



Review Article

CONCEPTUAL STUDY OF SHATKRIYAKALA IN SHUSKASHIPAKA (DRY EYE SYNDROME)

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ABSTRACT

*Shushkakshipaka* is considered as a *Sarvakshi roga* by Ayurveda acharyas. Among different Acharyas there is difference in opinion about the *Dosha* predominance of the disease. According to Susruth Acharya it is a *Vataja* disease; but Vagbhata describes it as a *Vatapitta* entity. *Vata*, *Pitta* and *Rakta* play major roles in the pathogenesis of *Sushkakshipaka*. The term *Kriyakala* refers to the progress of the disease, which helps to determine the treatment modalities to be given to make the *Doshas* in equilibrium. The *Kriya Kala* explained by Susrutha is having six stages, consider as *Shadkriyakala*. Here is an attempt to explain *Shushkakshipaka* in terms of *Shadkriyakala* so that one can understand the stage of the disease and decide the treatment to be given.

INTRODUCTION

Tear secretion ensures continuous moisture and lubrication of the ocular surface, which is essential for maintaining comfort, as well as corneal and conjunctival health, and vision. The tear film, a composite layer on the eye, is formed by secretions from the lacrimal gland, goblet cells, and meibomian glands. Any quantitative or qualitative abnormalities in these secretions can destabilize the tear film, leading to ocular surface desiccation and the development of Dry Eye Syndrome.<sup>[1]</sup> Dry Eye Syndrome (DES) is a prevalent ophthalmic condition that primarily affects middle-aged and elderly individuals. It is characterized by inadequate or altered tear production and ocular surface dysfunction, leading to symptoms of discomfort, visual disturbances, and tear film instability. *Shushkakshipaka*, an etymologically and clinically similar entity to DES, is defined in Ayurveda as the disease affecting all parts of the eye characterized by *Paka* (inflammation) due to *Shuskatva* (dryness) caused by altered coherence of *Ashru* (tears) with ocular surface or due to lack of *Ashru*.<sup>[2]</sup> The concept of *Kriyakala* is one of the important original contributions of Sushruta. The term *Kriyakala* refers to the progress of the disease, which helps to determine the treatment modalities to be given to make the

*Doshas* in equilibrium. It contains two terminologies “*Kriya*” and “*Kala*”, where *Kriya* means choice of the treatment and *Kala* means the stage of progress of the disease. The *Kriya Kala* explained by Susrutha is having six stages, consider as *Shadkriyakala*, Where the visible symptoms of a disease and its complications occupy the last two places.<sup>[3]</sup>

Need of the Study

Major eye complaints associated with lifestyle disorders are- cataract, macular degeneration, diabetic retinopathy, dry eye and refractive errors. Risk of dry eye increases with age and is more common among post-menopausal women. The prevalence in India is higher than the global prevalence and ranges from 18.4% to 54.3%. In current scenario dry eye cases are rapidly increasing in young adults due to the usage of visual display units as most of the work is going online nowadays. *Shushkakshipaka* is a similar disease explained in *Sarvakshigata roga*. Ayurveda envisage definite treatment for such clinical conditions. So this article can help to identify the stages of *Shushkakshipaka* and how the medication to be given.

MATERIALS AND METHODS

*Sushruta Samhita*, *Ashtanga Hridaya*, *Ayurvediya vikrti vijnana*, *Roga vijnana*, classical commentaries, e-books, and research articles, are critically reviewed to collect the literature on *Shatkriyakala*, *Shushkashipaka* and dry eye. All compiled matter is reorganized and critically analyzed for the discussion, and an attempt is made to reach some insightful conclusions.

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## Shatkriyakala

### Sanchaya (Stage of Accumulation)

In this stage *Doshas* will increase in their own sites<sup>4</sup> and produces dislike for things which causes of increase and liking for the things of opposite qualities.<sup>5</sup> Symptoms in *Chayavastha* will differ according to the *Dosha* involved.<sup>[6]</sup>

- **Vata Sanchaya Lakshana:** *Stabdhapoornakoshtata* (stiffness and fullness in abdomen)
- **Pitta Sanchaya Lakshana:** *Pitavabhasata* (yellowishness of the body parts), *Manda ushamta* (mild increase in body temperature)
- **Kapha Sanchaya Lakshana:** *Angagaurava* (heaviness in the whole body), *Alasya* (lassitude).

### Prakopa (Stage of Aggravation)

It is the second stage of *Shatkriyakala* in which the *Doshas* accumulates further on their own sites. It is of two types according to Vagbhata.

**Sachaya Prakopa:** It is a physiological condition causing the *Chaya* of *Dosha* first, due to *Ritu* or any natural reasons. If proper measures or *Ritucharya* is not followed it may aggravate further and cause the *Prakopa* of concerned *Dosha*.

**Achaya prakopa:** In this, instant *Prakopa* of the *Dosha* occurs overriding the *Chayavastha*. For instance, if one having *Ratri jagarana* it will cause instant aggravation of *Vata* without going through the *Chaya*.

Following symptomatology manifests in *Prakopa* of different *Doshas*.<sup>[7]</sup>

- **Vata Prakopa Lakshana:** *Koshta toda sancharana* (pain and movement of *Vata* in *Mahasrotasa*).
- **Pitta Prakopa Lakshana:** *Amlika* (sour eructations), *Paridaha* (burning sensation all over the body), *Pipasa* (excessive thirst).
- **Kapha Prakopa Lakshana:** *Annadweshya* (aversion to food), *Hruduyotkledascha* (excessive salivation in mouth).

### Prasara (Stage of Spreading)

It is third stage of *Kriyakala*. In this the aggravated *Doshas* leave their original place and spread to the other parts of the body through different *Srotas*. If the aggravation of *Doshas* is mild it may not produce disease because it stays in hidden channels and produces disease if preventive measures not undertaken and after consuming causative factors in excess. Aggravated *Dosha* spread to different places and produces following symptomatology are as follows.

- **Vata Prasara Lakshana:** *Vimarga Gamana* (regurgitation), *Atopa* (flatulence and gurgling).
- **Pitta Prasara Lakshana:** *Osha* (sense of boiling), *Chosha* (squeezing sense), *Paridaha* (burning sensation), *Dhoomayanani* (emitting smoke from mouth).

- **Kapha Prasara Lakshana:** *Arochaka* (anorexia), *Avipaka* (dyspepsia), *Chardi* (vomiting), *Angasada* (lassitude).

*Dosha* also moves to different places with the help of *Vayu*, either alone or in combinations with other *Dosha* which leads to 15 types of *Prasara stage*.<sup>[8]</sup> *Doshas* takes any one of the following three courses

1. **Urdhwa gati:** Upward diseases of ear, nose, eye etc.
2. **Adhogamana:** *Atisara*, *Shleepada*
3. **Tiryaka gamana:** *Charma vyadhi*, *Akshepaka*, *Sira purana* (hypertension).

### Sanchaya, Prakopa and Prasara in Shushkashipaka

➤ **Sanchaya:** The etiological factors responsible for *Vata*, *Pitta* and *Rakta* vitiation may indirectly cause *Kaphakshaya* initiating the pathogenesis. The causative factors of *Rakta dushti* like *Vidahi annapana*, *Atapa sevana*, *Analasevana* etc. are relevant in the pathogenesis of *Sushkakshipaka*.

➤ **Prakopa and Prasara:** The main *Nidana* of *Sushkakshipaka* are *Rooksha*, *Laghu* (lightness) *Gunasa*, *Katurasa*, *Vegadharana*, *Ratrijagarana*, *Ativyayama*, *Soka*, *Ulkanda*, *Greeshma rithu* and *Vridhavastha*. These factors are also susceptible to provoke *Pitta* and *Rakta*.

In dry eye, patient has multifactorial etiology disturbing qualitatively and quantitatively all component of tear. It may be aqueous tear deficiency, mucin deficiency dry eye, lipid deficiency and abnormalities, impaired eyelid function

### Sthansamsraya (Stage of Localization)<sup>[9]</sup>

In this stage the aggravated *Dosha*, start to localise to any part of the body and manifest the specific diseases pertaining to that Part. *Doshas* in *Prasaravastha* circulate throughout the body and get obstructed in *Srotas* due to *Srotovygunya*. This *Srotovygunya* causes the *Dosha Dooshya sammoorchana* in that site and prodromal symptoms of the disease will appear. It is the fourth stage of *Kriyakala*, So, this is called the stage of *Poorvaroopa* (Preclinical phase).

### Poorvaroopa in Shushkashipaka

Specific *Poorva roopa* of *Sushkakshipaka* has not been mentioned. But the *Samanya Poorva roopa* of *Netra roga* is attributable to *Sushkakshipaka* also. *Sushruta* describes the *Samanya Poorva Roopa* as. *Avilatha* (blurring), *Sasamrambha* (grittiness), *Asru* (lacrimation [reflex]), *Kandu* (itching), *Upadeha* (feeling of coating), *Guruthvam* heaviness, *Osha* (burning), *Toda* (pricking pain), *Raga* (redness), *Soola* (pain), *Sooka poornabha netratha* (foreign body sensation), *Vihanyamana roopa* (blurred vision), *Vihanyamana kriya* (dysfunction of eye). In *Shushkakshipaka*. After *Dosha Dooshya Sammoorchana*, the disease manifests in its own, producing specific signs and symptoms and treatment must be employed to correct *Dosha*, *Dushya* or both.

### Vyakta (Stage of Manifestation)

In this stage the symptoms of the disease start to appear on the body which can be seen or observe by physician and patient. Dalhana has called this stage as a stage of manifestation of disease.<sup>[10]</sup> Cardinal sign and symptoms of the diseases are expressed in this stage.

### Lakshana in Shushkashipaka

The main *Lakshana* (signs and symptoms) of *Shushkashipaka* described by Sushruta are *Vartma vikoonanam*, *Rooksha vartma*, *Akula darsanam*, *Pakam* and *Daruna pratibhodanam*. Ashtanga hridayakara adds *Gharsha*, *Toda*, *Bheda*, *Upadehatvam*, *Visushkatvam*, *Soolam*, *Pakam* and *Seethecha*. Bhavaprakashakara, Yogaratnakara and Karala agree with Sushruta but add *Daha* and *Paka* along with it. *Karala* excludes *Daruna rooksha Vartma* but adds *Kshara vartmam*.

Patients who have dry eye often complain of eye irritation, gritty or foreign body sensation, dryness, nonspecific ocular discomfort, burning, tearing, photophobia, blurry vision that improves with blinking or instillation of non-viscous artificial tears.

### Signs<sup>[11]</sup>

- **Tear film signs:** Presence of stingy mucous and particulate matter in the tear film, absent marginal tear strip. Froth in tears along the lid margin is a sign of meibomian gland dysfunction.
- **Conjunctival sign:** Lusterless ocular surface or conjunctiva with mild congestion. Conjunctival xerosis and keratinization may occur.
- **Corneal signs:** Slit lamp examination shows corneal changes in the term of punctate epithelial erosion, mucus plaques and filaments. Cornea may lose luster.
- **Other signs:** Inadequate tear volume, early tear film break up time shows on slit lamp examination. Meibomian gland dysfunction also observed. Schirmer's test shows less wetting of tear strip.

### Bheda (Stage of Differentiation/Complication)

This is the last stage in which disease can be diagnosed correctly and its *Doshaja* type can be decided. It is also considered as a stage of complication (*Upadrava*). In this stage the disease become *Chirakari* (chronic), and if proper treatment is not given it will end up as a *Asadhya vyadhi* (incurable).<sup>[12]</sup>

### Bheda in Shushkashipaka

According to Acharya Vagbhata, *Sushkashipaka* includes in 18 diseases which may lead to *Pilla roga* if left untreated. Most of the symptoms are concerning lids, manifested by thickening of lid margin, itching, matting of lashes, falling of eye lashes, distorted lashes and lid discoloration.<sup>[13]</sup>

## DISCUSSION

### Importance of Shatkriyakala in Shushkashipaka

As in all diseases we can describe *Shushkashipaka* in terms of *Shatkriyakala*. It will help

us to know the stage of the disease and decide the timing of different treatment modalities which can be given in *Shushkashipaka*. When go through the classics we can observe that *Shushkashipaka* has different stages, starting with only *Vata* predominant condition and then *Pitta* also vitiated along with *Vata* and causes the *Paka*. And if no treatment is taken it can lead to *Pilla* stage. So according to these stages we can plan the therapy which we can give.

### Approach of Shatkriya Kala in Shushkashipaka

*Shushkashipaka* is considered as an *Oushada sadhya Sarvakshi roga*. Among different Acharyas there is difference in opinion about the *Dosha* predominance of the disease. According to Susruthacharya it is a *Vataja* disease; but Vagbhata describes it as a *Vatapitta* entity. Shargdhara classifies it in *Vatarakta* category. Acharya Charaka describes *Akshipaka* as a disease vitiated by *Rakta*. On examining the three conditions and the three types of *Doshakopas* it can be ascertained that these are the three stages of the same entity according to *Dosha* predominance. *Vata*, *Pitta* and *Rakta* plays major roles in the pathogenesis of *Sushkashipaka*. The description of Vagbhata is about the early stage, while Sushruta describes about the *Vatapitta* predominant *Paka* stage.

**Chaya and prakopa:** These two stages are prior to *Sthana samsraya avastha* so we may not see any *Sthanika lakshanas*. But there will be general *Chaya and prakopa lakshana* according to the *Doshas*. In *Shushkashipaka* the predominant *Dosha* is *Vata*, later *Pitta* also accompanies and cause *Paka*. Due to *Netra roga nidanas* and *Samanya vata kopa nidanas* there will be *Vata Chaya* and *Prakopa* and cause *Stabdha-poornakoshtata* and *Koshta toda sancharana* respectively. In these stages we can administrate *Vatahara ahara vihara*.

**Prasara:** In this stage the aggravated *Vata* leaves its original site and started to get the *Urdwagati* through *Urdwavaha sira* and reaches *Jatrurdwa bhaga*. So there will be *Vimargagamana* of *Vata* along with *Atopa* which are the *Vata prasara lakshanas*. If the *Nidana* continued and no remedy is taken, the aggravated *Vata* again gets vitiated and it leads to the *Sthanasamraya* stage.

**Sthanasamsraya:** Here the aggravated *Vata* starts to localise in *Chakshu* in case of *Shushkashipaka*. *Chakshu* is the site of *Pitta dosha*, so the aggravated *Vata* started to vitiates the *Pitta* also. These two *Doshas* then started to vitiates the *Dooshyas* and *Dosha dooshya sammoorchana* occurs. prodromal symptoms of *Shushkashipaka* will appear in this stage.

**Poorvaroopa:** Specific *Poorva roopa* of *Sushkashipaka* has not been mentioned. But the *Samanya Poorva roopa* of *Netra roga* is attributable to *Sushkashipaka* also.

**Vyakta:** In *Vyakta avastha* the Cardinal signs and symptoms of *Shushkashipaka* starts to appear on *Chakshu*.

### Management of Disease in *Shatkriyakala*<sup>[14]</sup>

**Sanchaya:** Prophylactic measures, starting of medicines considering the *Doshavitiations*. The symptoms are very minimal in *Chayavastha* so it is easy to cure the disease in this stage.

**Prakopa:** All *Doshas* are vitiated here. If *Vataprakopa* at the site *Pitta*, *Pithahara* treatment should be given and similarly the predominant *Dosha* and the site should be assessed and treated in the similar manner.

**Prasara:** Upto this stage, treatment for cause and symptoms should be given rather than disease.

**Sthanasamsraya:** Treatment for *Dosha* and *Dushya*.

**Vyakthi:** Treatment contrary to disease is to be given

**Bheda:** Incurable

### Management in *Shushkashipaka*

The treatment modalities of *Sushkashipaka* - include *Ghruthapana*, *Seka*, *Aschyothana*, *Anjana*, *Nasya*, *Vasthi*, *Tarpana* and *Putapaka*. Systemic and local *Vatapitta samana* and *Dhathuposhana* treatment protocol can be advised for *Sushkashipaka* starting from *Snehapana*. If there is *Rakta dushti* in the pathogenesis *Langhana* and *Mrudu virechana* can be done initially if not contraindicated for *Vata* and *Pitta*. *Nasya* will be beneficial; *Murdha taila* can be done by *Shiroabhyanga* and *Shiro vasti*. *Parisheka*, *Anjana* and finally *Tarpana* can be done locally. In a brief, untreated or improperly treated chronic *Sushkashipaka* patient if continues to resume *Nidan* may vitiate *Kapha* and *Rakta* also, leading to *Pilla roga*. Prevention is better than cure and early diagnosis of the disease in its budding stage is very beneficial for the management.

### CONCLUSION

Tear film is an integral part of ocular surface physiology. Any quantitative or qualitative compromise in this process can lead to *Shushkashipaka* (Dry Eye Syndrome), resulting in various symptoms of ocular discomfort and, in severe cases it can lead to corneal blindness. According to Ayurveda, the vitiation of *Vata* and *Pitta* is a key pathological factor in its development. Unlike conventional medical treatments, Ayurveda offers a comprehensive, holistic approach to the management of dry eye syndrome. A patient of *Shushkashipaka* treated with such treatment protocol,

is beneficial in prevention and further aggravation of the disease.

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