

OCULAR SURFACE STABILITY & ITS DISORDERS – AN AYURVEDIC VIEW

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ABSTRACT

Shushkakshipaka is a disease which is described elaborately in Ayurveda under the heading of *Sarvakshiroga* and Dry eye syndrome is a similar entity in the modern ophthalmology. This condition occurs due to the instability of tear film and reduction in the ocular surface defense mechanism. It is essential to know the concept of Ayurveda regarding the tear film and factors which maintain its stability for the better understanding of the diseases like *Shushkakashipaka*. Harmony of *Tridoshas* and *Sapthadhatus* are the base of this ocular surface defense mechanism and tear film stability. Any factors which are responsible for the *Vata-Pittha* vitiation or *RaktaDushti* will lead to its instability and may lead to the disease *Shushkakashipaka*. While analyzing the tear film, it is evident that the aqueous part takes origin mainly from *Rasa Dhatu* and non-aqueous part from *Mamsa* and *MedoDhatu*. *Rakta* also contribute a main role by stabilizing the *Rasa*, *Mamsa* and *Medadhatu*s for the stability and proper functioning of *Ashru* (Tear film).

Keywords: *Shushkakshipaka*, Dry eye syndrome, *Ashru*

INTRODUCTION

The tear film is a highly specialized and well organized moist film which covers the ocular surface and remains most directly in contact with the environment. It is critically important for protecting the eye from external influences and for maintaining the health of the underlying cornea and conjunctiva. The optical stability and normal function of the eye depends on an adequate supply of fluid covering its surface¹. Any problem of the constitution or distribution will lead to the initiation of inflammatory process of ocular surface and leads to lot of problems like burning sensation, foreign body sensation, feeling of dryness etc. Dry eye syndrome is the

common problem occurring due to the instability of tear film which leads to major complications if not treated in time².

It is essential to know the concept of Ayurveda regarding the tear film and factors which maintain its stability for the better understanding of the diseases like *Shushkakashipaka*, which is very similar to Dry eye syndrome in modern ophthalmology. All Acharyas have considered *Shushkakshipaka* as a disease which affects all the parts of eye i.e. *Shukla*, *Krishna*, *DrishtiMandalas* and can cause major problems in these parts if not treated properly³.

Aim

- To understand the ocular surface stability by assessing the role of *Tridoshas* and *Sapthadhatus*
- To incorporate the pathophysiology of tear film in the treatment of *Shushkakashipaka*.

Materials and methods

- Available literature from the *Brihatrayee*, *Laghutrayee* and other relevant Ayurvedic texts were collected and discussed to develop the Ayurvedic physiology and functions of Tearfilm and its stability.
- Relevant treatment approaches for the disease *Shushkakashipaka* from various Ayurvedic texts were also reviewed to substantiate the pathophysiology of tear film.

Concept of Ashru:

The term *Akshi* itself indicate that it is continuously and closely adherent with *Ashru*.e “*Ashru-teAnenaAshruVyaptousanghatecha*”⁴Sharngadharahasused the term *Netrajala*, which indicate that it is watery clear fluid⁵. Basically *Ashru* is derived from *RasaDhatu* which serves the functions like *Snehana*, *Jeevana*, *Tarpana*, *Dharana* etc. due to its *Saumya* and *TaijasaBhavas*⁶. Apart from these functions it also serves optical function being closely in contact with outermost *TejoJalashritaPatala*. The production of *Ashru* from *RasaDhatu* is again substantiated by the manifestation of dryness of eyes in *VatikaJwara*⁷, *VatajaPandu*⁸ where the mainly involved *Dhatu* is *Rasa*.

It is evident that *Ashru* plays a main role in the ocular surface defense mechanism by its excessive production in ocular surface inflammations i.e. *AmayuktaNetraroga*⁹ and it also serves the function of cleansing ocular surface¹⁰ (*TamasruNerravarnamPramrijiya* -Amarakosha)

Constitution of Ashru (Tear film):

In Ayurveda there is no direct reference of detailed constitution of *Ashru*, but during the description of functions of different *Dhatus*, Acharyas gave few glimpses regarding the dynamics of *Ashru*.

- *Rasa Dhatu* contributes the major portion in tears i.e. aqueous part and serves the functions like *Tarpana&Preenana*¹¹ It is evident from clinical features like *Shosha* and *AlpaCheshta* in *Rasakshaya*¹².
- *MedoDhatu* mainly contributes the non-aqueous part as it serves the function of *NetraSnigdhatata*¹³.
- *MamsaDhatu* also serves the function in ocular surface by its role in the *DehaLepa* & *Medapushhti*¹⁴. The feature of *Akshaglani* in *Mamsakshaya* also substantiates its function in maintaining the ocular surface integrity¹⁵.

So, it can be concluded that non aqueous part is contributed by the *Mamsa* and *MedoDhatu*. *Kshaya* and *Vridhhi* of *Dhatus* are maintained by the *Rakta*¹⁶ (*TeshamKshayaVridhhiShonitaNimitthai*), so to stabilize the *Rasa*, *Mamsa* and *MedaDhatu* for the maintained of tear film stability, proper functioning *RaktaDhatu* is essential. It is also evident that *Rakta* possess the properties of *Pitta* and *Kapha* i.e. *MadhuramLavanamKinchithAsheetoshnamAsamhatam*’ is the basic nature of *Rakta*¹⁷. Thus it also helps to maintain the equilibrium of *Dhatus*¹⁸ (*DehasyaRudhiramMulamRudhirenaivaDharyatae*’) by its *Saumya* and *Agneya* properties.

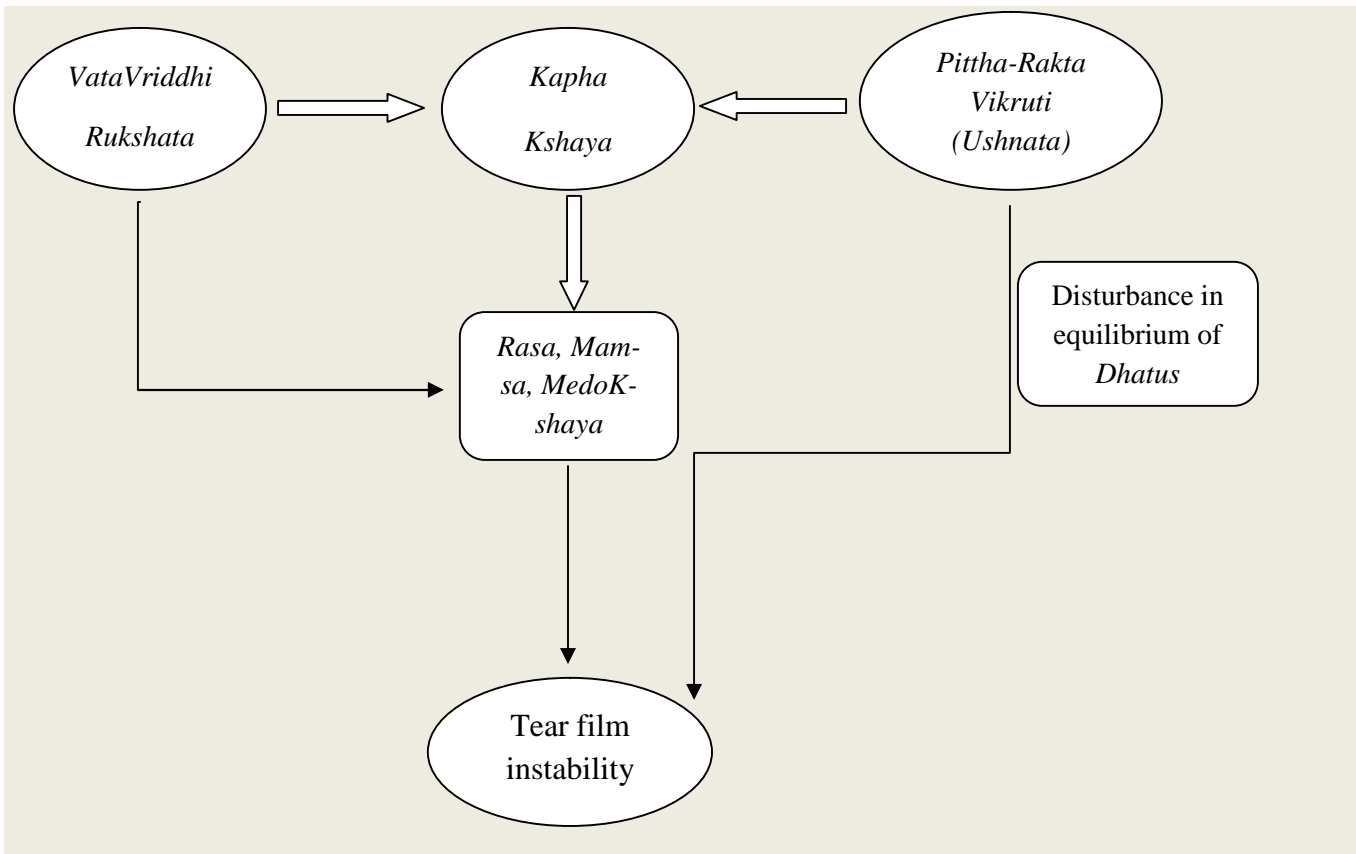
How the Ashru (Tear film) stability gets disturbed?

KaphaDosha is the basic factor which helps to form the *Ashru* (Tear film) properly and to make it closely adherent with eye ball for its proper functioning¹⁹ (*SlishAlinganae*). This *AlinganaSwabhava* of *Kapha* will get disturbed if *Chala*, *Ruksha* and *KharaGuna* of *Vata* increases. So any factor which

leads to the *KaphaKshaya* or *Vata* vitiation will also disturb the normal functioning of *Ashru* (Tear film).

As discussed above that constituents of *Ashru* are derived from *Rasa*, *Mamsa* and *MedoDhatu* and these *Dhatu*s are closely related to *Kapha–AsrayaAsrayiBandha*²⁰. So, the *KaphaKshaya* will also lead to the *Kshaya* of these three *Dhatu*s, which

will further disturb the constitution of *Ashru* (Tear film). Role of *Pitta* is also evident in the proper formation of *Ashru* by the role of *RaktaDhatu* which has been already discussed. The factors which lead to the vitiation of *Pitta* & *Rakta* will also disturb the harmony of tear film e.g: *Ushna*, *VidahiAhara*, *Aatapa-Analasevana* etc²¹. So the pathology of tear film instability can be concluded in the following way:



Disorder of tear film – *Shushkakshipaka*:

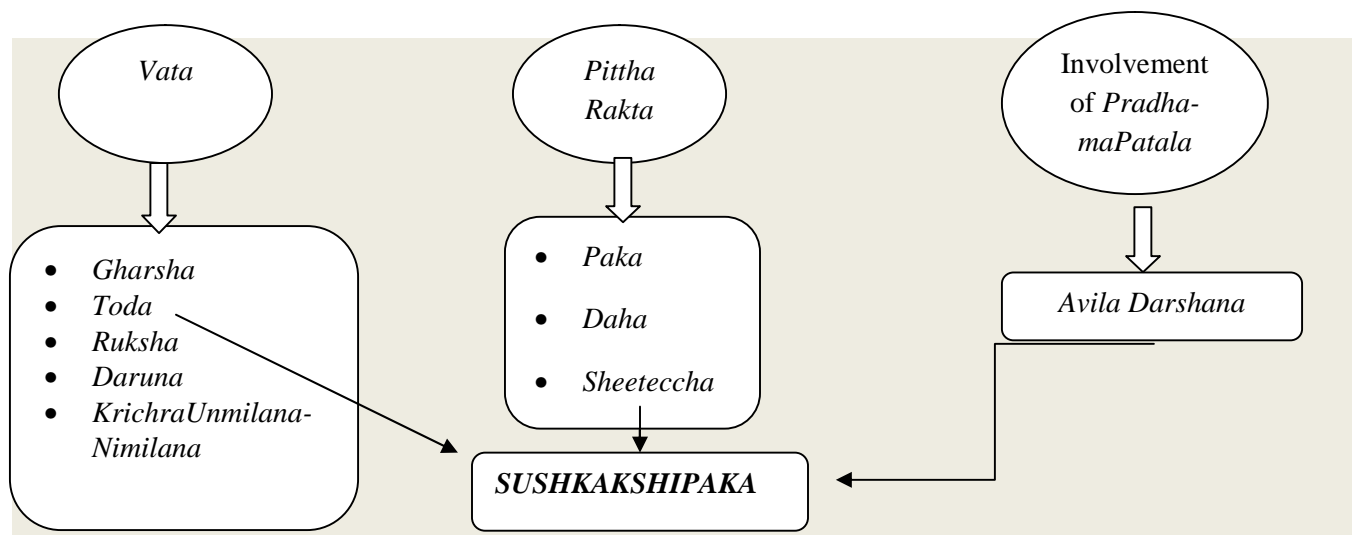
Shushkakshipaka, a disease affecting the all parts of the eye ball is described as a *Vataja* disease by Sushruta²², *Vata Pitta* vitiated condition by Vagbhata²³ and *Sharngadhara* considered this as a *VataRaktaja*²⁴ (*SaraktaVatajanya*). It is also important to remember that AcharyaCharaka described *Akshipaka* as a disease caused by vitiated *Rakta*²⁵. By analyzing these different opinions, it is clear that

vitiation of *Vata*, *Pitta* and *Rakta* play the major role in the disease pathology which are the basic factors required for the stability of tear film.

The etiological factors responsible for *Vata-Pitta* & *Rakta* vitiation will lead to *Kaphakshaya* and will initiate the pathology. *Vata* provoking factors like *Ruksha*, *LaghuGunas*, *KatuRasa*, *Vega Dharana*, *Ratrijagarana*, *Ativyayama*, *Shoka*, *Utkantha*, *GrishmaKaala* and *Vridhdhavastha*²⁶ are

the some common *Nidanas* of *Shushkakshipaka*. These factors also create a vulnerable atmosphere for the provocation of *Pitta* and *Rakta*. One should consider the causative factors of *RaktaDushti* like *VidahiAnnapana*, *AtapanalaSevana*²⁷ etc in the pathophysiology of *Shushkakshipaka* because the vitiation of *Rakta* alone can disturb the stability of tear film, which already been discussed. It is interesting to note that many of the etiological factors of *Rakta-dushti* like *Kopa*, *Shoka*, *Abhighata*, *Sukta*, *Amla*,

Kulattha, *Masha*, *ChardivegaPrathighata* etc., are also quoted as causative factors for *Netrarogas*²⁸.



What makes the disease *SukhaSadhya*?

All Acharyas have given good prognosis for this disease²⁹. The *Sukhasadhyata* of the disease is due to the involvement of *RasadiDhatu*s and *AtulyaDushya* nature of the disease³⁰; i.e., *Vata-Pitta* vitiation and *Rasa-Mamsa-MedoKshaya*. The ultimate treatment for this condition is *Brimhana*³¹ (*Sarvam-schaSharirabhavakshayajan Rogan Brimhanenopachareth*) which indirectly act as the *VataShamaka* (*VatasyaVridhimBrimhanenopacharet*) & *Vata-Pitta Shamaka*³² (*BrimhanamShamanmtvevaVayo: Pitthanilasya Cha*).

Treatment approach of *Shushkashipaka*:

Systemic and local *Vata-Pitta Shamana* and *DhatuPoshana* treatment is highly recommended starting from the *Snehapana*³³. Due to the impor-

tance of *RaktaDushti* in the pathogenesis, it is better to go for *MriduLanghana* like *Upavasa* and *Virechana*³⁴ initially which is not against the treatment principle of *VataDosha* and *Pitta Dosha*³⁵. It is also mentioned that body can better tolerate and assimilate *Brimhana* therapy if it is started with *Mridu-Langhana*³⁶ (*BrimhyastuMriduLanghayet*).

BrimhanaNasya which has the specific indication in *Akshisankocha* & *Timira*³⁷ is also beneficial along with *Murdhataila*, mainly *Shiroabhyanga* & *Shirovasti*. *Shirovasti* is highly recommended in conditions like *NasaShosha*, *MukhaShosha* and *Timira* also³⁸. In local therapeutics mainly *Parisheka*, *Tarpana* and *Anjana* are also beneficial for the treatment of *Shushkakshipaka*³⁹.

Regarding the *Pathyapathya*, all *Vata-Pitta* provoking and other factors which cause *Rakta-Dushti* should be avoided. It is interesting to go through the opinion of *Harita* regarding the *Netra-Rogapathyapathya*⁴⁰. He clearly explained that the factors like smoke, direct wind, intake of *Rukshna, Ushna, Katu & AmlaAhara* and excessive exertion should be avoided in ophthalmic diseases which is specifically applicable to disease like *Shushkakshipaka*.

DISCUSSION

The neural mechanism of the lacrimal functional unit is maintained by the *Tridoshas*. And the stability of tear film is maintained by proper functioning of *SoumyaDhatu*s. The vitiated *Doshas* will cause the disruption of neural mechanism of Lacrimal Functional Unit while the related *Dhatu*s will cause the instability of tear film. *Acharyas* clearly mentioned that the *Kshaya* of *Kapha* and *Kapha-srayiDhatu*s especially *Rasa* will occur during the old age along with the *Vata Vriddhi*.⁴¹ Any local or systemic pathology in which the similar *Dosha* vitiation especially *Vata-PittaVriddhi* can lead to the ocular surface pathology like *VatikaJwara, Vatika-Pandu* etc. Formation of *Ama* due to the influence of improper *Ahara* and *Vihara* will cause the disturbance of function of *Pachaka Pitta*⁴² which also contributes to the Pathology.

- * *Ama*formation will cause the *Srotorodha* locally (ocular surface) and systemically will cause the vitiation of *Vata* which ultimately causes the interruption of afferent neural pathways and reduction of blinking rate.
- * The vitiated *Vata* itself is responsible for the interference of functioning of *TarpakaKapha* because of its *Pangutwa*⁴³ (Will not be motivated in the absence of proper stimulation of *Vata*). The *KaphaKshaya* due to old age will cause the *Kshaya* of all types of *Kapha* including *TarpakaKapha*. Any of these pathology i.e. *Vata*

vitiation or *KaphaKshaya*, can lead to the disruption of *IndriyaTarpana*.

- * *Pitta* vitiation mainly due to the dietary factors like *AmlaVidahiAhara, Shukta* etc and environmental factors like exposure to sunlight, heat etc will ultimately lead to the initiation of inflammation in the ocular surface⁴⁴. The affinity of *Pitta* to promote ocular surface inflammation is especially due to the *Achakshushya Pitta PrakopaAharaVihara* along with the tissue damage caused by the vitiated *Vata* and *Kapha* in the ocular surface.

CONCLUSION

Any factors which are responsible for the *Vata-Pittha* vitiation or *RaktaDushti* will lead to the instability of tear film and inflammation of ocular surface. *Shushkakshipaka* is a disease which closely resembles the dry eye syndrome in modern ophthalmology occurring due to the instability of tear film.

Ashru (Tear film) is very important for ocular surface defense mechanism and it also serves the function of cleansing ocular surface. Its aqueous part takes origin mainly from *Rasa Dhatu* and non-aqueous part from *Mamsa* and *MedoDhatu*s. *Rakta* also contribute a main role by stabilizing the *Rasa, Mamsa* and *MedoDhatu*s for the stability and proper functioning of *Ashru* (Tear film).

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