A Comprehensive Analysis of Nidana for Netra Rogas as explained by different Ayurveda instigators in the specific context of Netra Shalakya

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ABSTRACT

Ayurvedic way of diagnosis has two basic components mainly Rogapariksha and Rogipariksha. Among them Rogapariksha gives us the detailed knowledge about a disease starting from the etiological aspects to the actual manifestation of disease. The five basic components of Rogapariksha are Nidana, Purvarupa, Rupa, Samprapti and Upashaya, which are collectively known as Nidana Panchakas. Nidana, the foremost component among them not only gives the knowledge of causative factors but also helps in treatment by avoiding them. Among all the Indriyas, Netra is said to be Pradhana, thus a special care and concern should be taken to protect it. Understanding the strength of the causative factors for eye diseases will help to execute the treatment appropriately and maintain the healthy vision. Thus an attempt is made to analyse the Netra Roga Nidana in this presentation.

Key words: Nidana, Causes, Netra Roga.

INTRODUCTION

The eye is the most important and most complex organ of the human body. The functions of human eye is not less than that of a camera. Proper efforts should be made in order to protect the eyes. Vata, Pitta and Kapha, which are responsible for normal functioning of the body, when vitiated, leads to disease.

Many Nidanas has been stated in different texts and for the manifestation of the disease it has several etiological factors which contributes. These Nidanas holds good to understand not only the existing disorders, but also the trending new diseases and changing pattern of old diseases.

The human senses are our contact to environment. We perceive upto 80% of all impressions by means of sight. If all other senses like taste, smell etc. stop working it’s the eyes that protect us from danger. So proper eye care and eye wear at every stage of life is important in order to avoid curable blindness and preventable blindness a part of global initiative ‘Vision 2020’ which starts from avoidance of causative factors itself.[1]

Table 1: Showing different Nidanas explained by different Ayurveda Acharyas.

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**Analysis of Nidana of Netra Rogas from the clinical aspects**

There are specific group of *Nidanas* which are responsible for vitiation of *Doshas* in the eyes likewise the vitiation of *Doshas* which are specific to particular organ. The *Nidanas* as explained in the classics can be further grouped as follows,

1. Aharaja
2. Viharaja
3. Rutu Viparyaya
4. Manasika
5. Agantuja
6. Bhesaja
7. Nidanarthakara
8. Sankramika

**1. Aharaja Nidana**

**Pittakopakara Ahara:** The Agneya Bhavas of *Pitta* Kopakara Ahara deranges eye. These Aharas possess Katu and Amla Rasa, Teeksha, Vyavayi, Visada and Sara Guna, Ushna Veerya and Katu Vipaka that afflicts *Pitta* and *Rakta* and results in *Daha*, *Paka* and *Raga* which can be understood as inflammatory changes.
Eg: Kumbheeka (Multiple stye), Abhisyanda (Conjunctivitis), Pilla (Inflammatory diseases).

a. Excess intake of Shuktha and Aranala: Shuktha and Aranala are Sandhana Dravya produced by fermentation. They contain histamines and thereby produce more histamines, acts as vasodilator leading to allergic manifestations.


c. Excessive intake of Kulatha: It is also a Vidahi Ahara. It has high level of crude proteins that can effect on energy concentration and impair the overall metabolism. Pentosan present in Kulatta can even lead to inflammatory changes.

d. Excessive intake of Madya: Madya is toxicating in nature. It increases the amounts of methyl alcohol in body. Methyl alcohol metabolizes very slowly and oxidised into formic acid and formaldehydes in tissues, causing degeneration of ganglion cells, a main factor to cause toxic amblyopia.

e. Excess intake of Kshara, Teekshna, Ushna, Katu Aharas: Kshara increases the body pH there by increasing the pH of eye also. Excessive intake break down into hydroxyl ion and cation which saponifies the cell membrane and interacts with collagen and glycosaminoglycans producing the stromal haze. They also cause epithelial defect and ciliary body irritation.

Katu Ahara stimulates the pain chemicals called prostaglandins. They are powerful local acting vasodilators. These type of food inhibits the aggregation of platelets leading to inflammatory changes and desensitizes the neurons causing pain.

Kaphakopakara Ahara: The Kaphakopakara Aharas mainly possess Madhura Rasa, Guru, Snigdha, Picchila Gunas and Madhura Vipaka. It causes Jataragni Mandya and Dhatvagni Mandya leading to Srotorodha and Maal Sanchaya. Acharya Charaka has stated that the Netra will always have threat from Kapha, thus excess Kapha accumulation is to be avoided. Eg: Kaphaja Timira (cataract), Krimigranthi (Blepharitis), Sleshmopanaha (lacrimal cyst), Shopha (peri orbital swelling).

a. Excess intake of Masha: Masha increases the level of oxalates in the body, decreases the iron levels that are needed for formation of RBC thereby increasing oxidative stress and damaging the surrounding tissue. When they deposit in the eyes interferes with transport of glutathione.

b. Excess intake of Drava Anna: Abdominal pressure increases and further increases extracellular fluid volume. This exerts pressure in arterioles specifically the micro circulation in eyes causes occlusions and inflammatory changes. The fluid retention also takes place beneath the skin causing localized swelling.

c. Excess intake of Sheeta Aharas: Intake of cold potency food lowers the metabolism and alters the digestion. The nutrition absorption and excretion also gets affected and thus it lowers the immunity. It hampers the normal circulation and nutrition leading to weakness.

d. Excess intake of Guru Aharas: If heavy food consumed rich in carbohydrates, blood sugar level will rise higher than normal levels and take long time to return to normal. The increased glucose level accumulates excess glucose in the lens. To dilute this glucose, lens also absorbs more fluid which changes the shape of the lens.

Ahara Vidhi

a. Virudha Ahara: results in Dosha Utklesha and increases Guru, Snigdha and Picchila Gunas, further leads to Abhisyandi Srotas, Srotorodha and Netramala Sanchya with Kapha predominant Netrarogas. The Viruddha Aharas causes Dhatu Utklishta and deranges the vasculature and permeability of the vessels.

b. Asatmya Ahara: Intake of Asatmya Ahara results in Ama Uttpatti. Further it causes Jataragni Mandya leading to Kapha Utkleshana and Srotorodha. The vitiated Kapha intern vitiates
Pitta causing Netra Rogas. The Ama Lakshan as explained in texts are Raga, Shopha, Srava, Shola, Daha which indicates the inflammatory changes.

By the intake of incompatible foods (milk and fish together) and high saturated fatty foods (diary products, red meat) regularly leads to increased deposition of cholesterol and saturated fat in the body and affects circulatory system. This leads to decreased blood supply and intum oxygen supply and this in turn causes plaque formation in the macular vessel which slows down the blood flow.

2. Viharaja Nidana

Vatakara Vihara: Due to Vatakara Vihara the Ruksha, Khara Guna increases and does Shoshana, impairs the Pranavata and Vyana Vata and Indriya Grahana Shakti is altered. Eg: Timira [Hypermetropia, Accomodation problem, Cataract, macular degeneration, Toxic ambyopia, Valsalva retinopathy], Shushkakshipaka (Dry Eyes), Arma (Pterygium), Abhisyanda (Allergic conjunctivitis, Uveitis), Balasagrathita (pingueculae).

a. Doorekshanath: Looking at very distant objects for a long time like drivers, shooters, archery, working with telescopes.

b. Sukshmanireekshanath: Watching minute objects for longer duration like in tailors, embroidery workers, computer users etc where there is the focusing of the eyes for prolonged periods on a fixed object which are held very close.

c. Vividha Roopa Prekshana: On continuos observation of different kinds of objects.

d. Sakampenapi Karmana: Working with vibrating hands like drillers, drivers driving on bad roads.

Research study states range of vision of normal eye is from 60mts to about 25cm and anything beyond this limit always gives strain to ciliary muscles. When a person works with vibrating hands or gazes continuously, visualizes the moving objects, pupils are constricted causing strain to the ciliary muscles. As a result of these factors the spasm of accommodation occurs i.e. exertion of an abnormally excessive accommodation and causes difficult in sensory perception. On starring continuously the blinking rate also will reduce, which make tear film to evaporate fast. All these factors constitute the Atiyoga and Mithya Yoga of Indriya.

e. Srantha Klantha: Fatigue and tiresome eyes due to over usage of eyes in any type of work. When the eyes are used intensively leads to strain on ciliary muscles and accommodation which could be could be due to several reasons. Due to sustained accommodative efforts patient develops asthenopic symptoms.

f. Atisheegrayanath: Running, travelling by bike like walking or running very fast, riding bikes without covering face or protecting eyes. By the above said factors oneself is exposed to the speed blow of air or dust which leads to leads to hyperplasia of conjunctiva. Hyperplasia ultimately encroaches cornea destroying the bowmans layer, superficial tissue. Rash driving can also lead to decreased peripheral vision as the visual field narrows on increasing the speed.

g. Atimaithuna: Excessive indulgence in sex results in Dathu Kshaya. Studies have revealed there will be drop in Estrogen and Androgen levels by indulgence in more sex. Further studies have proved the presence of receptors in epithelial cell of lacrimal gland, Meibomian gland and conjunctiva which causes Meibomian gland dysfunction, tear film instability and disturbs the regulation of immune system and alters the secretory functions of Lacrimal glands.

h. Maloshna, Sankatana, Paadapeedana: Causing strain or damage to foot like not wearing foot wear, excessive cycling, wearing pointed heels. There are certain postulations that the feet have mechanical receptors of the nervous system. These receptors are sensitive to touch, so whenever there is any sort of blow, injury to the feet/soles it can affect eye also.

i. Swapna Viparyaya: Abnormal sleepping habits keeping awake at night (Ratri Jaagarana).
Decreased oxygen supply to the brain causes loss of cognitive abilities and involuntary, spontaneous, localized quivering of ocular muscle occurs and also leads to excessive stress to ciliary muscles cause defects in accommodation.

j. **Vega Vinigraha:** Suppression of natural urges like Mootra, Vata, Vit, Shukra, Jrumbha, Asru, Kshavathu causes Vata Prakopa.
   - Mootra Nigraha - causes Shiroruja.
   - Vata and Vitnigraha - Shira Shoola and Drusthi Vikara.
   - Vegadharana causes vitiation of Vata specifically Apana which becomes Pratiloma, further affects Prana and Udana in turn Indriya Pravrutti. Viguna Vata results in Shoola. Shukra Nigraha causes Mootra Vibadha thereby causing Shiroruja.
   - Jrumba Nigraha - Shiroroga and Akshi Gourava.
   - Kshavathu Nigraha - Shirashoola and Indriyanam Dourbalyatha.
   - The pressure exerted by controlling these urges increases the pressure within the globe, causes pain. In advanced stages causes vaso dilatation leading to haemorrhages in Shukla Mandala or Drishti Mandala.
   - Bhashpa Nigraha - Akshi Roga

There may decreased production of tears by the lacrimal apparatus due to clogging. This further causes instability of tear film, dryness of ocular surface occurs.

k. **Avakshirashayana** (Sleeping on head low position): Due to gravitational pressure there occurs compression to blood vessels. Sleeping on head low position/upside down face against pillow will tend to increase the pressure over optic nerve.

l. **Uchrithashayana** (Sleeping in head up position): Decreased blood circulation to head and thereby hampers the metabolism to eyes

m. **Atilangana (Excessive fasting):** Fasting leads to hypoglycaemia. Decreased supply of glucose and thereby reduces energy production. Retinal cells will not be able to meet the metabolic demands and there will be deficient in retinal function.

n. **Bahubaaranaam (Carrying heavy loads over head):** Sudden increase of intra thoracic pressure against a closed glottis leads to rupture of retinal capillaries.

o. **Thailabyanjana Varjanath:** Increases Rooksha, Khara and Shuskshma Guna in Netra.

**Pittakara Viharas:** The Pittakara Vihara serves as Achakshushya and in turn does Rakta Dushti leading to Syanda Srotas. Increases the Teekshna and Saraguna of Pitta, in turn causes Rakta Dushti and Syanda Srotas disturbs the Tejo Guna causing Indriya Grahana Dourbalya. Eg: Abhisyanda (Conjunctivitis), Adhimantha (Glaucoma), Pitta Vidagdha Drishti (Day blindness), Dhoomadarshi (haziness of vision)[13]

a. **Ushnabhitaptasya Jalapraveshath:** Alternative usage of cold and hot like immediately immersing in cold water after exposing to sun or heat, Bathing in hot water and drinking cold water, Entering into AC compartment soon after exposure to heat/sun.[14]

Due to these factors there will be imbalance in serum electrolytes and the variation in temperature causes loss of tissue integrity as the fine balance between hot and cold is maintained by the eyes and further circulatory disturbances occurs.

b. **Rajodhumanishevana:** Excessive exposure to dust, smoke and other pollutants like smoking carbon dioxide emitted from vehicles, factories.

The anterior segment of the eye, cornea and conjunctiva are directly exposed to external environment. Due to these irritants potential oxidative damage evokes and ocular injury occurs due to oxidative stress as there causes the imbalances between the oxidants and anti-oxidants in favour of oxidants causing oxidative stress. Infective organisms of the atmosphere may cause infection to conjunctiva and sclera.
On excessive exposure to dust (containing grass, pollens, spores etc.) leads to immediate hypersensitivity reaction mediated by IgE and mast cell activation.

**Kaphakara Viharas:** Kaphakara Viharas does Dosha Utkleshana interacts with Rakta and Pitta of Netra and leads to Syanda Srotas. Eg: Abhisyanda (Conjunctivitis), Sleshma Vidagdha Drishti (Night blindness), Pothaki (Trachoma).

a. **Swapna Viparyaya:** Divaswapna - sleeping during day time like working in night shifts and late night hours and sleeping during day time. The fluid in eye, the aqueous humour fails to drain properly. Further making it susceptible for nerve damage.

b. **Abhyanjane Nithanthena (Excessive oil massage):** Increases Snighdha, Pichhila and Guru Gunas, does Dosha Utkleshana.

c. **Vega Vinigraha (supression of vomiting):** Chardi Nigraha causes Akshi Khandu.

3. **Rutunam Viparyayena (Seasonal Variations)**

The seasonal eye diseases are produced when the person is not following proper Rutucharya. Eg: Person indulging more in Pittakara Ahara Vihara in Varsharutu Rutu causes Abhisyanda (Keratoconjunctivitis).

Seasonal eye changes are produced due to change in the climatic conditions. The conjunctiva of eye is more sensitive than skin. In the warm climate, there will be hyperplasia of epithelium of conjunctiva and it sends downward projections to sub epithelial tissues. Cold climate can constrict the blood vessels in the eyes and can even restrict the normal metabolism of cornea according to many researches. Both these conditions can be painful and compromises to the visual clarity. In addition to the causation of pain caused, both the cold and hot weather can even lead to dry eyes (tear film evaporates quickly).

4. **Manasika Nidana:** Manasika Bhavas are also other set of etiological factors involved in the manifestation of Netra Rogas. Either of the emotional factors such as Bhaya, Krodha and Shoka cause vitiation of Doshas both at physical and psychological level leading to manifestation of disease. These emotional factors cause derangement of Saririka Dosha Viz:

- **Prasakta Samrodhana** (continuos weeping), Bhaya (Fear), Shoka (grief), Klesha (stress) causes Vata Prakopa.
- **Kopa** (anger) causes Pitta Prakopa.

a. **Prasaktha Samrodhana:** Continuous wheeping for longer duration, causes stimulation of lacrimal glands and thereby secreting more fluids and washing away nutrients and bacteriostatic activity of conjunctival sac. conjunctival sac and lacrimal apparatus looses its defence mechanism against diseases.

b. **Bhaya:** Fear is the reinforcement of a safety signal. It is autonomic neuro endocrine action causes muscle twitching, increases heart rate, leads to sudden dilation of pupil.

c. **Shoka & d. Klesha:** Grief - A variety of emotion and Klesha - Stress leads to vitiation Shareerika and Manasika Doshas. Studies have reported that frequent changes in the endocrine, immune, autonomic nervous and cardiovascular system towards the biology of grieving. All of these are fundamentally influenced by brain functions and neuro transmitters and further have impact on Eyes.

e. **Kopa:** (getting anger) When in anger the adrenaline shoots up and as a result the pupils will be dilated causes perception of more light. When pupils are dilated blurrness can be noticed as a reaction to the over perception of light. Profound vasodilatation also occurs due to activation of autonomous nerve system.

5. **Agantuja Nidana**

a. **Abhighaatha:** Minute irritating injuries like abrasions and lacerations to severe injuries like penetrating and perforating injuries. If proper care is not taken can also lead to blindness.
b. **Salilakreeda:** (No protection to eyes while playing water games.) Chance of entry of contaminated water into eye leading to inflammatory changes. [Eg: *Abhisyanda* (Swimming pool Conjunctivitis), *Savrana sukra* (Corneal abrasions)]

c. **Keetamakhika Sparshadibhi:** (Bite of insects, mosquitos etc.) Causes injury, may release toxin, act as foreign body.

d. **Chandragraha, Nakshatra Kramana:** By visualising lunar eclipse, constellations it can lead to ciliary muscles strain in eyes. The penetrating and high illuminating rays can lead to retinal damage.

e. **Divakara Agni Tejasa, Ratnam Vilokanacha:** (By the glare of sun and by visualising the *Tejas* of *Agni*, looking into precious stones.)

By these factors retinal damage occurs due to photochemicals rather than thermal injury. By sungazing though there is 4 deg C increase in temperature insufficient to photo coagulate, the light promotes oxidation, chemical reactions occur in exposed tissues with unbonded molecules. The duration of exposure is necessary to cause injury and it varies with the intensity of light. Eg: Macular burn or photic retinopathy.

6. **Bheshaja:** (Mithya and Athiyogas of certain treatment procedures result in development of eye diseases)

   a. **Atiswedana:** The vasculature will be altered leading to dilatation of vessels leads to *Pitta Prakopa Netra Rogas*. Only mild *Sweda* is indicated for eyes, otherwise the above said complications will occur.

   b. **Vamanatiyogath:** *Atiyoga* of *Vamana* can cause *Akshiyovryavrutti*. *Ativamana* does *Vata Prakopa* leading to *Vata* predominant eye diseases. Upward pressure exerted during *Vamana* causes the fragile vessels of eyes to rupture and bleed. Eg: *Timira* (Valsalva retinopathy), *Netra Shoola* (Ocular pain), *Arjuna* (Subconjunctival haemorrhage).

c. **Anjana:** Applying *Teekshna Anjana* to already tiresome eyes can also lead to disorders of eye. Local irritation, excessive lacrimation, damage to conjunctiva, cornea etc. will take place. Eg: *Sirajola* (Haemangioma), *Sira Pidaka* (Limbal nodules).

7. **Nidanarthakara**

   a. **Jwaropatapa:** (High fever or Sun stroke) Due to high fever or sun stroke along with *Shiras* even *Netra* is also affected. *Acharya Charaka* in *Chikitsasthana* 3rd chapter has clearly mention *“Deha Indriya Manastapi”* and *“ Indriya Tapina Timiradaya”*. Since the cardinal feauture of *Jwara* is *Santapa* it affects eyes also. Eg: *Netra Raga* (Congestion), *Daha* (Burning sensation), *Timira* (Blurred vision).

   b. **Granthi:** Glandular disorders have impact on eyes like Swelling around the eyes in Hypothyroidism.

   c. **Meha:** As a complication of *Meharoga*, eyes can also be affected. Diabetis mellitus leading to diabetic retiopathy.

8. **Netraabhisyanada as an Oupasargika Roga:** The Nidanas stated are *Prasangath*, *Gatrasamsparshath*, *Nishwasa*, *Sahabhjoana*, *Sahashayyasanath*, *Vastramalyanulepanas*.

**CONCLUSION**

Understanding the *Nidana* helps to assess the *Dosha* vitiation, helps to decide *Sadhya Asadhyata* of the *Vyadhi*, analyse the *Samprapti* and proper planning of the treatment. If the *Nidanas* are not addressed and avoided the best treatment modalities adopted to manage the condition will not be beneficial and thus our *Acharyas* have clearly stated “Sanksepataha Kriyayoge Nidana Parivarjanam”. *Nidana* may work individually, work together cause *Dosha Prakopa* leading to new disease, aggravates an existing disease and stimulates *Doshagati*. Under WHO, a global action plan “2014 – 2019” is intended to serve as a roadmap to consolidate joint efforts aimed at working towards universal eye health in world. The prime objectives includes expanding comprehensive integrated eye care services that respond to the major causes of
visual impairment and creating awareness for proper care of eyes as by which the prevalence of visual impairment can be reduced to a extent.

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