

ROLE OF *KRIYAKALPA* IN THE MANAGEMENT OF *NETRAROGAS*

¹Dr. Pravin Chavan, ²Dr. Gitanjali Kundlik Mane

¹Prof. and Guide, ²PG Scholar

Irp ayurved medical college Islampur

Drpravin999@gmail.com, Dr.gitanjalimane0318@gmail.com Mob:982233861, 9767040163

ABSTRACT- *The Promotion of the visual acuity was considered as one of the priorities in the branch of shalakyatantra of Ayurveda. Many procedures and formulations have been described to cure the ophthalmic disorders. The present conventional system of medicine has topical and systemic administration of drugs to the eye which are highly inefficient and there is a need for controlled, sustained release, particularly for conditions that affect all parts of the eye. Sushruta the father of ancient Indian surgery, advocated 'kriyakalpa' as the main therapeutic procedure for NetraRogas, along with other forms of treatment. He has described this in a separate chapter in Uttartantra of Sushruta Samhita. Some of the proven principles of management procedures and medicaments include intake of purified medicated ghee (Ghritarpana), nourishing eye both therapy (Tarpana), and processed liquid instillation through nostrils by drops or powders (Nasya), eye both therapy (pariseka), application of medicated paste on eye lids (Bidalaka) and collyrium (Anjana), these procedures improve the vision by strengthening of the ciliary muscles, maintaining unctuousness of the eye ball, proper accommodation of the lens, relaxing the senile muscles, maintaining unctuousness. Hence these procedures are also helpful in dealing with inflammatory conditions like conjunctivitis, hordeolum, Corneal ulcer, staphyloma, panophthalmitis etc. Thus kriyakalpa can be done in healthy as well as diseased eye conditions to improve the ophthalmic health.*

KEYWORDS—*kriyakalpa, eye diseases, UttarTantra, shalakyatantra.*

INTRODUCTION— *Kriyakalpa* is the basis of the ophthalmic disorders, *aspanch karma* is the basis of *kayachikitsa* when we refer to our classics for the therapeutic measures adopted in the management of eye diseases, we find that the management includes many of the topical treatments along with systemic ones. The reason might be that the drugs administered systematically may not cross the blood aqueous, blood-vitreous and blood-retinal barriers. Ancient seers have designed many unique routes of drug administration and also varied formulations to suit the anatomy, physiology and pathological status of all parts of the body and more importance is given to design eye medicaments. The eye being a very vital and sensitive part was of main focus while designing *kriyakalpa-scharaka-samhita* deals with the diseases of the entire body on the medical lines without paying any special reference to the disorders of the eye, ear, nose and throat (1).

However, some references are available regarding the eye ailments saying that eye disorders should be treated with the help of mentioned three *kriyakalpa* in *chikitsasthana* i.e. *Bidalaka, Aaschyotana* and *Anjana* (2). *Acharyasushruta* mentioned five *kalpa* i.e. *Seka, Aaschyotana, Anjana, Tarpana* and *Putpaka* (3). *Acharyasharangadhara* mentioned 7 *kriyakalpa* five of them are same as *sushruta* and added *pindi* and *Bidalaka* to them

(4). *Acharya Bhavamishra* has meant the same seven types of *kriyakalpa* as that of *sharangadharasamhita* while *chakradatta* has described complete chapter for *netraroga* with many formulations and *bahirgunthanavidhi* for acute eye condition (5). Which include *seka* and *Aschyotana*

(continuous pouring or instilling drops). Now all these are Topical measures came into play and these are called as 'kriyakalpas'

Kriyakalpa(6)- *kriyakalpa* is the main therapeutic process for ophthalmology in *shalakyatanta as thepanchakarma* is the bases of *kayachikitsa* the word *kriyakalpa* built from two words *kriya* and *kalpa*. *Kriya* means therapeutic procedures for *chikitsa* used to cure the disease and *kalpa* means practicable, possible, manner of acting, a prescribed rule so *kriyakalpa* means specific formulation used for therapy in *Ayurveicophthalmology*. It includes selection of specific procedure, preparation of special drug form and finally its proper application to the eyes. When we refer to our classics for the therapeutic measures adopted in the management of eye diseases, we find that the management includes many of the topical treatment along with systemic ones. The reason might be that the drug administered systematically may not cross the blood aqueous, blood-vitreous and blood-retinal barriers, Now the topical measures came into play and these are called as 'kriyakalpas'

Erymology- *kriyakalpa* is formed by two words as *kriya* and *kalpa* word *kriya* refers here to therapeutic procedures which cures the disease without causing any adverse effects while the word *kalpa* indicates the specific formulations adopted for the therapeutic procedures. Hence, the word *kriyakalpa* literally means to perform proper treatment who opines that *kriyakalpa* includes various preparations like *Tarpana*, *putapaka* etc. for the treatment of eye diseases.

Definition of kriyakalpa – No specific definition of *kriyakalpa*

Classification and Indication of *kriyakalpa*- *Acharya Astanga Hridaya* indicated for *Tarpana* in following symptoms and diseases.

Sr no.	Eye Symptoms(8)	Sr.no	Eye diseases(9)
1.	When a pt. seen darkness/blackouts in front of eyes	1.	<i>Kricchronmeelana</i>
2.	In severe dryness of the eye	2.	<i>Siraharsha</i>
3.	Roughness of the eyes	3.	<i>Sirotapata</i>
4.	Stiffness of the eyelids	4.	<i>Arjuna</i>
5.	Falling of eye lashes/Modrosis	5.	<i>Shukra</i>
6.	Deviated eye ball/squint	6.	<i>Abhishyanda</i>
7.	Dirtiness of the eyes	7.	<i>Timir</i>

Tarpana Dravyas-

Ghrita prepared from *kwath* of *kashmary*, *Madhuk*, *Kumuda*, *Utpala*, *Urupaga*, *Kushtha*, *Brihati*, *Tamalamamsi*, *Sariva*, *Prapaundarika*, *Darbhamula* and *kasheru* in milk. This *Ghrita* can be used

*By using *Ajayakrita*, *Agaru*, *Priyangu*, *Nalada*, and *Devadaru* prepare *ksheerapaka* Navaneeta from the curd obtained from this *ksheerapaka* is used for *Tarpana*.

Tarpana duration-

(a) According to *Dosha*

1. *Vata*-1000 *matra*

2. *Pitta*-800 *matra*

3. *kapha*-600 *matra*

(b) According to *Adhithana-*

1. Vartma-100 matra
2. Sandhi-300 mantra
3. Shukla-500 matra
4. Krisna-700 mantra
5. Drishti-800 mantra
6. Sarvagata-1000 manta(10)

How *NetraTarpana* work- By virtue of its *sanskaranuvartana* property *Ghrita* attains the properties in ingredients without losing its own. *Ghrita* is supreme *injangamasneha* and is *Balavardhaka, Ojovardhaka, Vayasthapana, agniDeepana* and *Dhatuposhaka*. *Acharyacharaka* in *sutrasthanasnehadhyaya* explained that “*SnehoanilamHanti*” which means that *snehana* is the supreme treatment for *vataDosa*. He mentioned *AskshiTarpana* as one of the 24 *snehapravicharana* in *sutrasthana* 13th chapter. According to *charaka*, *Ghrita* is effective in subsiding *pittaja* and *vatajadisordes*; It improves *Dhatu*s and is overall booster for improving *ojas*(11).

2) Putapaka- In this process the oily (*ghee*) substance is kept in eye for a specific time by special arrangement simple *ghee* or oil is used as medicine which is the form of suspension so its particles do not leave the eye and contact time is more and more drugs are absorbed. It will cross corneal epithelium barrier easily due to its lipophilic property *putapaka* can be done in all those conditions in which *Tarpana* is done. Those in whom *nasya* (nasal instillation of medications), *Tarpana* and *snehapana* (Treatment in which medicated oils or *ghee* is given for intake in metered doses either everyday or as a part of pre-treatment procedure for *shodhana* vis-à-vis cleansing procedures) are contra-indicated are not eligible to take the treatment after the aggravation of *Doshas* has been subsided(12)

Indications- It is indicated when eye get fatigued after the *Tarpana* i.e. for rejuvenation of eyes *putapaka* is used to give energy to the eyes to overcome from fatigued stage

**putapakayogas* are-

**putapaka* prepared from *nimbapatra* and *lodhra* with *jala*.

*Juice of cooked *Ajayakrita, camel, pig* with *pippali, saindhava, madhu* and *ghrita* prepared as *putapaka* method. This *Ghrita* can be used for *Tarpana*.

*Types of *putapaka*- There are 3 types(13)

1) *Snehanaputapaka* (*putapaka* having or admixed with fats or prepared with unctuous or fat-rich drugs) the below mentioned are used for *snehanaputapaka-sneha* (*ghee* or oil), *mamsa* (meat), *vasa* (meat soup), *majja* (bone marrow), *meda* (fat) and *madhuraushadha* (medicines or drugs having sweet taste)(14).

Indications- It is preferred to be done in a person having *Rukshata* (excessive dryness in the body) or *Rukshanetra* (dryness in the eye), *vata* disorders of the eye.

Duration- It is done for 200 *matrakala*.

2. *Lekhaneeya putapaka* (*putapaka* prepared using drugs having a scraping nature i.e. capacity to scrape off the *kapha* and fat) the below mentioned drug are mixed together and used for *lekhaneeyaputapaka-jangalayakritmamsa* (flesh or meat of the liver of animals and birds living in dry and desert regions), *shunti* (ginger), *maricha* (pepper), *pippali* (long pepper), *krishna* or *kantalohabhasma* (Ash or calyx of magnetic iron), *Tamrabhasma* (calyx or Ash of copper), *shankhabhasma* (Ash or calyx of

conch), (Ash or calyx of conch), *pravalabhasma* (calyx or ash of conch), *saindharalavana* (Rock salt), *Dadhi* (curds etc) (15).

Indications- It is preferred to be done in a person having *snigdhatata* (oily body or excessive unctuousness of the body) or *snigdhanetra* (very unctuous eye). It is preferred to be in *kapha-vata* conditions or *kapha-vata* disorders of the eye.

Duration- It is done for time duration of *100 matrakala*.

3) *Ropaneeyaputapaka* - prepared by the milk, *madhu*, *ghritajangalamansa* and *tikta rasa dravyas*. It is preferred for bringing strength and luster in the eye or in eyes afflicted by *merbif* (16)

Indication- *Pitta*, *Raktaorvata* or eyes afflicted with *vrana* (ulcers) *Acharyavagbhata* names it as *prasadana putapaka* (*putapaka* prepared with nourishing drugs) and indicates its usage in *Drishti Rogas* (vision related disorders)

Duration- *300 matrakala*

(3) *Seka* - *Seka* is defined medicated solution poured as stream from 4 *angula* on closed eye continuously for specific time according to *doshas*. It is more beneficial in those conditions which are strong and cannot cure with *Aschyotana*. In this process "medicine is poured on closed eye (on eye lids) continuously from 4 inches height for a specific time according to *Dosha*". So the medicine is absorbed through skin of lids.

Classification and doses (17)-

(a) *Lekha* (200 *matra*)-*kapharoga*

(b) *Ropana* (600 *matra*)-*pitta and raktaroga*

(c) *snehana* (400 *matra*)-*vata Roga*

Indications-

*Itching in the eyes

*watery eyes

*conjunctivitis

*Burning eyes

*Dry

*Photophobia

(4) *Aschyotana* - It is indicated as first procedure in all eye diseases. Instilling medicated *Ghee*/Drops to eyes for specific frequency. This is useful in dry eyes, myopia, and allergic and inflammatory eye disorders. *Aschyotana* is *adyaupakrama* in which medicated drops are instilled into open eye from 4 *angula* height at *kanineekasandhi* most commonly used medicated drop for *Aschyotana* is *triphthalakwath* containing *amalaki* (*Emblica officinalis*), *Bibhitaki* (*Terminalia bellirica*) and *Haritaki* (*Terminalia chebula*)

Indications- Initial stage of eye disease when *Doshas* are not severely vitiated specially *pitta Dosha*. It is used in eye condition like mild pain, redness, watering, foreign body sensation.

Itching, burning sensation, congestion of vessels etc. It is contraindicated in night.

Classification and Doses (18)-

(a) *Lekhana* (8 drops)-*Kapha Roga*

(b) *Ropana* (12 drops)-*pitta and raktaroga*

(c) *snehana* (10 drops)-*vataroga*

(5)**Aanjana**-The medication applied in the form of ointment to the eyes is termed as *anjana* when the patient has undergone the *shodhana* therapies of *vamana* and *virechana* and the *niraamadasha* are causing eye diseases, then *anjanashould* be done.

Types- these are 3 types

- 1) *Lekhanaanjanas* mentioned for *kapha* predominant conditions.
- 2) *Ropanaanjanas* for *pitta* related diseases
- 3) for *vatajadavyas*(20)

Time of applications of *anjana*(21)

Prasadaanjanas There is different opinion regarding the timing of *anjana* during night due to sleep and in the day time because of the hot rays of sun the becomes weak so it is advised to do *anjana* both morning and evening .while applying in the morning time it should be *kalpasamana* in nature as there is chance of vitiation of the same in the morning while in the evening it is better if it is *pitta samana* as it may make the eye fresh and cool which become weak due to the exposure to hot sun in way the application of in morning and evening surely correct the daily vitiation of *doshas* in a healthy eye. It is not applicable in pathological eye. The other *anjana* opinion is regarding the *theekshnanjana* application of, as it contains *katu, lavana, Amaladreyas* which of boutique combination of *agnivayu* applying it in day time will again harm the eye as there is hot outside but during night the coolness of the moon helps the eye to recover easily from the ill effect of *teekshnanjana* but according to some application of *anjana* in night should strictly avoided to them the *sheet* in night it will cause *stambhana* so the drug cant act properly *acharyasusruta* advises to do *anjana* in morning for *kapha* predominant eye diseases , during diseases it is advised to do in night.

Mode of action:-(22)

After deciding the type and dose of *anjana* the desired amount of it can be applied in the eye using the different *salakas* mentioned for particular purpose i.e. if *lekhanais* the aim of treatment the *salaka* made of *tamra* (copper) is the best option and for *ropana karma a kalalohoya (iron)* *salaka* is better and if *prasadana* is the ultimate aim of treatment one can prefer a *salaka* made of *roopya* (silver) *suverna* (gold) and *anguli* (finger) is also mentioned for the *trupti* asked *theekshnanjana* to move the eye ball after gently closing of the eye application of *anjana* in eye. After applying spontaneously. Rubbing of the lid forcefully and washing of eye should be avoided just after the application of *anjana karma*. when the eye becomes free from the gritty feeling developed after the application of *anjana*. *Netraprakshlana* should be performed with suitable decoction while preparing the decoction the factors like disease , *Dosha* and season should be considered. After washing the eye it should be cleaned with a piece of clean cloth .In conditions like severe vitiation of *kapha*. *Dhoomapana* can be advised after *anjana* . *Theekshnanjanas* are contraindicated for prolonged use and *prathanjanas* are advised for correcting the complications if developed during application of *theekshnanjanas*(23).

(6)**Pindi**- Bandaging a medicated bolus over closed eye for a stipulated time period .as soon as *kavalika* it is indicated *abhishandyaadhimantha*(24).

Indication:-Acute stage of all eye diseases in general and particular *abhishandya* it reduces inflammation produce due to trauma and wound .

7) **Bidalak**:- Application of medicated paste over the eyelids for stipulated time .It is application of medicated paste to eyelids externally except at eyelashes ⁽²⁵⁾.

Indications:- Acute stages of all eye disorder burning sensation, swelling, discharge, redness, pain foreign body sensation etc.

OCULAR PHARMACOLOGY:- These are four method⁽²⁶⁾

- 1) topical instillation in to conjunctival sac. As in the form of drops ointments and gel .
- 2) periocular injection – these include subconjunctival,subtenon,retrobulbar and peribulbar injection .
- 3) Intraocular route- intrachimera injection (into anterior chamber) intravitreal injection (into vitreous cavity)
- 4) Systematic administration :- in the form of antibiotics and steroids eyedrops are the simplest most convenient method of topical application. It is instilled in two form i.e. aqueous suspension.

In solution drugs are totally dissolved but it's

Quickly diluted by tears and drains into NLD so tissue contact time is less in suspension tissue contact time is higher than solution because the drug present as small particles and kept suspended in aqueous medium.

Ointment and gel increases bioavailability of drugs by increasing the tissue contact time and by preventing dilution drainage of active ingredients.

Ocuserts form a system of drug delivery through membrane. These can be placed in upper or lower fornix to a week. The corneal epithelial tight junction and lipid-water-lipid sandwich layer provides mechanical and chemical barrier for the drug absorption .the lipophilic and hydrophilic substance can be effectively delivered permeability across sclera depends on ocular pharmacology the therapeutic effect of *kriyakalpa* can be understandable and conclusion of the effect can be drawn as follows.

CONCLUSION- As in Ayurveda we are applying ophthalmic therapeutics either in the form of local therapy i.e. *kriyakalpa* or in the form of systemic use i.e.oral*chakshushyadravyas* the main aim of any pharmacotherapeutics is the attainment of an affective concentration at the site of action for a sufficient period of time to elicit the response .In practice,therapeutic effect is the attainment of an affective concentration at the site of action for a sufficient period of time to elicit the response.Inpractice,therapeutic effect is found in all types of *kriyakalpa*.It is up to the science to correlate the observations with their scientific explanation . Here in present review article,it is tried to correlate the *ayurvedic* ocular therapeutic i.e.*kriyakalpa* on the basis of modern pharmacology Therapeutic various drugs can be selected according to the stage and types of the disease and can be used in various*kriyakalpa* procedures according to need.In the light of above fundamentals of modern pharmacology ,all the*ayurvedic* ocular therapeutic procedures are relevant as such..Today current methods of drug delivery exhibit specific problems that scientists are attempting to address for example many drugs potencies and therapeutic effects are limited or otherwise reduced because of partial degradation that occurs before they reach a desired target in the body.If orally administered time-release medications deliver treatment continuously rather than providing relief of symptoms and protection from adverse event solely when necessary present conventional system of medicine has topical and systemic administration of drug to the eye which are highly inefficient and there is a need for controlled ,sustained release,particularly for conditions that effect the posterior segment various

non implantable and implantable drug delivery devices have been developed which are far from satisfactory and result in more adverse effects which is driving scientists to research more and more into safe, effective drug delivery methods for all parts of the eyes.

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