

**CRITICAL ANALYSIS OF DRY EYE DISEASE IN MENOPAUSAL WOMAN- AN
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ABSTRACT

The highlight of Menopause is not only Cessation of menstrual cycles and end of reproductive phase of life but also has strong impact before and after which influence women's health for their lifetime. Ayurveda seers have mentioned *rajonivritti* at the age of 50 years which falls under Vata predominating period. Dry eye also known as keratoconjunctivitis sicca or xerophthalmia, is a multi-factorial disease that results in discomfort, visual disturbance and tear film instability with potential damage to the ocular surface on progression of the disease. Postmenopausal women have higher incidence of DED. Large-scale epidemiological studies done in the United States have shown that the rate of DED in women over 50 years old is nearly double that in men over 50, at 7% and 4%, respectively.^[1] Numerous studies have demonstrated that there is a hormonal etiology behind this group's susceptibility to DED.^[2,3] In this article an attempt has been made to analyze the relation between *Rajonivritti* and *shushkakshipaka* as ocular manifestation from the ayurveda perspective.

The word 'Menopause' comes from the Greek word 'Menos' (month) & 'Pausis' (cessation).

Menopause is a natural phenomenon occurs at the age of 45-55 years. After the age of 40 years, ovaries reduce their production of sex hormones as a result, the menses as well as other body functions are disturbed. Finally the menses cease permanently. This ultimate pause is described as menopause.^[4] Irregular periods, hot flushes, night sweats, vaginal dryness itching and mood swings--all these are typical symptoms of menopause. Osteoporosis, heart disease, Alzheimer's disease (progressive loss of memory and concentration), Dry eye disease/Kerato conjunctivitis sicca are the long term, hazards of menopause.^[5] The group of signs and symptoms associated with the phase of menopause are termed as menopausal syndrome.

Menopause is because by the nature declining functions of the ovaries which gradually produce lower and lower the levels of hormones oestrogen, progesterone, and testosterone. Other causes include surgery that removes both ovaries due to pathology or some type of chemotherapy

Rajonivrittikala (Cessation of menstrual cycle) is mentioned by almost all *Aacharya* without any varying opinions. *Rajonivritti* as a diseased condition is not described separately in the classic, According to

Sushruta and various other references (*Astanga Sangraha*) to 50 years is mentioned as the age of *Rajonivritti*.^[6,7] Though *Rajonivritti* is not described as a pathological condition or severe health problem, but can be considered under *Kalaja Vyadhi* when it happens at normal period and *Akalaja vyadhi* when it occurs early due to pathological causal factors.

Although in *Ayurveda* Menopausal symptoms are regarded as "imbalance of the *Dosha* (*Vata*, *Pitta*, *Kapha*) which occurs as a natural and gradual consequence of aging, the age limit is dominated by "*Vata dosha*" and obviously it easily get vitiated during this time.^[8] This dominant *vata dosha* will have effect all over the female body including all anatomical as well as physiological factors by virtue of its characters i.e. "*laghuta kharata* and *rukshata*". According to *Acharya Sharangadhara* at the age about 40 years and later the bodily changes occurs and after the age of 50 years the changes in the skin occurs which talks about the declination process naturally where *Vata* will be predominant.^[9]

The signs and symptoms of menopausal syndrome can be analyzed from *doshic* aspect as follows:

- Dryness in vagina, extremities getting cold, difficulty in getting sleep, mild to variable hot flushes (Invariable), anxiety, panic, nervousness, mood swings, dry skin,

palpitations, bloating and constipation can be attributed to **Vata dominant symptoms**.

- Angry, irritability, excess hot flushes, night sweats, extremely heavy periods with burning sensation, skin rashes, associated complaints such as UTI (urinary track infection) can be attributed to **Pitta dominant symptoms**.
- Weight gain, heaviness, lethargy, depression, lack of motivation, hormonal changes such as Thyroid malfunction, fibrocystic changes in uterus or in the breast and excessive fluid retention can be attributed to **Kapha dominant Symptoms**.^[10]

Rajas being an *upadhatu* of *Rasadhatu*, with aging generalised *vatavriddhi* and *kaphakshaya* take place which further causes *Rasadhatu kshaya*. Dalhacharya also states after the age of 50 years due to ageing the body undergoes deterioration.^[11] The main nourishing *Rasadhatu* will be decreased both qualitatively and quantitatively and ultimately resulting in its *upadhatu Artavakshaya*. Due to this factor along with generalized *vata vriddhi* according to age their increases *laghu, ruksha, khara guna* and causes *shosha*.

Approximately 8% of the world population is suffering with dry eye, of which 78% are women. A number of contributory factors affect the severity of dry eye syndrome, including autoimmune disease, anatomical features, environmental surroundings, contact lens use, unmodified life styles, hormonal changes, chronic inflammation, infections, and iatrogenic factors, such as medications or surgery.^[12] Dry eye disease can hinder the performance of activities of daily living and is associated with an overall decrease in quality of life.^[13]

Dry eye disease (DED) is defined by the International Dry Eye Workshop as, "A multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface."^[14] This can cause debilitating symptoms including burning, foreign body sensation, and decreased vision and affect activities of daily living.

Dry eye is believed to be a disturbance of the ocular surface functional unit. The ocular surface functional unit comprises the ocular surface (cornea, conjunctiva, meibomian glands), lacrimal glands, lids and the sensory and motor nerves that connect them. The overall function of the lacrimal gland functional unit is to preserve the integrity of the tear film, the transparency of the cornea, and the quality of the image projected onto the retina.

The tear film has three major components – the aqueous layer secreted by the lacrimal gland, the lipid layer secreted by the meibomian glands, and mucin secreted by the conjunctival goblet cells. Tear production,

evaporation, drainage, health of corneal epithelial cells, corneal subbasal nerve plexus and corneal inflammatory and immune status interplay to maintain ocular surface homeostasis. By influencing the above-mentioned mechanisms, sex hormones play a role in pathogenesis of DED.

A reduction in sex hormones, such as androgens, occurs in both males and females with increasing age. The hormonal changes that accompany menopause can also play an important role in the production of dry eye symptoms. A significant decrease in androgen levels is also associated with meibomian gland dysfunction.^[15]

Both androgens and estrogen have known effects on the synthesis and components of the tear film. Sex steroid receptors are present on the meibomian glands, which are the sebaceous glands on the eyelids responsible for producing the oil component of tears that prevents evaporation. Androgen binding results in synthesis and secretion of lipids from these glands, while low estrogens actually cause a decrease in lipid production. For this reason, decreased levels of estradiol are believed to be a risk factor for dry eye.^[16]

Menopause may play an important role in the development of dry eye. The impact of hormones on the incidence and course of dry eye, especially in postmenopausal women has been noted. Researchers have demonstrated the presence of α -type and β - type estrogen receptors in the epithelia of several ocular tissues and have suggested that sex steroid hormones may play a role in the development of certain ocular diseases. Evidence demonstrates that the meibomian glands of the lids contain androgen, estrogen and progesterone receptor mRNA and protein within the acinar epithelial cells, and that these respond to androgen precursor by increasing their production and release of lipids. Studies conducted have clearly demonstrated that the meibomian gland is an androgen target organ and that androgens impact meibomian gland function, regulate the quality and quantity of lipid produced and promote the formation of the tear film lipid layer. Hence, any deficiency associated with androgens can cause meibomian gland dysfunction and an increase in the signs and symptoms of dry eye. The decline in the levels of total androgen with ageing in both sexes, particularly in females upon the onset of menopause, coincides with the increased appearance of meibomian gland dysfunction and ageing.^[17]

Clinical Considerations In Dry Eye Disease: Clinically, patients present with symptoms of dryness, burning, blurred vision, tearing, and light sensitivity. Medical history, surgical history, concurrent medications, environmental exposures to allergens, smoking, etc., need to be evaluated to identify potential contributing factors. On ophthalmic examination, decreased tear lake with increased tear breakup time is seen. Corneal surface staining is seen on slit-lamp

bimicroscopy. Schirmer's test shows decreased tear production in aqueous deficiency. Increased tear osmolarity and decreased levels of lactoferrin and lysozyme are seen. First line of treatment is lubricating eye drops. If ineffective, second line of treatment includes anti-inflammatory medications such as steroid eye drops and immunomodulatory eye drops such as cyclosporine. In severe cases, depending on underlying cause, punctal occlusion, eyelid corrective surgery, and interventions such as scleral contact lenses and autologous serum tears may be indicated.^[18]

The condition dry eye can be well compared to *Sushkakshipaaka* (*Sushka*=Dry, *Akshi*=Eye, *Paaka*=inflammation) explained in Ayurveda owing to its simulating clinical features and pathogenesis Dry eye disease.

Shushkakshi paka is a *Vata Pitta* predominant disease according to Vagbhata and *Vatika* according to Susruta. The disorder is characterized by difficulty while closing the lids because of Hardness and Roughness of the eye lid (*Daruna Rooksha Vartma Yat Kunitam*) Patient cannot see the Objects Clearly (*Avila Darshana*), Difficulty in Opening/Closing the Eye (*Sudarunam Yat Pratibhodanam*). According to Vagbhata it is characterized by Foreign Body Sensation (*Gharsha*), Pricking Pain (*Toda*), Loss of Clear Vision (*Upadeha*), Hardness and Roughness of the Eye Lids (*Rooksha Daruna Vartma*), Difficulty in Closing and Opening of Eye Lids (*Krichra Unmeela Nimeela*), Dryness (*Shushkata*), Pain (*Shoola*), Suppuration (*Paka*).^[19,20] *Madhavakara* and *Bhavamishra* adds Burning Sensation in Eyes (*Samdahana*) along with the above said symptoms.

The symptoms explained in Ayurveda like *gharsha*, *thoda*, *bheda upadeha* are seen in association with *prakopa of vata*. *Rookshatha of vartma* which is a hall mark of *Shushkakshipaka* and feeling of dryness of eye in dry eye patients has been explained in modern texts.

DISCUSSION

Accomplished by estrogenic and androgenic receptors on the Cornea, Conjunctival epithelium and Meibomian glands it helps in production of tear film which includes aqueous, lipid, and mucin layer. Various mechanisms such as decrease in hormonal levels, shift in feedback mechanisms, and changes in receptor receptivity interplay to alter the ocular surface homeostasis and subsequently results in dry eye. On analysing through our science it can be emphasized that there is a involvement of *Vata dosha* and *Rasa dhatu dushiti* during this stage in pathology. *Shushkakshipaka* which has metagorical features with Dry eyes of compendia also has *Vata* and *pitta* as Pathogenesis.

In contemporary Ayurvedic medicine, a treatment course is always individualized, and will generally be based on individual *dosha* imbalances (*Ayurvedic Vikriti*) rather

than treatment of specific symptoms. The symptoms occurring in menopausal syndrome like; sleep disturbance, irritability, hot flushes, etc. can be co-related with *Vata Pittaja lakshana*. As Rajonivritti deals with Jaravastha with increased Vata and Shushkakshi paka has Vata dosha in Samprapti Rasayana therapy is the line of treatment for prevention of longterm effects of depletion of Dhatus in place of Hormone Replacement Therapy (HRT) which has its own limitations.

When the secondary effects like sushkakshi paka has already established chikitsa is aimed at samprapthy vightana or interfering in the disease pathogenesis. As a first line of treatment *Vatahara* treatment is done and in later stages when inflammatory changes takes place *Pitta* involvement has to be considered and *Pittahara* treatment is to be adopted. *Hetuprathyaneeka chikitsa* by avoiding aggravating factors and *Panchakarma* (Detoxification therapies) to correct agnidushti also play a key role.

Various regulated principles of management are in place addressing the manifestations of clinical complications in Ocular surface by reaching the target tissues and receptors for enriching the structures, and thus extending milestone in recovering from dry eye symptoms. *Ghrta Pana* (Oral administration of Ghee), *Tarpana* (Bathing of eye in Medicated ghee) with *Jeevaniya Gana Dravyas ghrta*, *Nasya* (Instillation of Nasal drops) with *Anutaila* or any *Brimhana Taila*, *Pariseka* (Pouring of medicated liquid over closed eye) with *Saindhava lavana and Ksheera*, *Anjana* (Application of collyrium) with *Saindhava, daru, shunti, Matulunga swarasa*, can be additional treatments adopted in the condition along with general line of treatment for Rajonivrutta sambandha vyadhis vis-a-vis Menopausal Syndrome.

CONCLUSION

The alteration of sex hormones plays an important role in the pathophysiology of DED in perimenopausal and menopausal age group. DED remains very underrecognized in this group. In the period of Rajonivrutti occurrence of *Shushkakshipaka* under sarvagata netraroga can be well justified based on the influence of *Dosha & Dhatu*. In mild cases often, simple measures such as *Aschyotana* (Instilling eyedrops) with *Goghrita, Jeevanyadi ghrta* and *Pratimarsha Nasya* with *Anutaila* will provide lubrication and relief from signs and symptoms. In moderate and more severe cases, along with *Rasayana* mentioned for *Rajonivrutii, sthanika kriyakalpa* mentioned for treating *Shushkakshipaka* like *Bidalaka, Seka, Tarpana* and *Nasya* can be a replacement for surgical intervention when done periodically. It is important for the practitioners of *Prasooti tantra* and *Streeroga* to understand Dry eye disease to recognize, treat, and seek *Shalaki* intervention wherever applicable. Dry Eye disease itself cannot be prevented, notably because of permanent hormonal variations. Early evaluation and

preventive therapies from *Netra Shalakyas* can always ease the discomfort and further complications.

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