ejpmr, 2024, 11(7), 192-196

SJIF Impact Factor 7.065

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Review Article

ISSN 2394-3211

EJPMR

KRIYAKALA VIVECHANA IN KAPHAJA TIMIRA (SENILE CATARACT)-A SPECULATIVE STUDY

Dr. Rethika*[1] and Dr. Divya Stuvert[2]

[1]Post Graduate Scholar, Department of Post Graduate Studies in Shalakya Tantra, SDM Institute of Ayurveda and Hospital, Bengaluru, Karnataka, India.

[2]Associate Professor, Department of Post Graduate Studies in Shalakya Tantra, SDM Institute of Ayurveda and Hospital, Bengaluru, Karnataka, India.

***Corresponding Author: Dr. Rethika**

Post Graduate Scholar, Department of Post Graduate Studies in Shalakya Tantra, SDM Institute of Ayurveda and Hospital, Bengaluru, Karnataka, India.

Article Received on 10/05/2024 **Article Revised on 01/06/2024** **Article Accepted on 21/06/2024**

ABSTRACT

Timira is one among the *Netra Roga* specifically mentioned in *Dristigata Roga* which means darkness. According to different *Acharyas Timira* is classified into *Vataja, Pittaja, Kaphaja* and *Sannipathaja.* Considering the different stages, *Kaphaja Timira* can be correlated to cataract which is classified under avoidable blindness. Cataract is a multifactorial disease where there will be opacification of lens leading to visual disturbance followed by blindness in mature stages. The concept of *Kriyakala* is explained by *Acharya Susruta* in the context of vrana to understand the prognosis of the disease and it guides us when to intervene. *Kriyakala* can be categorized as *Prakruta* and *Vaikruta*. As cataract comes under the avoidable blindness the knowledge of *Kaphaja Timira* with special reference to Senile cataract through *Kriyakala* aids in prevention and better management. In this article the significance of *Kriyakala* in relation to *Kaphaja Timira* prevention and management in the respective stages is described. Pathophysiology of cataract specially in the ageing lens is analysed in understanding the *Kriyakala* of the *Kaphaja Timira*.

KEYWORDS: *Timira*, cataract, *Kriyakala*, Ageing lens, Senile cataract.

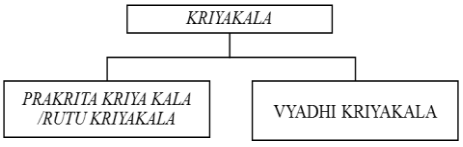
INTRODUCTION

Timira is a *Dristigata Roga* exhibits symptoms according to the dosha predominance in general exhibiting blurred vision as a cardinal symptom. Cataract is a cloudy or opaque area in the normally clear lens of the eye.[1] Normally the lens focuses light on the retina, if the lens is clouded by a cataract light is scattered so the lens cannot focus properly leading to visual disturbance.[2] Cataract is the major contributor for visual impairment and blindness in adults worldwide. According to the National blindness and visual impairment (NPCB and VI) survey 2015–2019, cataract contributes to 66.2% of blindness and 71.2% of visual impairment in the population above 50 years in India.[3] *Kriyakala Chikitsaavasara*-the time that denotes necessity of treatment.[4] It is a concept where evolution of disease is explained in detail for proper planning of the treatment. It is of two types *Prakruta* refers to variation of dosha in relation to day, age, night and season. *Vaikruta kriyakala* explains the evolution of disease starting from *Nidana Sevana* till *Upadrava* manifestation and suitable management to adopt at each stage. The above is divided into six stages and termed as *Shadkriyakala*. Ayurvedic science promotes the concept of subduing the disease at the preliminary stage leads to good prognosis and prevents further progression of a disease. Proper knowledge on the concept of *Kriyakala* helps in proper treatment of the disease at right time. As in immature stage of Senile cataract does not have a definitive treatment better understanding and early detection of the pathology will improve the quality of the treatment planning.

KRIYAKALA

Kriyakala or *Shadkriyakala* is explained by *Acharya Susuruta* in *Vrana Adhyaya*. It is comprised of two words i.e. *Kriya or Karma/Pravrutti* means the *Chikitsa* to be adopted in form of *Aushadha, Ahara* and *Vihara* to correct the *Doshic* vitiation. *Kala* is appropriate time (time to intervene) to adopt proper measures in terms of disease stages.[5] *Acharya charaka* has explained in terms of *Sanchaya, Prakopa* and *Prasara* that can be taken or understood as *Prakrita kriyakala*.[6]

Classification



Prakrita kriyakala also called *Swasthya Kriyakala* is explained by *Acharya Vagbhata*[7] which deals with physiological variations of *Doshas* with respect to season, age, day, night etc. this is a natural process occurring against the external environmental factors which will remit on its own. Adopting *Dinacharya* and *Rtucharya* helps in pacifying the *Doshas* and further development disease will not happen.

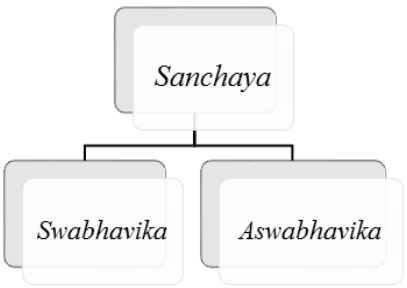
S.no	Factors	*Kapha*	*Pitta*	*Vata*
1	*Vaya*	*Bala*	*Madhyama*	*Vruddha*
2	*Ahoratri*	• *Purvanne* • *Prathama rathiri*	• *Madhyana* • *Madhyarathiri*	• *Sayankala* • *Rathiri ante*
3	*Bhukta*	*Prathama Vipaka*	*Dvithiya Vipaka*	*Tritya Vipaka*
4	*Ritu*	*Vasantha*	*Sarad*	*Varsha/pravrut*

Vyadhi Kriyakala helps in understanding the *Doshic* involvement in manifestation of a disease and its complication. Explained in following stages *Sanchaya, Prakopa, Prasara, Sthana samsraya, Vyakthavastha, Bhedavasta*.

S.no	Stages	Dosha progression
1	*Sanchaya*	Accumulation of *Dosha* in *Svasthana* Quantitative increase of *Dosha,Dhathu* and *Mala*
2	*Prakopa*	*Dosha* vitiation in *Svasthana* Quantitative and qualitative increase of *Dosha,Dhatu* and *Mala*
3	*Prasara*	Movement of *Dosha* from its place through different *Srotas* Spread and moves in *Urdwagati*
4	*Sthana samsraya*	Localization in weak areas (*kha vaigunya*)- i.e, *Patala* of *Netra* where *Dosha-Dushya Samurchana* happens
5	*Vyakthi*	Signs and symptoms of disease will be seen
6	*Bheda*	*Dosha* involvement and differentiation at *Dhatu* level and manifestation of *Upadrava*

Sanchaya

Sanchaya can be taken as an incentive stage of a disease, instead of circulating freely the *Doshas* are stagnated in its own place. In this stage ill-defined or vague symptoms of the *Chaya Dosha* may be seen.



Swabhavika is due to environmental or physiological changes like seasons and age factor. In Senile cataract age contributes as a *Sanchaya* factor.

Aswabhavika is due to *Nidanas* like *Prajna Parada, Mithyahara vihara* and *Asathmya Indriya Samyoga* which causes *Dosha Vrudhi.*

Prakopa

Further the accumulated *Doshas* in its place gets excited or provoked by factors such as *Ahara, Vihara* and *Charya* followed. *Acharya Susruta* has explained provocative factors for each *Dosha* in detail.

Prasara

Prasara means *Vimarga Gamana*, where the *Prakupita Dosha* spread from its *Sthana* to other parts of the *Sharira.*

DOSHA	*AHARA AND VIHARA*	ENVIORMENTAL CHANGES
Vata	*Katu, Tikta and Kashaya rasas* *Laghu, Ruksha, Sheeta Guna Aharas* *Patra shaka, Vallura, Varaka, Uddalaka* *Ativyayama, Ati Maithuna, Langana, Rathri Jagarana, Vegadharana (Vayu, Mutra, Purisha, Asru)*	*Pratapa, varsha rtu, Sayankala, Sheeta kala*
Pitta	*Katu, Amla and Lavana rasa ahara* *Tikshna, Ushna, Vidahi, Laghu Guna ahara* *Pinyaka, Kulatha, Sarsapa, Haritaka, Dadhi* *Athapa sevana, Ati Langana*	*Grishma and Sarad Rtu, Madhyarathiri*

Kapha	*Guru, Abhisyanda, Amla, Lavana Rasa Ahara, Hayanalla, Yavaka, Masha, Ksheera, Payasa, Anupa Mamsa Diwaswapna, Aasyasukha*	*Hemanta and Vasantha rtu*

Susuruta describes with an example "*Mahanudaka sanchaya ativrudha*"-overflowing of water from the overfilled dam (or) "*Kinvaudaka pista samavaya Ivodrakthanam*"- *Kinva Pista*(starch) when kept overnight rises due to fermentation.[8]

Likewise, the *Prakupita Dosha* gets excited and overflows from its *Sthana.* To move from one place to another *Vata Dosha* is a prime factor involved for the movement of the other *Dosha*. The *Prakupita* either singly or two or all the three doshas along with *Rakta* can leave its *Sthana* and move to different parts and cause a disease. Based on Permutation and combination of *Prasara* of *Dosha* can be fifteen in number. Wherever the *Prakupita Dosha* travels it may cause disease in that particular *Sthana*.

In *kaphaja Timira kapha dosha* gets vitiated in *Sarva Sarira* due to *Nidanas* and in the *Svasthana* due to age related changes in the lens.

Sthana samsraya

This stage represents the prodromal phase or phase of *Purvarupa*. The provacated *Dosha* gets localised in specific place and shows prodromal symptoms of the disease pertaining to those structures.

Dalhana commentary describes that this stage happens due to *Sroto vaigunya* or if there is any *Dusti* in the *Srotas* leading to *Dosha-Dusya samurchana*[9] i.e. it acts at the *Dhatu* level. Here it can be taken as age related changes happening in the *Dristi* that aids in *Sthana samsraya*.

Sthana Samsraya can happen at different levels of *Patala* in *Netra* and leads to *Kaphaja Timira.* At *Purvarupa* level person might only experience *Avila Darsana* (Blurred vision) or it may be asymptomatic.

E.g.: If the *Sthana samsraya* of *Dosha* happens in the *Urdhwa Jatru* like *Netra* it causes *Abhisyandhadi Rogas* and *Purvarupa* like *Asru, Kandu, Upadeha* will be seen.

Vyakthi

In this stage the disease is fully developed as a result of *Dosha-Dushya samurchana* and the symptoms are clearly manifested. Characteristic features of a disease will be seen like *Shopha, Jwara* etc.,

E.g. *Prakopita Kapha* in *Netra Patala* causes *Kaphaja Timira. According to Patala in Prathama patala the person experiences Avyaktha Darshana* (Blurred vision).

If *Dosha* lodges in *Dwithiya Patala* it is termed as *Timira.*In *Tritya Patala* it is termed as *Kacha* and in *Chathurtha Patala* it is termed as *Linganasha*

Bhedha

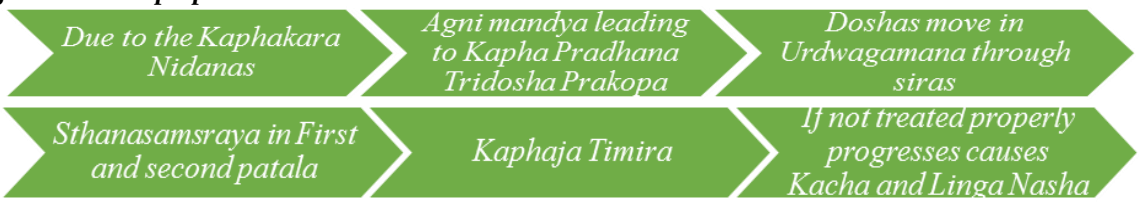
When the disease is not treated at *Vyaktha avastha* then it will lead to *Bheda avastha* where the disease has progressed to chronic stage and there might be manifestation of *Upadravas* and it will be difficult to treat at this stage. This stage to be taken seriously because the predisposing disease may cause another disease (*Nidanarthakara Vyadhi*).

Here it can be considered as the progression of the disease like *Kacha* and *Linganasha.*

Timira

Timira word derivation states "*Timi kledane aardri bhavaha iti yavathaha*"[10] means increased moisture content. It is one among the *Dristigata roga* possessing blurness of vision as a prime symptom *Nidana* such as *Ushna Abhitaptasya Jala Pravesha* (Change of enviormental temperature), *Agni Suryadi Tejasa Avalokana* (Visualizing bright illumination), *Nidra Viparyaya* (Sleep disturbances), *Kopa* (Anger), *Abhighata* (Injuries-Head), *Katu, Amla Ahara Sevana* leads to causation of disease.[11] Based on the *Dosha* dominace *Timira* can be classified as *Vataja Timra, Pittaja Timira, Kaphaja Timira, Sannipataja Timira*. Based on the placement of *Doshas(Sthana samsraya)* it can be *Prathama patala gata, Dwithiya patalagata, Tritya patalagata* or *Chathurtha patalagata Timira*. *Kaphaja Timira* has been focused as cataract signs and symptoms correlates with the same.

Kaphaja Timira Samprapthi



***Lakshanas* of *Kaphaja Timira*[12]**

Lakshanas of *Kaphaja Timira* According to *Acharya Susuruta* explained as follows

- *Snigdha swetham cha pasyathi*-visualizes everything white and glossy
- *Gauvra, Chamara Swethaprabha prathimani*-visualizes everything white as if covered by clouds

- *Pasyeth Sukshma atyartham*- Visualizes minute objects with difficulty
- Visualizes Moving clouds in clear sky (*vyabre cha abrasamplavam*)
- *Salila plavithaniva parijadyani*-visualizes objects as if immersed in water According to *Astangasangraha*.[13]
- *Snigdham Swetham cha pasyate*- vision becomes *Snigdha*.
- *Sankha, Indu, Kunda, Kusuma, Kumudaivachitham*-visualizes objects as if covered by Conch shell, Moon, Jasmine, White lily, Lotus.

Cataract

A cataract is a clouding or opacification of the normally clear lens of the eye or its capsule that obscures the passage of light through the lens to the retina of the eye.[14] It can be bilateral and vary in severity. The disease process progresses gradually without affecting daily activities early on, but with time, especially after the fourth or fifth decade, the cataract will eventually mature, making the lens completely opaque to light interfering with routine activities. Senile cataract is one among the commonest type of acquired cataract, also called as age-related cataract occurs usually above the age of 50 years. Risk factor includes Age, Hereditary, Smoking, Ultraviolet radiation, Dietary factors (deficiency of Vit A, C, E).

Types of senile cataract

- Cortical cataract
- Nuclear cataract
- Posterior subcapsular cataract

Pathophysiology of cataract

About 33 percent of lens composition is formed by proteins, crystalline like alpha, beta and gamma, where Alpha crystalline play an important role in preserving the lens transparency by maintaining the protein in its native state and it is rich in free radical scavenging capacity.[15] Pathophysiology runs in and around these proteins and crystallins. Many degenerative processes denature and coagulates the protein leading to loss of transparency.

Various mechanism that takes place in cataract formation are[16]

- Disturbances at the level of primary lens fibre formation (Congenital cataract)
- Metaplasia of lens epithelium (Subcapsular cataract)
- Hydration of cortical layer (Cortical cataract)
- Deposition of pigments and hardening of lens (Nuclear cataract)

Changes seen in ageing lens[17]

- Biochemical changes results in increased light scattering in the lens (Deeper in cortex than the nucleus)
- Due to biochemical changes lens relative hydration is lost and hydration of lens takes place
- Lens thickness increase leading to increase in axial length of the lens and reduced elasticity of lens
- Changes in the crystallins such as deamidation, glycation encouraging unfolding and insolubility of the crystallins (Denaturation of proteins-disturbance to the native state of protein)
- Accumulation of denatured proteins causes progressive hardening of the lens (Greater in lens nucleus)
- Fall in the free radical scavenging capacity of alpha crystallins

  Because of many biochemical changes lens loses its transparency leading to cataract formation.

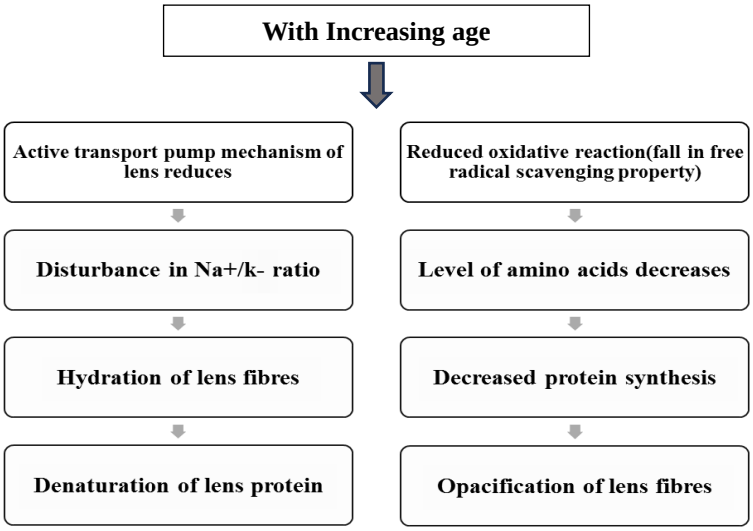


FIG. 1: Flow Chart Depicting Cataract Formation.[18]

DISCUSSION ON *VIVECHANA* OF *KRIYAKALA* IN *KAPHAJA TIMIRA* WITH SPECIAL REFERENCE TO CATARACT

As normal physiology production of new lens fibres over the old fibres and loss of organelles in the old fibres age can be understood as ***Sanchaya (Swabhavika)*** where *Vata* and *Kapha* are involved predominately. ***Prakopa avastha*** as the further progression of age along with the *Nidana* and *Charya* followed by the individual results in biochemical changes in the lens leading to denaturation of proteins in the lens, as in *Vrudda avastha Vata Dosha* plays an important role and it is *Prakopa avastha*. Next it Develops to ***Prasara avastha*** through different layers the changes continue to happen resulting in reduced free radical scavenging property of the crystallins lens. This leads to loss of transparency and hardening of lens. It is greater in lens nucleus than in cortex as the superficial cortex still retains the free radical scavenging property. The change in the lens fibres can be understood as *Kapha* gets hardened by *Vata* in the nucleus layer whereas in cortex that does not happen as it retains scavenging property. The layer where the cataract changes happen can be termed as ***Sthana samsraya*** either in cortex, subcapsular or nuclear. All symptoms such as blurred vision, glare, halos, black spots in front of eyes, diplopia will be seen in ***Vyaktha Avastha*** and grading of cataract can be done such as Immature and mature stage. In ***Bheda avastha*** *Upadrava* like loss of vision will be seen where the *Dosha* reaches the fourth *Patala* and termed as *Linganasha* the hyper mature stage of cataract.

CONCLUSION

Senile cataract being one among the avoidable blindness managing the disease by prevention and early treatment plays an important role. Understanding and framing the treatment through *Kriyakala* helps us to provide better treatment at the earliest. Managing *Kaphaja Timira* at stage of *Sthana samsraya* will prevent further progression of Dosha to next *Patalas* in turn preventing vision loss. As the disease progresses treatment becomes difficult with bad prognosis “Earlier the treatment better the prognosis”.

REFERENCES

1. Cataract www.aoa.org; URL: https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/cataract [Internet]-American Optometric Association
2. Cataract www.aoa.org; URL: https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/cataract [Internet]-American Optometric Association
3. Sarkar, Deepayan; Sharma, Ria; Singh, Priti; Verma, Vidhya; Karkhur, Samendra; Verma, Sunil; Soni, Deepak; Sharma, Bhavana. Age-related cataract - Prevalence, epidemiological pattern and emerging risk factors in a cross-sectional study from Central India. Indian Journal of Ophthalmology, 2023; 71(5): 1905-1912.
4. Rajendra kumar soni, Garima Srivastava Review on Shadkriyakala- A way to know and treat diseases. Journal of Ayurveda and Integrated Medical Sciences, Sep-Oct. 2016; 1(3). ISSN 2456-3110.
5. Amritha E pady, Muralidhara, Prashasth M J, Moksha B M Importance of Kriyakala vivechana in the Management of Prameha- A conceptual study. International Ayurvedic Medical Journal, Dec. 2016; 4(12). ISSN:2320 5091
6. Krishna Bihari, Ajai kumar pandey, Meenu et al. Concept of Kriyakala in the Light of Prevention and Management of Disease; Journal of Ayurveda and Holistic medicine.
7. Shivaprasad sharma, editor, Astanga Sangraha of Vaghbhata; Sutrasthana chapter 13, verse 15-16, Varanasi Chaukambha Sanskrit series, 2019.
8. C.Dwarakanatha, Introduction to Kayachikitsa, Chapter 7, Chaukhambha Orientalia; Varanasi, 96.
9. C.Dwarakanatha, Introduction to Kayachikitsa, Chapter 7, Chaukhambha Orientalia; Varanasi, 98.
10. Dr. Vishak M.D, Dr. Veena Shekar, Dr.Sujathamma k.A. review of Senile Cataract(Timira) and its management. International Ayurvedic Medical Journal, Sep-Oct 2018; 3(5). ISSN:2456 5091
11. Dr. Vishak M.D, Dr. Veena Shekar, Dr. Sujathamma k.A review of Senile Cataract(Timira) and its management. International Ayurvedic Medical Journal, Sep-Oct 2018; 3(5). ISSN:2456 5091
12. Vaidya Yadavji Trikamji Acharya, editor. (Reprint edition) Sushruta Samhitha of Sushrutha, Uttaratantra; Dristigatarogaprathishediya chapter 17, verse 20-21. Varanasi; Chaukhambha Orientalia, 2021; 628-629.
13. Shivaprasad sharma, editor, Astanga Sangraha of Vaghbhata; Uttaratantra chapter 15, verse 8, Varanasi Chaukambha Sanskrit series, 2019.
14. Cataract www.aoa.org; URL: https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/cataract [Internet]-American Optometric Association
15. R. Michael, A.J. Bron, The ageing lens and cataract :a model of normal and pathological ageing, Philosophical Transactions of The Royal Society B., 2011; 366: 1278-129. doi:10.1098/rstb.2010.0300
16. Nizami AA, Gurnani B, Gulani AC. Cataract. In: Statpearls [Internet]. Treasure Island (FL): Statpearls publishing, 2024 Jan. http://www.ncbi.nlm.nih.gov/books/NBK539699
17. R. Michael, A.J. Bron, The ageing lens and cataract: a model of normal and pathological ageing, Philosophical Transactions of The Royal Society B., 2011; 366: 1278-129. doi:10.1098/rstb.2010.0300
18. AK Khurana, Anuj Khurana, Bhawna Khurana, Disorders of Lens and Cataract surgery, Chapter, CBS publishers and distributors pvt ltd, 62.