



Review Article

CONCEPT OF PRATHAMA PATALAGATA TIMIRA IN CORRELATION WITH MODERN COUNTERPART: A REVIEW

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ABSTRACT

Eye is a highly specialized sense organ serving the most important function of vision. Vision is the most vital of all the senses. Almost 90% of knowledge is perceived only through eyes. Humans are mostly dependent upon the vision for their day to day work. Hence any hindrance to this means a major handicap. Ayurveda advises that all sincere efforts should be made to protect the eyes as long as one is alive. Ayurvedic classical texts have mentioned about eye and its diseases since *Vedic* and *Samhita kala*, thus showing the importance of eye and ways to protect it. In Ayurveda, clinical features related to visual disturbances are generally seen in *Dristigata roga*. The anatomical consideration of the *Patala* and symptoms of the vitiated *Dosa* situated in these *Patala* reveals that the word *Timira* which is described as an ocular pathology in Ayurveda, is nothing but error of refraction. The part of clinical features of *Timira (Pratham Patalagata Timira)* can be correlated to myopia. Myopia is a common refractive condition that can affect the clarity of vision, limit occupational choices, and contribute to increased risk for vision threatening conditions. Myopia commonly known as short-sightedness is the most common ocular disease in the world which substantially graves the social, economic and educational life. It is a type of refractive error in which parallel rays of light coming from infinity are focused in front of the retina, when accommodation is at rest. Poor distant vision is one of the main symptoms of myopia. Thus, on the basis of symptoms of *Timir roga* and simple myopia a correlation can be established between the two diseases.

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INTRODUCTION

Salakya Tantra is one of eight branches of Ayurveda which has evolved a long time ago. It deals with the etiology, diagnosis, prognosis, prevention and treatment of diseases that are located above the *Urdhwa jatrugata* i.e. eyes, nose, head and ears. In this branch the prime importance is given to *Netra*^[1], as it is considered as *Pradhana* among all *Indriyas*. Importance of vision has been explained in *Samhita* as: 'A person who desires for a long life must take care of his eyes throughout the life, as for a blind man there is no difference between day and night'. Henceforth even though he

has wealth, he will not be able to enjoy the life. So, protection of eyesight is the top most priority of *Salakya tantra*, since the loss of vision completely disables a person.

Timira

The term *Timira* is derived from root '*Tim*' (meaning the increase of watery substance in the eye or loss of light perception) with '*Uaadi*' suffix '*Kirach*' to form the *Timira*^[2]. *Timira* has been mentioned in *Uttartantra*, in terms of involvement of successive *Patalas*. In *Amarakosa*, the meaning of *Timira* is given as darkness. *Acarya Susruta*

mentioned *Timira* as a disease among *Dristigata rogas* which are 12 in number and *Acarya Vagbhata* also described it among 27 *Dristigata rogas*. *Acarya Susruta* have described that diseases *Timira* inflicts four *Patala* causing *Prathama*, *Dwitiya*, *Trtiya* and *Caturtha Patalagata Timira*. *Timira* is classified into 6 types i.e. *Vataja*, *Pittaja*, *Kaphaja*, *Raktaja*, *Sannipataja* and *Parimalayi*.^[3]

Patala

Patala is one of the structures told by *Acarya Susruta* in *Netra Sarira*. *Pata+Klach-Pratyaya*, which means a layer, covering chest, membrane especially of the eyes, a film over the eyes^[4]. So, it can be considered as the layers of the eyeball. There are six *Patala* in the eyeball- two *Vartma Patalas* and four *Aksi Patala*. The pathogenesis of *Dristigata rogas*, especially *Timira* has been described in terms of involvement of successive *Patala*^[5].

- 1) 1st *Patala* is called *Tejolasrita*
- 2) 2nd *Patala* is called *Mamsasrita*
- 3) 3rd *Patala* is called *Medoasrita*
- 4) 4th *Patala* is called *Asthyasrita*
- a) Features of affliction of 1st and 2nd *Patala*- Clubbed with 6 types of *Timira*
- b) Features of affliction of 3rd *Patala*- Clubbed with 6 types of *Kaca*
- c) Features of affliction of 4th *Patala*- Clubbed with 6 types of *Linganasa*.

The outermost first *Patala* is supported by *Tejas* and *Jala*; second one consists of *Mamsa*, the third *Patala* is described as '*Medoasrita*' and the fourth *Patala* is '*Asthyasrita*'. Their thickness is equal to one-fifth of the *Drsti*^[6]. According to some scholars, the 1st *Patala* can be taken as Cornea and aqueous humor as they are the seat of *Tejas* and *Jala*. The 2nd *Patalas*, which is *Mamsasrita*, can be taken as Iris and Ciliary body; they are mesodermal in origin and contain muscles tissue. The 3rd *Patala* can be taken as lens and vitreous humour; which resembles *Medas*. The 4th *Patala* can be taken as retina as it is the seat for *Linganasa*.

Prathama Patalagata Dosa-dusti

The only symptom produced when the *Dosa* are vitiated in the first *Patala* is *Avyakta Darsana*. The patient is not able to appreciate the exact nature of the object and there is slight blurring of vision. *Dalhana* has described the first or outermost *Patala* as "*Tejomalashrita*". The word *Teja* means *Alocaka pitta* and so *Siragata rakta* can be taken as *Teja*. *Jala* implies to *Rasa dhatu*. So, it can be considered that the first *Patala* is the *Asraya* for *Rasa* and *Rakta Dhatu*. They are the primary *Dhatu* which provide nutrition to the eyes. *Rasa* gives

nutrition to transparent structures and *Rakta* gives nutrition to the vascular structures. *Pitta* helps in perception of objects of vision and involved in analyzing the *Indriyarth*. It is the first medium or part of the eye which receives the light. *Vata* is the activating and controlling factor. So, *Pitta* and *Vata* are considered as the prominent *Doshas* in this part of *Dristi*^[7]. Probable hypothetical pathogenesis can be due to *Nidanasevana* where there is vitiation of *Doshas* which induces the symptoms of *Prathama Patalagata Timira*. According to *Acarya Susruta*, *Timira* causing *Dosa*, vitiated by various reasons, when reach internal orbital organs through *Sira* and occupies first *Patala* generate pathology in the specific site^[8]. *Timira* vitiates first *Patala*, followed by second, third and fourth *Patala*. Clinical feature of the *Prathama Patala* has been described by *Acarya Vagabhat* is blurred/indistinct vision without any reason^[9].

Myopia:

Myopia or short sightedness is a type of refractive error in which parallel rays of light coming from infinity are focused in front of the retina when accommodation is at rest. The word Myopia is derived from a Greek term "muopia" which means, "I close the eye" it manifests as blurred distance vision, hence the popular term "nearsightedness".

Simple Myopia: The refractive status of the eye with simple myopia is dependent on the optical power of the cornea and crystalline lens and the axial length. Since the sharpest rise occurs at school going age i.e., between 8 years to 12 years, so it is also called as school Myopia. In simple myopia, the distance blur is constant^[10].

Prevalence of Myopia

Myopia is becoming more common problem in general population various surveys in India have found the Prevalence of myopia ranging from 6.9% to 19.7%. An estimate of number of people suffering from refractive errors in the world is in range of 8 million to 2.5 billion. According to WHO, 43% of vision impairment is due to uncorrected refractive errors.^[11]

Classification of Myopia

Etiological Classification

- **Axial Myopia:** Results from increase in anterior posterior length of the eyeball.
- **Curvature Myopia:** Occurs due to increased curvature of the cornea, lens or both.
- **Positional Myopia:** Is produced by anterior placement of crystalline lens in the eye.
- **Index Myopia:** Increase in the refractive index of crystalline lens with nuclear sclerosis.

- Myopia due to excessive accommodation occurs in patient with spasm of accommodation.

Clinical Classification of Myopia^[12]

- Congenital Myopia
- Simple/Developmental Myopia
- Pathological/Degenerative Myopia
- Acquired/Secondary Myopia

Grading of Myopia:

- Low Myopia (<3.00D)
- Medium Myopia (3.00D – 6.00D)
- High Myopia (>6.00D)

Samprapti (Pathogenesis) of Timira

Nidana: *Acaksusya nidana* i.e., *Mithyahara* and *Vihara* include causes like distant looking at far away objects for long, minute observation, altered pattern of sleep, fast travelling, traumatic injury, *Amla* (sour), *Kulattha* (*Dolichos uniflorus* Lam) and *Masa* (*Vigna mungo* (L.) Hepper) intake of *Ahara*^[13], etc.

Pathogenesis of Myopia

Theories associated with myopia

Genetics: Family patterns of inheritance are well established in familial high myopia, there are also significant family correlations in refractive error in school myopia. In a large number of studies, children with myopic parents have been shown to be more likely myopic compared with those with non-myopic parents.

Diet and Diabetics: Environmental risk factor that has been proposed is diet. The increasing prevalence of myopia in countries that have adopted western dietary patterns has led to the hypothesis that hyperglycemia and hyperinsulinaemia induce myopia. High glycemic load and the resulting hyperinsulinaemia affect different growth factors resulting in scleral growth.

Similar to *Timira* in Ayurvedic the causative factors of myopia can be postulated to have a similar pathogenesis^[14].

Diet and diabetics, ocular trauma and genetic could cause myopia. Along with these factors like straining of eyes on VDT (Visual display terminal usage), extensive looking at objects could cause myopia. (Figure 2)

Lag of accommodation: The lag of accommodation theory is based on the hypothesis that high lag of accommodation that occurs during near work in

myopic eyes causes foveal hyperopic retinal blur that ultimately induces an abnormal axial growth of the eye leading to myopia.

Mechanical Tension: This theory suggests that the contraction of the ciliary muscle following accommodation results in forward and inward pulling of the choroid. Such ciliary choroidal tension restricts the equatorial growth of the eye thus decreasing the circumference of the sclera leading to a more prolate eye shape and ultimately to an elongation of the axial length of the eye that results in myopia.

Peripheral Refraction: Studies have shown that chronic exposure to lens-induced hyperopic defocus accelerates the axial length growth of the eye in a predictable manner in various species ultimately leading to myopia, suggesting that foveal defocus influences eye growth.^[15]

Sadhyasadyata

According to *Acarya Susruta Timira* of *Prathama Patalagata* is *Sadhya*. Meaning if proper medication, *Ahara* and *Vihara* are followed by the patient, *Timira* is curable.

Similarly in modern medicine prescription of concave glasses and lenses with proper visual hygiene, the power of glasses or lenses won't deteriorate and can be maintained.

DISCUSSION

Timira as Simple Myopia: *Timira* is a disease when the vitiated *Dosa* are situated in the *Patala* cause symptoms like *Avyakta darsana* when *Prathama Patala* gets affected. The disease progresses to *Kaca* and *Linganasa* when the *Dosa* vitiate the successive *Patalas* like third and fourth respectively. In *Prathama patala* the sign like *Avyakta Darsana rupama* (transient nature of blurriness) along with symptoms like *Sirahasaula*, *Aksisula*, watering from eyes and heaviness in eyes symptoms are more similar to asthenopic symptoms as mentioned in simple myopia. First *Patala*, among the four *Aksi Patala*, is known as *Bahya* or outer; this means that the other three are relatively innermost to the former. According to *Susruta*, the disease *Timira* vitiates the first *Patala* is considered as the outermost and the fourth *Patala* is considered as the innermost *Patala*.

<i>Patala</i>	Symptom	Pathogenesis	Modern correlation
<i>Prathama/Rasa-Rakta</i>	Intermittent blurring of vision described as <i>Avyakta Rupama Darsana</i> , symptoms like <i>Aksisula</i> , <i>Sirosula</i> , watering from eyes, heaviness in eyes	<i>Dosa samcaya, Prakopa, Prasara, Vimargamana</i>	Refractive error comes under it. Prodromal symptoms of <i>Timira</i>

CONCLUSION

When we consider the comparative analysis of symptoms of *Prathama Patalagata Timira* with myopia then the symptoms described by *Acarya Susruta* and *Acarya Vagbhata* resembles to that of symptoms of simple myopia. In Ayurvedic classical texts various eye treatments like *Kriyakalpa* like *Tarpana, Seka, Putapaka, Anjana* and *Ascyotana* are mentioned which have desired results in *Timira*. Apart from it various eye exercises have also been mentioned along with appropriate lifestyle which will help to control the disease. Myopia is a common refractive condition that can affect clarity of vision. Thus, *Prathama Patalagata Timira* is the *Dr̥stigata roga* can be correlated with in modern science with simple myopia. Thus, there is a need to study of each and every anatomical structures of eye explained in different *Samhita* and its comparison with modern science.

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