

AYURVEDIC REVIEW ON TIMIRA WITH SPECIAL REFERENCE TO CATARACT

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ABSTRACT

Cataract is the opacity of the crystalline lens or its capsule, which impairs or destroys vision. In Ayurveda, visual disturbances are described in the context of *Timira*, *Kacha* and *Linganasha*. *Timira* is a disease of the *Drusti Mandala* which presents with blurred vision initially and if left untreated may lead *Linganasha* the last stage where there is complete loss of vision. Surgery is the main line of treatment for cataract. The entire world is looking at the alternative systems of medicine to prevent surgical complications and looking upon preventive ophthalmology for improving and maintaining vision. In such a scenario, a detailed knowledge about the *Timira* is very important for proper management of the condition. Here review on *Timira* from different literature has been compiled with special reference to cataract.

Keywords: *Timira*, *Kacha*, *Linganasha*, *Drusti Mandala*, Cataract

INTRODUCTION

A cataract is a disease which leads to decrease in vision due to development of opacity in crystalline lens in the eye. Symptoms may include faded colors, blurry vision, halos around light, trouble with bright lights, and trouble seeing at night. ^[1] This may result in trouble driving, reading, or recognizing faces. Poor vision caused by cataracts may also result in an increased risk of falling and depression. ^[2]

The incidence of cataract in people over 50 years in the west is about 15%, while in developing countries it is about 40%. ^[3] In the developing world, the prev-

alence is believed to be greater and the onset at earlier ages, making the social and medical costs of blindness from cataract highly disproportional in areas of the world that can ill afford them. ^[4]

Kaphaja Timira is a disease of the *Drusti Mandala* which presents with blurred vision initially and if left untreated may lead to conditions like *Kacha* and *Linganasha* associated with complete loss of vision which has the features of cataract.

No accepted medical treatment is available for cataract till date; surgery is the only available treatment

for cataract. Though the prevalence of cataract blindness would decrease due to increase in cataract surgery rate, the number of cataract-blind would increase from 7.75 million in 2001 to 8.25 million in 2020 due to the increase in the population above 50 years in India over this period.^[5] Data available in India show that all cataract surgeries are not sight-restoring.^[6] Surgical treatment of cataract imposes great economic burden on the society, and the backlog is perhaps too big to be handled by surgery alone at the same time surgical approach have its own complications. If such a factor is identified which simply delays the onset of cataract by a period of 10 years, the number of cataract surgeries would drastically decrease by 45% or more.^[7]

Cataract - The word cataract (kat a-rakt) is derived from the Latin word ‘cataracta’ and Greek word ‘katarraktes’ which means disease of eye consisting of opacity of the crystalline lens or its capsule, which impairs or destroys vision. The term cataract has been used in a nonspecific manner to indicate loss of transparency of lens, usually in the context of vision loss. The senile cataract is a common ocular condition associated with dramatic effects upon vision loss. By the age of 60 years, over 90% of the individuals may develop senile cataract. The World Health Report published in 1998^[8] estimated that there were 19.34 million people who are bilaterally blind from age-related cataract. This represented 43% of all blindness. Minassian and Mehra estimated and reported that in India alone 3.8 million people become blind from cataract each year.^[9]

The similarity between *Timira* and Cataract starts from the word meaning itself. *Timira* is derived from word *Tim* which means *Kledane* that is imbibing of moisture, increase of moisture substance in the eye. *Timira* or cataract denotes a shade of darkness which makes the view of the patients affected by this disease as if looking through water, moisture, waterfall, glazed paper, waxed paper etc.

Timira is a disease of the *Drusti Mandala* which presents with blurred vision initially and if left un-

treated may lead to complete loss of vision. The term *Timira* is derived from root ‘*Tim*’ (meaning the increase of watery substance in the eye or loss of light perception) with ‘*Unadi*’ suffix ‘*Kirach*’ to form the *Timira*.^[10] According to *Shabda Kalpa Drumam*, *Timira* means that eyes become wet. It also means that there is blackout in the vision.

The meaning of *Timira* according to Amarakosha is given as darkness.^[11] *Timira* means darkness whose enemy is sun according to *Halayudha Kosha*. According to Monier Williams, the word *Timira* means dark, gloomy, darkness of eye and partial blindness.^[12] Sushruta has described *Timira* as a *Ghora Roga* that produce visual disturbance due to accumulation of *Dosas* in various *Patalas* of the eye. Charaka has included *Timira* in the *Nanathmja Vata Vyadhis*, Chakrapani clarifies that *Vata* has an important role to play in *Timira* though there is association of other *Dosas*.

Acharya Charaka has broadly classified the causes of *Netra rogas* as misuse, overuse and disuse of the senses and has regarded as “Volitional transgression”. Excessive gazing at the bright object is excessive use, avoiding looking altogether is disuse and seeing too near, too distant, fierce, frightful, wonderful, disliked, disgusting, deformed and terrifying objects is perverted use of objects can cause *Netra Rogas*. *Diwaswapna*, *Vegavarodha* or *Veganigraha*, *Atimaitihuna*, *Virudhaharaare* the other causes mentioned by Acharya Charaka^[13]. These have bad effect on *Chakshuindriya* which can lead to deterioration of vision and can leads to early formation of cataract.

Acharya Harita mentioned intake of *Ushna*, *Atikshara* and *Katu Ahara*, injury to eye and keen observation, visualization of minute objects constantly can aggravates the *dosha* in the eye and cause *Netra rogas*.^[14] Any injury to *Avarta* and *Apanga marmas* may lead to partial and complete loss of vision^[15]. Trauma to eye can cause opacity to lens and cause Traumatic cataract.

Acharya Sushruta and others have described following *Nidanas* for eye diseases, which can be categorized into general and specific causes. [16] **Usnabitaptasya Jalapraveshath-** Taking cold water bath, when the body is hot i.e. sudden variation in the body temperature causes eye diseases. This may be a *Viprakishta Nidhana* for Cataract. **Doorekshanath** - Means to see distant object continuously for example watching T.V continuously for many hours. Eye can visualize the things up to some distance without any strain, but gazing at the very distant objects for a long time results into eye strain & later leads to eye disorders. This can lead to early development of cataract. **Swapna Viparyaya-** Means alteration of the pattern of sleep, *Diwa Swapna* i.e. Day sleeping causes *Kapha* Vitiation and *Ratrijagrana* causes *Vata – Pitta Prakopa*. Biological clock of body will be altered which indirectly affect the physiology of eye and lead to cataract. **Prasakthasamrodhana-** It means continuous weeping. This can indirectly alter the physiology of eye and can lead to cataract. **Abhighatha-** due to traumatic injury, minute irritative injuries or contusion injuries or perforating injuries cause a great loss to the eye; if proper care is not taken blindness follow immediately. Traumatic cataract one of the leading cause of blindness. **Shuktaaranalaamlakulathamashanishewanath-** *Shukta, Arnala* (Sour food item) taken excessively causes *Netravikaras* because the above things are *Sandhana Dravyas* having the properties oppose to *Ojas* and their excess use causes *Ojokshaya* and leads eye diseases. *Kulatha - Kashaya rasa, Katuvipaka-* if taken for a long time vitiates and causes *Raktaja Pittaja* disorders of eye *Masha - Guru, Madhura, Snigda* - if taken for a long time causes *kaphaja* disorders of the eye and cause *Kaphaja Timira*. **Sookshmanirekshnath-** observing the minute things regularly causes strain to the ciliary muscles and lens results in visual problems e.g. use of mobile continuously which cause exposure to light and radiation can cause cataract. Radia-

tion cataract is one among the commonest developmental cataract in present days.

Dhoomanishewanath- Smoking is considered as harmful for eyes according to Ayurveda as well as modern medicine. As per Ayurveda, smoking may vitiate *Pitta* and *Vata* by increasing its *Tikshna, Ushna and Ruksha Gunas*, hence it can be considered as one of the important factors in the causation of *Timira*. Smoking is an established risk factor for cataract, which is the leading cause of visual impairment in the world, responsible for more than 50% of world blindness. [17] Smoking increases the oxidative stress in the lens by generating free radicals and reduces the plasma concentration of several antioxidants, such as ascorbic acid. The amount of proteolytic enzymes and their capacity of removing damaged lens proteins is impaired. Long-time exposure of oxidative stress leads to accumulation of damaged lens proteins, thus promoting cataract development. [18]

Samprapti

The pathological events of *Timira* begin with *Swasthanavridhi* of *Dosas* at their respective sites. In reference to *Samprapti* of *Timira*, Sushruta has clearly stated that when *Dosas* get excessively vitiated internally, pervades the *Siras* (vessels) and gets lodged in the first *Patala* of *Drishti*, than the patient sees all the objects as blurred. While commenting on this Dalhana opines that the word ‘*Sira*’ denotes here ‘*RupavahaSira*’ and *Drishti* indicates inner part of the *Drishti*. The lodgment of *Dosas* in *Patalas* further prevents the functional capacity of *Patalas* and lead to *Avyakta Darshana* or blurred vision. It further inhibits the nutritional supply by obstructing the channels responsible for it. The further involvement of second and third *Patala* leads to further deterioration of *Drishti*; i.e *Vihwala Darshana* due to the involvement of *Pishitashrita* and *Medoashrita Patalas*. When the *Dhosha* reaches the fourth *Patala* affliction terminates into *Linganasha* or loss of vision. The *Ashraya* of the *Malas* in *Indriya* thus pro-

duces both *Upaghata* [*Nasha* or destruction] and *Upatapa* [*Vikriti* or disease] in *Chakshurindriya*.^[19]

Samprapti Ghataka:

Dosas involved in Cataract is *Tridoshaja*. *Dushya* involved is *Rasa*, *Rakta* and *Mamsa rasa*. *Agni* responsible for the formation of cataract is *Mandagni* leading to *Ama* formation. *Srotas* involved is *Rupavaha Siras* and *Srotodushti* is *Sanga*. *Rogamarga* is *Madhyama* as *Shiras* is the *Pradhana marma* and *Adhishtana* in *Drishti Kacha* ie lens of eye.

Samprapti of cataract based on Shat Kriyakapla

Due to *Achakshushya Nidana Sevana* like *Mitya Ahara*, *Vihara*, *Beeja dosha* and *Agantuja* can cause *Ama Uthpathi* and *Avayava Vikriti* in *Srotas*. Due to continuous *Nija* and *Agantuja Nidana Sevana* can leads to *Sanchaya* of *Dosas*. *Dosha Dushti* and *Vridhhi* will take place in *Swadhishtana*. The diffusion of *Dosas* in whole body take place through *Siras* and *Srotas* where *Dosas* attain *Prakopa Avastha*. The *Dosa* ascend to the *Urdhvajatra* ie *Shiras* which is of *Prasara Avastha*. *Srotho Avarodha* take place and localization of *Dosas* in *Patala*, *Drishti* and *Rupavahasira- drstimandhya* where *Poorva Rupa Lakshanas* appear and attains *Sthana Samshraya*. When *Dosas* reaches Ist *patala* there will be *Avyakta Roopa Darshana* ie blurred vision and when IInd *patala* is involved there will be *Vihwaladarshana*. When IIIrd *Patala* is involved there will be *Gochara Vibhrama* which is considered as *Kacha* and when IVth *patala* is involved it is *Linganasha*. In *Vyakthavastha* the symptoms of immature stage of cataract will be very clear. The cataract matures and there will be complete loss of light perception which is *Bheda Avastha of Kriya Kalpa*.

Poorva Rupa:

Avilata, *Samrambha*, *Ashru*, *Upadeha*, *Guruta*, *Raga*, *Vihanyamana Rupa* are the general *Purva Rupas* of the eye diseases has taken as there is no direct reference for *Timira*. All these *Lakshans* are seen in stages of cataract.

Rupa Cataract according to Patala involvement

The clinical features of *Timira*, when the *Dosas* are vitiated in successive *Patalas* are different from each other which can be seen in different stages of cataract.^[20] When *Dosas* are located in lower part person will be unable to see near objects and in upper part person will be unable to see distant objects. If *Dosha* is present in side person will be unable to see sides and *Dosas* present all around the person see overlapping of the objects. When *Dosas* are situated in centre, person sees double images, if *Dosha* present in two places triple images are formed, if *Dosa* are present in inner part then big objects appear small and small objects appear bigger and if *Dosas* are unstable there will be several images. All these symptoms are seen different stages of Cataract and even in different retinal diseases. Therefore Cataract cannot be specifically taken as a disease in Ayurveda it is group of symptoms which is involved by different *Dosas* in different *Patalas*.

The word *Timira* indicates darkness where as *Linganasa* means complete loss of vision. Conditions with gradual loss of vision leading to blindness are considered as *Timira*. The clinical features of both *Timira* and *Linganasa* are related with the dominance of vitiated *Dosha* where as the severity both the disease is dependent upon the number of *Patalas* involved. Hence *Timira*, *Kacha* and *Linganasa* are the three stages of the same disease and they are not the independent pathologies. When *Dosas* have reached the third *patala*, it is called as *Kacha*. At this stage, *Timira* gets raga or the transparency of *Dristi* is lost. The eye appears to be having shades of different colours.

Drishti kacha as human Lens

In text books of Ayurveda, there is no special description of lens. Susruta had described *Pramana*, *Akara* and *Lakshana* of *Drishti* in the chapter *Drishti Roga Vijnaneeyam Adhyayam*. *Drishti kacha* is circular in shape and measures to the size of a *Masoora Dala* a size of lentil seed. Externally, it is covered by *Patalas* (layers) of eye. Here *patala* refers to the

bahya patalas (external covering). We can consider it as human lens, which is circular and biconvex in shape. It is covered externally by the cornea and the eyelids.

It is composed of all the five *Mahabhootas*, with a predominance of *Tejo Mahabhoota*. Even then it is *Sheeta Satmya* (accustomed to cold). Because of the predominance of *Tejo Mahabhoota* it shines like a *Khadyota* same as light emitting fly or *Visphulinga* like fire spark.^[21] Later authors have coined a term as '*Drishti Kacha*' for Lens.^[22]

Lens is the only structure which grows throughout the life. When ageing take place the lens fibers will get degenerated. Any physical or chemical factor which disturbs the intra and extra cellular equilibrium of water and electrolytes causes opacification of lens. In *Vruthavastha* there will be predominance of *Vata Dosha* and there will be decrease of *bala* of the indriyas. In the same way *bala* of *Netra* will be decreased as day passes in *Vruthavastha*.

Timira and Kacha

Suhsruta had used the term *Timira* till *Dosa* reach the third *Patala*. But Vagbhata uses the term *Timira* only till *Dosas* reach the second *Patala*. When they reach the third *Patala* he terms it as *Kacha*. Susruta had used the term *Kacha* for *Linganasha* which occurs when *dosha* enters the fourth *Patala*.^[23]

Kaphaja Timira and cataract

Kaphaja Timira is the visual disturbance where *Kapha* is the cause for blurriness of vision. *Kapha* has *Snigdha*, *Sheeta*, *Guru*, *Manda*, *Slakshna*, *Mritsna* and *Sthira Guna*. Hence any condition that brings in one of these or a combination of these *Gunas* results in *Kaphaja Timira*. Vision will become *Snigdha* (unctuous) in nature, vision may become watery, i.e. *Stimita* (*Salila Plavitaneva Parijadyani Manavah*), objects appear to be white (*Sitadarshana*), he will see the objects as if covered by *shankha* (Conch Shell), *Indu* (Moon), *Kunda* (Jasmine) flower or *Kumuda* (White Lilly) flower, visualizes only large objects (*Pasheta sookshmanyathartham*), He will perceive objects as

if covered by thin clouds (*Vyabhrecaivaabhrasamplavam*) and he may see net in his visual field (*Jalaka Darshana*)^[24]. The person will be able to see *Jalakas*. The person will be able to see only large objects and will not be able to perceive smaller ones. The person will feel as if some heavy objects are covered in front of his eyes and may perceive objects as if seen through water.

In initial stages of *Timira*, *Kapha* is vitiated and its *Snigdha*, *Sheeta*, and *Drava Gunas* are increased which are confined to *Rasa Dhatu*. Later stages *Sthira* and *Guru Gunas* are increased and as a result, the transparent structure of lens turns to dense white opacity. All the above symptoms of *Khaphaja Timira* are seen in immature stages of cataract. The *Kaphaja kacha* will convert the vision to be dominated by white colour where *chikitsa* is advised by *Acharyas*. This condition can be taken as the immature stages of cataract where there is a colour change in the lens. In *Kaphaja Linganasa*, the *Drishti* becomes thick, smooth, white like a conch shell, *kunda* flower or the moon. It appears like a shining drop of water on a moving lotus leaf. Pupil gets excessively constricted in the sun and dilated in shadow. These symptoms are seen in mature cataract where *Shastrakarma* is advised. All these symptoms told for *Kaphaja Timira* resembles the different stages of cataract. Even in modern science the surgical removal is considered as the treatment of choice in cataract. Measures for delaying the progression of cataract has been told in *samhitas* in the form of *Netra kriyakalpas* and *Panchakarma* procedures.

Sadya sadhyata and Chikitsa of Timira

Kaphaja Timira is a *Sadhya Vyadhi* with medications and treatment procedures. *Kaphaja Kacha* is *Yapya Vyadhi* and *Kaphaja Linganasha* as *Shastra Sadhya Vyadhi*.

Local measures include *Tarpana*, *Putapaka*, *Seka*, *Aschyotana* and *Anjana*. These all together are known as "*Kriyakalpas*". As *Khaphaja Timira* is one among the *Timira rogas*, *Kriya kalpa* procedures are the treatment of choice in immature stage of cataract

also. ^[25]*Teekshna Nasya, Teekshna Anjana, Teekshna Shodhana, Putapaka* and *Apatarpana* are the line of management of *Kaphaja Timira*. ^[26]

DISCUSSION

The understanding of immature cataract, including stage of lamellar separation and incipient stage can be considered as *kaphaja timira*. *Kaphaja timira* in second *patala* brings symptoms of floaters, blurred distant and near vision, glare, polyopia, diplopia and difficulty in threading a needle. Hence *Kaphaja timira* in second *patala* may be compared with immature cataract where a patient gets veiling luminance, contrast sensitivity and other problems as mentioned above. He sees all the objects as white. They appear like white Lilly flower petals (*kumuda*). The subjective symptom mentioned by Acharya Vagbhata can be objectively seen with the help of a slit lamp examination on dilation. Hence, the description of *Kaphaja timira* may be compared to immature cortical cataract. Early stages of nuclear cataract also do have veiling luminance. They produce contrast sensitivity issues without any visible colour changes in the lens. Hence, the stage of *Kaphaja timira* may be compared to both immature cortical and nuclear cataract.

CONCLUSION

Timira is a disease of the *Drusti Mandala* which presents with blurred vision initially and if left untreated may lead to complete loss of vision. All the symptoms of *Khaphaja Timira* are seen in different stages of immature cataract. *Kaphaja Timira* is a *Sadhya Vyadhi* which can be treated with medications and treatment procedures. Therefore Cataract cannot be specifically taken as a disease in Ayurveda it is group of symptoms which is involved by different *Dosas* in different *Patalas*. Among the *Timira Rogas* most of the symptoms of *Kaphaja Timira* can be compared immature cataract, *Kacha* can be compared to mature cataract and *Linganasha* can be compared to hyper mature cataract.

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