CONCEPT OF CORNEAL OPACITY AND ITS TREATMENT

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ABSTRACT

Major refractive and transparent media in the body is cornea. Vision will be compromised due to any injury or infection causes its opacification. It accounts 5-10% of all blindness in developing countries.*Ayurveda* also opines that *Avrana Shukla*or corneal affliction is a disease affecting *Krishna Mandala* which may ultimately lead to disfigurement and blindness. The affection, complications of cornea and vision depends upon the site,spread and density of corneal scars. The treatment has been described as *Abhishyandavat* in the classical texts. Along with that *Lekhyanjana* is very effective in the treatment of *Avrana Shukla*.

KEY WORDS: Corneal Opacification, *Avrana Shukla,Lekhyanjana*

DOI Number: 10.48047/nq.2023.21.6.nq23191 NeuroQuantology2023;21(6): 1920-1924

INTRODUCTION:

Cornea is transparent structure in the whole body and plays major role in the refraction. Any injury, infection to this delicate structure causes corneal opacity which affects vision and accounts for blindness. In *Ayurveda,* corneal opacity can be taken as *Avrana Shukla. Avrana Shukla* is *Shuklata* of *Krishna Mandala* due to *Abhisyanda.* In the management, *Sushrutacharya*had described the use of *Lekhana Aushadhis* which helps in the removal of opacity of *Krishna Mandala.*

CORNEAL OPACITY

The one sixth of anterior eye ball is transparent which is cornea. Cornea is a transparent, avascular, watch glass like structure. Functions of cornea are, it is major refractive media,protects the intraocular contents. Corneal refractive power is three-fourth of the total refractive power of the eye. Histologically it contains Six layers: epithelium, bowman's membrane, substantia propria (corneal stroma), dua's layer (pre descemet's membrane), Descemet's membrane and endothelium. Corneal transparency is the result of peculiar arrangement of corneal lamellae, avascularity, relative state of dehydration, swelling pressure of the stroma[1]

Corneal opacity occurs when the cornea becomes scarred. Thisscar obstruct entering of light rays from cornea to the retina and may cause the cornea to appear white or clouded over. The incidence is very common in economically backward and skilled laborers of rock cutting trade, among persons employed in various processes of thrashing, husking and pounding of paddy.

The most common causes of corneal opacity are infection, injury or swelling of the eye.The risk factors which increases the chance of corneal opacity are Vitamin A deficiency, measles result in scarring/infection of the eye, foreign bodies striking the eye, eye injury from a force or from a chemical agent and other causes which can cause corneal opacity are Herpes simplex virus, conjunctivitis, Keratoconus-progressive thinning of the cornea, Stevens-Johnson syndrome- a skin disorder that can affect the eyes and other congenital corneal abnormalities. It may result blindness, swelling of eyelid, tearing, blurred vision, irritation, sensitivity to light, foreign body sensation in the eye, discharges of eye etc.

Pathological changes that occur in corneal opacification are broadly classified as keratitis, corneal ulceration, scarring and opacification. Keratitis is inflammation of the cornea. It is two types: Superficial keratitis & deep keratitis. In superficial keratitis involvement ofepithelium and Bowman's membrane of cornea on other hand inflammation of stroma is deep keratitis. If inflammation occurs in discrete patches is calledsuperficial punctate keratitis. If superficial epithelial defect occur without any inflammation is known as abrasion or erosion and loss of epithelium with inflammation is called as corneal ulcer. A corneal scar is the final outcome of any inflammation. Scar tissue is white and opaque in varying degrees of severity[2].

Corneal scar results into opacification which can be staged into nebular, macular, leucomatousopacification. Opacification allowing the details of iris to be seen through the opacity is called as nebular corneal opacification. Opacification which is denser, through which details of iris and pupillary margin are not visible, it is called as a macular corneal opacification. If very dense, white and totally opaque obscuring the view of iris and pupil is called as leucomatous corneal opacification. If iris is adherent to the back of a leucoma following healing of a perforated corneal ulcer is called as adherent leucoma. If the iris tissue is incarcerated and incorporated within the scar tissue, as occurs in healing of large sloughed corneal ulcer is called as corneo-iridic scar or if ectatic in nature then it is called as anterior staphyloma[3].

TREATMENT

Treatment may include: Antibacterial, antifungal, or steroidal eye drops, topical or oral antiviral medication.In some cases, scar tissue may be removed surgically. The surgery may be performed using a laser, called phototherapeutic keratectomy (PTK) [4], if the scarring is close to the corneal surface. In more severe cases, a cornea transplant may be necessary.

Although corneal opacities have many causes, there are a few preventive methods to avoid corneal damage.

- **Wear protective eyewear-** Care should be taken to avoid injury to the eye. Wear eye protection glasses during any dangerous activity. Make sure safety goggles are worn tight against the face, otherwise a foreign body can fly up under the goggles and injure the eye
- **Use contact lenses correctly-** Take proper care of contact lenses. Follow your doctor's recommendations regarding wear and tear of them.
- **Have regular eye examinations-** See your doctor right away if you think you have an eye infection, if you have injured your eye, or if you develop any pain or changes in vision.
- **Know your family history of eye disorders.** Because corneal dystrophies are hereditary, you may be at risk if someone in your family have eye disease.

AVRANA SUKLA

The description of corneal opacity finds the same important place in the ancient texts of Indian Medicine as it does today in modern ophthalmology; its equivalent in Indian Medicine is *AvranaSukla*– whiteness of cornea following ulceration.*AyurvedicAcharyas* described *Avrana Shukla* under diseases of *Krishna mandala*. *Acharya Shushrutha* named it as *AvranaShukla.* The literary meaning of *Shukla* is whiteness and *Avrana* means no wound or ulcer i.e. the pure and non-ulcerated whiteness of the *Krishna mandala* which signifies the corneal opacities.The word*Avrana* points out that the ulceration is the chief etiological factor of the disease and the permanent changes taking place at the site of ulcer in the process of healing in its pathogenesis, they known as cicatrial changes. The word *Shukla* has been used to describe the sclera. It indicates that the whiteness of corneal opacity resembles to the whiteness of the sclera and they may have structural similarity also. Moreover according to modern ophthalmology, all conjunctival diseases can spread over the cornea and leads to corneal diseases because of the direct anatomical continuity of the conjunctiva with the corneal epithelium, so *Abhishyanda* is said to be common etiological factor for *Avrana Shukla*. *Sushruthacharya* described indirectly the aetiology of *Avrana Shukla* except a word ie "*Syandathmakam*"[5]caused as the effect of *Abhishyanda*. But now it may be due to extrinsic factors and injury to cornea. *Sushrutacharya* has given *SamanyaSampraptiof Netra roga*.*Vagbhata Acharya* has described due to the vitiation of *kapha*, a white dot will appear over the *Krishna mandala*, which resembles *Shukla Shanka*[6].The main symptoms of the disease are *Shuklatha* of *Krishnamandala*, *AlpaVedana* and *Alpa Srava*[7].*Sushruthacharya*explained it as RaktajaSadyaVyadhiand Acharya*Vagbhata* explained it under Kaphaja*Sadya Vyadhi*[9]

It is interesting to note that there is spectacular similarity in the concept of ancient and present day treatment of corneal opacity also. So far as the principles of local treatment are concerned, they are almost the same. However the advancement in modern surgery is a significant achievement.The chief local treatment for corneal opacity described by *Sushrutha* is the use of *Lekhana* Medicines. The action of such drugs is similar to those irritants whichare used todays modern ophthalmology. Irritants causing hyperaemia helps in the removal of the opacity.

AVRANA SUKLA CHIKITSA

As per the guidelines of our classics, general line of treatment comprising of *Snehana*, *Swedana*, *Siravyadha*,*Virechana,Sirovirechana,Snehabasti*,*Niruhabasti* and local therapies like*Parisheka,Aschotana, Dhumapana,Shirobasti, Tarpana* ending with *Putapaka* which cure *Abhisyanda* should also be administered in this disease[10]. However at present, the effect of few *Lekhana* drugs (eg.*Triphala*) has been evaluated

Thus the combined effect of treatment will help the clearing off debris and fibrous tissue from the opacities and restoration of vision. After all the treatment above explained along with this, *AvranaSukra* can be treated with *Lekhyanjana.*

Ingredients of *Lekhyanjana*[11]	
Powder/ash of *Lohas*	Metals like iron, lead, gold, tin, copper etc.
Dhatus	Mineral ores like *Manashila, Haritala, Gairika*etc
Lavana	Salts like *Saindava*, *Bida*etc

Ratnas	Precious stones like *Vaidurya*, *Vajra, Marakata*etc
Danta	Teeth/tusk
Sringa	Horns of animals
Drugs of *Avasadakagana*	*Kasisa*etc
Lekhyanjana	Scarifying collyrium
Kukkutandatwak	Shells of hen egg
Other drugs	*Lashuna*, *Katutraya*, *KaranjaBija* and *Ela*

Above said drugs are used to make collyrium and is known as *Lekhyanjana*

Lekhana Anjana- scarificantcollyrium. It is made of drugs of five tastes excepting the first one (sweet taste), in five ways with each taste separately, and in accordance to the aggravated dosas. The drugsposess *Lekhana, Kaphahara, Chakshushya, Kanduhara* and *Vedanashamaka* effect. This kind of collyrium by its power makes the *Dosha*sto flow out from veins and cavities of the *Varthma* (eyelids), *Srngataka* (interior of the skull beneath the occipital bone), face, mouth, nose and eyes[12].

CONCLUSION

AvranaShukra is an opacity on *Krishna Mandala* (cornea). The commonest majority of the diseases ultimately leading to blindness and causes permanent disfigurement.*Avrana Shukla*, the *Krishna MandalagataRoga* is one among them.The vitiating factor of *AvranaShukra* is *Raktha/Kapha*.Acharyashave said as curable disease. So for no medical treatment is found effective. The only surgical treatment is keratoplasty. It cannot reach to common man. *Anjanas* are cost effective. Works in the same way of removing opacities.It was observed that *AvranaShukra* was emphasized in all texts and treatment was much stressed because of its severity in causing blindness. *Lekhyanjana* is effective in treating *Avrana Shukla*. If it is affecting superficial layer of cornea then the opacification can be cured on the other hand if it is involving deep layers then can be managed but cannot be cured.

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