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SYSTEMIC REVIEW ARTICLE ON NETRA PATALA: AN ANATOMICAL AND CLINICAL REVIEW

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ABSTRACT

Ayurveda describes the (Netra) as the most important among the Panchendriya. In Classical Ayurvedic texts, particularly in Sushruta Samhita, the anatomical structure of eye is elaborated through concepts such as Mandala, Sandhi, Patala and Drishti. Among these, Netra Patala holds significant importance in understanding the pathogenesis, prognosis and management of ocular diseases. In Ayurvedic Classics there are six Netra Patala which can be anatomically correlated with different layers of eyes as explained in modern ophthalmology.[1] In addition, on the basis of Dhatu Ashrya on four Patala of eyeball, the cornea with Aqueous, the lens with uveal tract, the posterior sclera and the Retina with optic nerve can be considered as the Prathama, Dwitiya, Tritiya and Chathurtha Patala respectively.[2] This Systematic review aims to bridge classical Ayurvedic concepts with modern ophthalmological science for better academic and clinical understanding.

KEYWORDS: Netra Patala, Eye Anatomy, Drishti.

INTRODUCTION

The eyes are often regarded as the "windows to the world" because they enable visual perception through one of the five sensory organs.[3] Vision plays a fundamental role in an individual's social interaction, learning and intellectual development.[4] In Ayurveda the eye is referred to as "Chakshuindriya", emphasizing its importance as the organ responsible for visual perception.[5]

Parts of eye[6]: The eye can be broadly described in terms of its anatomical devisions and functional components:

a) Mandala- Circular area of eyeball; 5 in numbers.

b) Sandhi- Junctional or Transitional areas of eyeball; 6 in numbers.

c) Patalas- Coats/Layers of the eyeball;6 in numbers.

द्वे वर्त्मपटले विद्याच्चत्वार्यन्यानि चाक्षिणि।
जायते तिमिरं येषु व्याधिः परमदारुणः॥
तेजोजलाश्रितं बाह्यं तेन्वन्यत् पिशिताश्रितम्।
मेदस्तृतीयं पटलमाश्रितस्वस्थि चापरम्॥
पञ्चमांशसमं दृष्टेस्तेषां बाहुल्यमिष्यते॥

The eye (Netra) is composed of six successive Patala or layers. Out of Six, two are present in Netragolaka.

Name of 4 Patala	Constituting Dhatu
1) Prathama Patala	Teja+ Jala
2) Dwitiya Patala	Mamsa
3) Tritiya Patala	Meda
4) Chaturtha Patala	Asthi

The thickness of these Patalas is 1/5th of the Drishti Mandala.[7]

Bahya Patala: The two external Patala are described as Vartamgata Patala, corresponding anatomically to eyelids.[8]

Abhyantara Patala

1) Prathama Patala: According to Sushruta, this Patala is related to the combined presence of Teja and Jala Mahabhuta. The principle clinical manifestation attributed to pathology of the first patala is blurring or diminution of vision. In some instances, the visual disturbance may temporarily become clear without specific intervention, resembling a refractive error that can be corrected through accommodation. In the description of Drishtigata Roga, Avyakta rupa darshana or indistinct vision is mentioned as an important manifestation of Timira involving the first patala.[9]

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Disorders Involving the cornea, including refractive conditions such as myopia, hypermetropia and other refractive errors are characterized predominantly by blurring of vision.[11] On the basis of these clinical features, the pathology of the first Patala may be corelated from a modern ophthalmological perspective, with refractive abnormalities.

2) Dwitiya Patala: The Second Patala is situated just deeper than the first patala. It is described as being predominantly associated with Mamsa Dhatu exhibits functions related to nourishment, contraction and relaxation.[12] The structures situated deeper to the cornea and possessing similar functional characteristics include the iris, ciliary body and choroid, which may be correlated with the Second Patalas.[13]

According to Shushruta, involvement of the second Patala produces manifestation such as

मक्षिका मशकान् केशाञ्जालकानि च पश्यति।
मण्डलानि पताकाश्च मरीचीः कुण्डलानि च॥
परिप्लवाश्च विविधाश्च वर्षमभ्रं तमांसि च।
दूरस्थान्यपि रूपाणि मन्यते च समीपतः॥
समीपस्थानि दूरे च दृष्टेर्गोचरविभ्रमात्।
यत्नवानपि चात्यर्थं सूचीपाशं न पश्यति॥

- Greater difficulty or diminution visual perception.
- Perception of floaters within the visual field.
- An altered perception of distance, wherein distant objects may appear closer and near objects may see farther away.
- Difficulty in threading a needle.[14]

The ability of the eye to adjust its focus rapidly for objects situated at different distances is termed accommodation.[15]

Accommodation depends principally on the coordinated action of the ciliary body and the elastic properties of crystalline lens.[16]

Hence on the basis of these clinical features, the pathology of Second Patala may be correlated from a modern ophthalmological perspective with Insufficiency of Accommodation like Presbyopia.

3) Tritiya Patala: The Third Patala lies deeper than Second Patala. Meda in this context has been correlated with vitreous humour, which is gelatinous substance ocuupying the posterior segment of the eyeball.

According to Sushruta, involvement of Third Patala produces manifestations such as.

ऊर्ध्वं पश्यति नाधस्तात्तृतीयं पटलं गते।
महान्त्यपि च रूपाणि छादितानीव वाससा॥
कर्णनासाक्षियुक्तानि विपरीतानि वीक्षते।
यथादोषश्च रज्येत दृष्टिर्बलीयसि॥
अधः स्थिते समीपस्थं दूरस्थं चोपरिस्थिते।
पार्श्वस्थिते तथा दोषे पार्श्वस्थानि न पश्यति ॥
समन्ततः स्थिते दोषे सङ्कुलानि च पश्यति।
दृष्टिमध्यगते दोषे स एकं मन्यते द्विधा ॥[17]

Clinical involvement of the third Patala may result in disturbances of vision. In such cases, the patient may perceive on the upper portion of an object while being unable to appreciate its lower part. Patients may also experience distortion in perception of objects, with large objects appearing as though they are partially covered. The patient may perceive objects in an altered, distorted or inverted form. These symptoms are correlated with marked loss of vision, which is prominent symptoms in case of retinal malfunction. Hence on the basis of these clinical features the pathology of Third Patala may be correlated from a modern perspective with Malfunction in Viterous humour of Retina.

4) Fourth Patala: Fourth Patala is the innermost and inner to the third patala. It is constituted by Asthi- hard tissue.

According to Sushruta, involvement of Fourth Patala produces manifestations such as.

रुणद्धि सर्वतो दृष्टिं लिङ्गनाशः स उच्यते।
तस्मिंश्चापि तमोभूते नातिरूढे महागदे ॥[18]

- Loss of Vision.
- Perception of bright illumination.

The clinical features of the Fourth Patala Timira i.e Complete loss of vision – Linganasha occurs in complete opacity of lens that means Matured Cataract.

DISCUSSION

The concept of Netra Patala described by Acharya Sushruta is a unique and scientifically oriented approach to understand the layered anatomy of the eye. In modern ophthalmology the eyeball is described as having three

coats, but Ayurvedic classics elaborate six Patalas, of which four are internal and two are Bahya Patalas situated in Vartma Mandala, corresponding anatomically to the eyelids. The thickness of all four internal Patalas together is said to be 1/5th of Drishti Mandala, which indicates their minute and successive arrangement. On the basis of Dhatu-Ashraya Siddhanta described in Sushruta Uttar Tantra –Prathama Patala - Tejo + Jala Ashrita: The structures which hold aqueous fluid and are Teja predominant can be considered as Cornea and Aqueous Humour. Its involvement leads to Avyakta Darshana - slight blurring of vision, which can be correlated with early corneal pathologies and refractive errors. Dwitiya Patala - Mamsa Ashrita: Mamsa Dhatu is similar in function to muscular and uveal tissue. Hence structures situated deeper to cornea and possessing similar functional characteristics as Iris, Ciliary Body and Choroid are correlated with Second Patala. Clinical features explained by Sushruta as Difficulty in threading a needle, perception of floaters, altered perception of distance - far objects appearing near and near appearing far, is suggestive of insufficiency of accommodation. The ability of the eye to adjust its focus rapidly for objects at different distances is termed accommodation which depends on coordinated action of ciliary body and elastic properties of crystalline lens. Therefore, pathology of Second Patala can be correlated from modern perspective with Presbyopia, insufficiency of accommodation and uveal dysfunction with vitreous floaters.

Tritiya Patala - Meda Ashrita Patala: Meda in this context has been correlated with Vitreous Humour, which is a gelatinous substance occupying the posterior segment Clinical involvement of Third Patala may result in disturbances of vision where patient perceives only the upper portion of an object while being unable to appreciate its lower part. Patients may also experience distortion, inverted or obscured vision of objects with marked loss of vision. This is prominent symptom in case of retinal malfunction. Hence Third Patala pathology can be correlated with malfunction of Vitreous Humour and Retina including conditions like vitreous opacities, retinal detachment and metamorphopsia.

Chaturtha Patala - Asthi Ashrita: Asthi is stable and supportive. It corresponds to posterior sclera and Retina with Optic nerve. Its involvement is described as Timira progressing to Lingnasha, which is comparable to advanced retinal and optic nerve pathologies leading to complete loss of vision. Thus, the progressive involvement of Patalas from Prathama to Chaturtha indicates increasing severity of visual loss - from Sadhya to Krichhra Sadhya to Asadhya. This Patala-wise description is not just anatomical but also has great prognostic and therapeutic importance in Shalakya Tantra.

CONCLUSION

The concept of Netra Patala is a comprehensive and clinically applied anatomical model propounded by Acharya Sushruta. The systematic review reveals that:Six Netra Patalas are described, of which two Bahya Patalas are Vartmagata (eyelids) and four are Antara Patalas (eyeball). On the basis of Ashraya-Ashrayi relation, Prathama Patala (Teja- Jala), Dwitiya Patala (Mamsa), Tritiya Patala (Meda) and Chaturtha Patala (Asthi) can be anatomically correlated with Cornea with Aqueous, Lens with Uvea, Posterior Sclera and Retina with Optic Nerve respectively. The symptomatology of Dwitiya and Tritiya Patala Gata Timira shows striking similarity with accommodative disorders, vitreoretinal disorders and retinal dysfunction in modern ophthalmology. Understanding Patala is essential to understand Samprapti, Sadhya-Asadhyata and management of Drishtigata Rogas like Timira and Lingnasha (Cataract and blindness). Hence, bridging classical Ayurvedic concepts with modern ophthalmological science provides better academic and clinical understanding and opens a new path for integrative research in Shalakya Tantra. This correlation helps in early diagnosis, prognostic assessment and planning appropriate management in ocular diseases.