atrophic areas within which the larger choroidal vessels may become visible.

Drusens are of two types,^[4]

1. Small hard drusen are usually innocuous, round, discrete and less than half a vein width in diameter.
2. Large soft drusen have indistinct margins and are a vein width or more in diameter.

Exudative ARMD

It is also called wet or neovascular ARMD. It is responsible for only 10% cases of ARMD but is associated with comparatively rapidly progressive marked loss of vision.

Signs include drusens with retinal pigment epithelial detachment (PED) seen as sharply circumscribed domeshaped elevation.

Choroidal neovascularisation (CNV) proliferating in Sub RPE space is seen as greyish green or pinkish yellow raised lesion. Haemorrhagic detachment of neurosensory retina which assumes diffuse outline and a lighter red colour around and adjacent to the PED.

Diagnosis

Clinical diagnosis is made from the typical signs described above, which are best elucidated on examination of the macula by slit lamp biomicroscopy with a +90D / +78D non contact lens. Fundus fluorescein angiography and indocyanin green angiography help in detecting choroidal neovascularisation. Optical coherence tomography reveals sub retinal fluid, intra retinal thickening and choroidal neovascularisation in exudative ARMD.^[5]

Treatment

Treatment of non exudative ARMD

1. Dietary supplements and antioxidants.
2. Smoking cessation.
3. Amsler grid used regularly allows the patients to detect new or progressive Metamorphopsia.
4. Low vision aid may be needed in advanced cases of geographical atrophy.

Treatment of exudative ARMD

1. **Intra vitreal anti VEGF therapy** - Anti VEGFs are injected intra vitreally. These include, Avastin, Lucentis, Macugen.
2. **Intravitreal steroids** - E.g Triamcinolone acetonide.
3. **LASER photo coagulation** - It uses an intense beam of light to burn small area of retina and the

abnormal vessels beneath the macula. The burns forms scar tissue that seals the blood vessels, keeping them from leaking under the macula.^[6]

Source of anti oxidants^[7]

| | |
|------------------------------|---|
| Vitamine E | Vegetable oil like sunflower oil and soyabean Nuts - Almonds, Peanuts and hazle nuts Seeds - Sunflower seeds, Green leafy vegetable |
| Vitamine C | Citrus, tomatoes, broccoli and fruit juices |
| Zinc | Animal protiens and dark meat of chicken, Nuts, Whole grains |
| Lutien and zexanthine | Kale, Spinach, corn, green leafy vegetables |

AYURVEDIC VIEW

Drishti Mandala

Discription given by *Acharya* Susrutha states that *Dristi* is composed of all five *Mahabhuthas* and *Tejo Mahabhuta* is predominant among them.^[8]

Dristi appears like glowing. This glow is compared to '*Khadyota*' the glow worm and '*Vishpulinga*' the spark. Glow worm is a soft bodied beetle of the genus lampyris whose wingless female emits light from end of the abdomen. Spark is a firey particle thrown off from a fire or light in ashes . This discription is comparable with retina, which reflects light, a fire like glow at macula.

The word *Patala* means thin membrane or coat. There are six *Patalas* in the eye.

Among them two *Patalas* are in the eye lid that is called *Bahya Patala* other four *Patala* situated inside the eye. *Timira* the dreadful disease manifest in these *Abhyantara Patala*.

Nidana of Timira^[9]

- Immersing in cold water immediately after getting exposed to heat or sun.

- Looking at very distant object for a long time.
- Abnormal sleeping habit (*Diva Swapna/ Nisi Jagarana*)
- Continuous weeping for long duration
- Getting anger and grief
- Stress and injuries
- Excessive indulgence in sex results in *Dhatu Kshaya*
- Use of *Shuktha* and *Aranala*
- Excessive use of horse gram and black gram
- Suppression of natural urges
- Excessive sudation and exposure to smoke
- Supressing the urge of vomiting, tears and excessive *Vamana* therapy
- Watching minute objects for long duration

Samprapti^[10]

Due to *Nidana Sevana* leads to vitiation of *Doshas* with pridominance of *Vata*. Then the *Urdhwagamana* of *Dosha* happens and *Sthanasamsraya* of *Dosha* in *Patalas* of *Drishti* leading to *Vataja Timira*.

Vataja Timira

- In *Vataja Timira* the person sees the objects like revolving, hazy vision, reddish and distorted. *Vagbhata* discribes *Timira* in three progressive stages.

- Vataja Timira*
- Vataja Kacha*
- Vataja Linganasa*

In *Vataja Timira* *Acharya* discribes

- Vyavidhaiva Darsana* - The straight line of the object appears to be curved.
- Chala, Avila, Arunabha Darshana* - The object appear as if they are moving, hazy and of orange colour.

- *Prasannam Chekshate Muhu* - some times vision become normal
- *Jalani Keshani Mashakani Pashyati* - The non existing objects like cob webs, hairs and flies appear before him.

Comparison between *Vataja Timira* and ARMD

| ARMD | <i>Vataja Timira</i> |
|--------------------|--|
| Blurring of vision | <i>Avila Darshana</i> - Person sees the object as hazy ^[11] |
| Distorted vision | <i>Vyavidha Darshana</i> - The straight line become curved ^[12] |
| Central scotoma | <i>Pashyathyasyamanasikam</i> - Person sees the face as noseless ^[13] |

Timira Chikitsa

Samanya Chikitsa of Timira^[14]

- *Ghrithapana*
- *Rakthamokshana*
- *Virechana*
- *Nasya*
- *Anjana*
- *Murdha basti*
- *Tarpana*
- *Lepa*
- *Seka*

1. *Ghrithapana*

Old ghee preserved in an iron vessel should be used for,

- *Pana*
- *Nasyakarma*
- *Tarpana*

Ghritha Yogas

Dasamoola Sidha Ghrita^[15]

Panchamoola Sidha Ghrita^[16]

Triphala Ghrita^[17]

2. *Siravyadha*

In the six types of diseases (six types of kacha) which are palliable blood letting should be performed by vein puncture¹⁸. *Siravyadha* should be avoided in *timira* when coloured, as dosha excited by the instrument destroys vision immediately. In case of coloured *timira* leeches may be applied.

3. *Nasya*

Nasya a procedure in which medicated oil or fresh juice of herbs is instilled inside the nostrils after oleation and fomentation of the face and neck.

Nasya is beneficial, when the symptoms of *Dosha* have just manifested and not involved the whole eye.

Nasya Yoga

- *Jeevanthyadi Taila*^[19]
- *Sita Eranda Taila*^[20]
- *Sahashwagandhadi Taila*^[21]
- *Trivritam Taila*^[22]

Virechana

Virechana is done with administration of medicines after internal and external oleation and sudation. This helps in removing toxins from the body and bring equilibrium of the *Doshas* especially *Pitta*. In *Vataja Timira*, *Eranda Taila* mixed with milk should be administered.^[23]

Anjana

The application of medicine to the inner aspect of the lower eye lid from the inner canthus to the outer canthus is *Anjana*.

- *Sukhavati Varti*^[24]
- *Chandrodaya Varti*^[25]
- *Chandanadya Varti*^[26]
- *Vasadyanjana*^[27]

Shirobasti^[28]

Shirobasti means pooling the liquid medicines, especially herbal oils and or ghee in a chamber or

compartment constructed over the head. Medicated oil prepared with *Nata*, *Nilotpala*, *Ananta*, *Yasti* and *Sunishsannaka* is ideal for *Shirobasti*. It can also be used in *Nasya*.

Netratarpana

Netra means eye, *Tarpana* means nourishment thus, *Netra Tarpana* means nourishment of eye or a treatment which nourishes the eye. In *Vataja Timira* medicated ghee prepared with *Shatahva*, *Kustha*, *Nalada*, *Dvi Kakoli*, *Yasti*, *Prapoundarika*, *Sarala*, *Pippali* and *Devadaru* added with eight part of milk is beneficial. Common *Tarpana Yogas* are given below,

- *Jeevanthyadi Ghrita*^[29]
- *Triphaladi Ghrita*^[30]
- *Mahatriphaladi Ghrita*^[31]
- *Patoladi Ghrita*^[32]

Lepa^[33]

Medicated paste is prepared with *Madhuka*, *Vidanga*, *Maricha*, *Amaradaru* and milk is good for *Lepa*.

Seka^[34]

One pala of *Katankateri* is boiled in sixteen *Pala* of water and decoction reduced to 1/8th. This decoction is mixed with honey and used for *Seka* is beneficial for the eyes aggravated by all the *Dosha*.

Putapaka

Prasadana and *Snehana* type of *Putapaka* is beneficial for *Vataja Timira*. *Snehana* type of *Putapaka* is prepared with *Medas*, *Majja*, *Vasa* and *Mamsa* of *Bhusayya*, *Prasaha*, *Anupa* or *Jivaneeya Gana* drugs.^[35] *Prasadana* type of *Putapaka* should be done with liver, bone marrow, muscle fat, meat of animals and drugs of *Madhura Gana* mixed with *Stanya* or cows milk mixed with ghee.^[36]

Basti

Niruha and *Anuvasana Basti* prescribed for *Pinasa Roga* of *Vata* origin can be given as *Basti*.

Common *Basti Yogas* for *Vataja Timira*,

- *Sthiradi Yapan Basti*^[37]

- *Musthadiyapana Basti*^[38]

- *Madhutailika Basti*^[39]

Treatment for Pitta vitiation

- *Jeevaniya Triphala Ghrita* for *Pana*^[40]

- *Siravyadha*^[41]

- *Sarkara*, *Ela*, *Trivrit* mixed together should be given for purgation.^[42]

- *Sarivadi Anjana*^[43]

- *Jeevaniya Nasya*^[44]

- In *Paittika* condition one should lick finely powdered *Triphala* mixed with plenty of ghee.^[45]

Hita Aharas in Timira^[46]

Old ghee, *Triphala*, *Satavari*, *Patola*, *Mudga*, *Amlaka*, *Barley*, *Karkotaka*, *Karavella*, *Tarkari*, *Karira*, *Shigru* and *Artagala*.

Ahitha Aharas in Timira^{[47],[48]}

Salty food items, Sour food, Black gram, Horse gram, *Aranala*, *Katutaila*, *Dadhi*.

DISCUSSION

ARMD is a condition characterized by degeneration of light sensitive cells of the central region of the retina - the macula which malfunctions and eventually dies, resulting in gradual decline and loss of central vision, age, excessive sunlight exposure, smoking are the main causative factors responsible for both *Timira* and age related macular degeneration (ARMD).

In clinical description of ARMD the symptoms like distorted vision, blurriness of vision, central scotoma are comparable with *Lakshanas* like *Vyavidha Darshana*, *Avila Darshana*, *Pashyathyasya Manasikam* of *Triteeya Patalagatha Timira*. If *Timira* is not treated properly it will lead to the complete loss of vision and this stage is known as "*Linganasha*" and even in ARMD, it cause complete loss of vision. ARMD should be considered as *Triteeya Patalagata Roga*. As disease occurs in old age and there is degeneration

and loss of neural tissue, which indicates that there is involvement of *Vata Dosha*, as old age is associated with predominance of *Vata* and also neural tissue is considered as a component of *Vata* in the body. In later stage of disease, however the involvement of other *Dosha* 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*. According to Ayurveda there is involvement of *Vata* and *Pitta Dosha*. All dry type of ARMD are purely *Vata* type and wet type has *Pitta Dosha* along with *Vata*. So *Vata Pitta Shamaka* treatment is to be given to patient in the case of ARMD.

CONCLUSION

ARMD is degenerative disease associated with aging that affects macula and causes gradual loss of central vision. Clinical features of ARMD simulate *Vataja Timira*. Ayurveda has significant role to play in the treatment of ARMD in both dry and wet types. *Kriyakalpas* judiciously used not only improves the circulation but also provides micronutrients to the macula there by preventing the deterioration of retina and optic nerve.

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