A Case Study on Vataja Timira w.s.r. to Keratoconus

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ABSTRACT

According to Ayurveda, Vata is responsible for formation of all body parts. Vayu is said to be Sarva Dhatu Vyuhakara and Kartagarbhakritam. It means that Vayu is responsible for the regular function and amount of Dhatus in body. In Ayurveda there is no direct reference of keratoconus, based on the symptoms it can be considered as Vataja Timira. This can be correlated to advanced condition of keratoconus, considering Dosha involvement Vatahara and Bruhmana line of treatment in the form of Nasya, Tarpana and Pindi is more beneficial in keratoconus.

Key words: Vataja Timira, Keratoconus, Astigmatism, Nasya, Tarpana, Pindi, Vatahara.

INTRODUCTION

Keratoconus in an eye disease that is characterized by thinning and steepening of the cornea. This is the front surface of the eye and the most important focusing element of the vision system. In patients who have keratoconus their cornea is cone shaped.

The name keratoconus is derived from the Greek word for cornea (kerato) and cone shaped (conus). Keratoconus results in visual distortion often results in visual distortion often not corrected by traditional glasses. The thinning and steepening of the cornea causes the front surface to become progressively more irregular in shape. The corneal surface irregularity is what induces the distortion and blurriness of vision experienced in keratoconus.¹

Prevalence

- The reported prevalence of keratoconus varies widely depending upon the geographic location, diagnostic criteria used and cohort of patients selected.

- The prevalence in studies can range from 0.3 per 1,00,000 in Russia to 2,300 per 1,00,000 in Central India (0.0003% - 2.3%). The first population based study was done by Hofstetter using a placido disc and he reported an incidence of 600 per 1,00,000. The most commonly cited prevalence is 0.054% in Minnesota, USA by Kennedy et.al., who used by movement on retinoscopy and keratometry for diagnosis.

- In Central India, the prevalence of keratoconus was studied based only on the anterior corneal power obtained by keratometry. Prevalence of keratoconus defined as a corneal refractive power ≥ 48 D was 2.3%. However the prevalence dropped to 0.6% using a cut off power ≥ 49 D and 0.1% using a cut off ≥ 50 diopter.

- Family history of keratoconus has been found to be very variable and a high prevalence of keratoconus in a sample population can change the reported rate of a positive family history. It varies between 6% and 10% in most studies, the US Collaborative Longitudinal Evaluation of keratoconus study reported a rate of 13.5% and a
study from Israel where the prevalence is high, reported a rate of 21.74%.

- Keratoconus usually occurs bilaterally but asymmetry is common. In a larger series, 14.3% had unilateral disease. Although unilateral cases do exist, their frequency might be even lower than reported. If appropriate diagnostic criteria and examination techniques that detect very early keratoconus are used.[2]

**Definition**

Keratoconus is a non-inflammatory bilateral ectatic condition of cornea on its axial part. It usually starts at puberty and progress slowly.

**Etiopathogenesis**

- It is still not clear.
- Various theories proposed so for label it as developmental condition, degenerative condition, hereditary dystrophy and endocrine anomaly.

**Symptoms**

Patients present with a defective vision, due to progressive myopia and irregular astigmatism which does not improve fully despite full correction with glasses.

**Signs**

- Window reflex is distorted.
- Placido disc examination shows irregular the circle.
- Keratometry depicts extreme mal alignment of mires.
- Photokeratoscophy reveals distortion of circle.
- Slit lamp examination may show thinning and ectasia of central cornea, opacity at the apex and Fleisher’s ring at the base of cone, folds in desmets and bowman’s membranes, very fine, vertical deep stromal striae (vogt’s lines) which disappear with external pressure on the globe are peculiar feature.
- On retinoscopy a yawning reflex (scissor reflex) and high oblique or irregular astigmatism is obtained.

- On distant direct ophthalmoscopy on annular dark shadow (due to total internal reflection of light) is seen which separates the central and peripheral areas of cornea (oil droplet reflex).
- Munson’s sign i.e. localized bulging of lower lid when patient looks down is positive in late stages.

**Morphological classification**

Depending upon the size and shape of the cornea the keratoconus is of three types;

1. Nipple cone has a small size (<5mm) and steep curvature.
2. Oval cone is larger (5-6mm) and globe like.
3. Globus cone is very large (>6mm) and globe like.

**Treatment**

- Spectacles correction may improve vision in very early cases. However, later in the course of disease the falling vision may not be corrected by glasses due to irregular astigmatism.
- Contact lenses usually improve the vision in early cases.
- Intact, the intra corneal ring segments are reported to be useful in early cases.
- Corneal collagen cross linking with riboflavin (C3R) may slow the progression of disease.
- Keratoplasty may be required in later stages Deep Anterior Lamellar Keratoplasty (DALK) or Penetrating Keratoplasty (PK) may be improved.[3]

**Ayurvedic Review**

Thought is not mentioned clearly;

- According to Acharya Sushruta, Krishna Mandala is originated from Vayu Mahabuta.[4]
- When Vayu in Garbhavasta gets vitiated due to Dauhrida Vamana leads to Vikrutakshi.[5]
- Acharya Vagbhata has taken outer part of cornea as Twak while describing Sadhyasadyha of Kshata Shukra.[6]
- So, keratoconus should be taken as Twagata Vata (Rosa / Indriyagatavata) described by Acharya Charaka which may be Beejajanya.[7]
Vayu is said to be Sarva Dhatu Vyuhakara and Kartagarbhakri. It means that Vayu is responsible for the regular function and amount of Dhatus in body; also, it is responsible for formation of normal body parts.

In keratoconus Krishna Mandala of Netra which originate from Vayu itself is either malformed or gets degenerated due to defect in Karma of Vata.

On the basis of previous research work keratoconus can be considered as Timira[8] and also supporting to this above statement, Vataja Timira Lakshana like 1. Vyavidha Darshana - The straight line of object appears to be curved, 2. Avila Darshana - Blurred vision or hazy vision, 3. Chandra Deepadaya Anekatvam - The luminous objects like moon, lamp is appearing to be multiple[9] are present, the same symptoms are observed in keratoconus disease. Considering these symptoms Vataja Timira can be correlated with keratoconus.

Ayurvedic treatment

So, Twakgata Vata should be treated as per explained by Charaka for Rasagata Vata i.e. Shodhana and Shamana with Snehana.

Agnideepana which will increase the absorption of drug.

Shodhana - Mrudurechana

Nasya

Tarpana

CASE REPORT

Patient’s name - xyz

OPD no. - 40779

Age - 17 yrs

Occupation - Student

Sex - Male

Address - Bangalore

Religion - Hindu

Date of OPD visit - 2/12/2017

Chief Complaints : Blurring of vision in left eye since 2 years

Associated Complaints : Photophobia since 2 years

No floaters/flashes

History of present illness

He consulted Aastha eye hospital on 18/11/17 and diagnosed as a left eye keratoconus - FFKC (Forme Fruste Keratoconus) showing early progression and advised for left eye KXL or accelerated cross linking and spectacles.

Auto Refraction

<table>
<thead>
<tr>
<th>Right eye</th>
<th>Left eye</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPH</td>
<td>CYL</td>
</tr>
<tr>
<td>-2</td>
<td>-2.5</td>
</tr>
<tr>
<td>-2.5</td>
<td>22</td>
</tr>
</tbody>
</table>

On examination

- Slight cone shaped thinning of cornea in left eye
- Corneal topography RE >40.6 D, LE >44.6 D
- LE - keratoconus - Early progression.

Visual acuity - Before treatment

<table>
<thead>
<tr>
<th>Distant vision</th>
<th>Near vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without glass</td>
<td>With glass</td>
</tr>
<tr>
<td>OD 6/18</td>
<td>6/18</td>
</tr>
<tr>
<td>OS 6/24p</td>
<td>6/18p</td>
</tr>
</tbody>
</table>

Medical history

Advice for -

- Left eye - KXL (Collagen Cross Linking) or accelerate cross linking
- Spectacles
- Patient was not willing for surgery
Treatment given: (7/12/2017 to 1/1/2018)

- **V**aishwanara Choorna - 3/4 th tsp thrice a day, before food
- **N**asya with Ksheerabala-101 Taila for 7 days
- **T**riphala Kashaya Seka for 7 days
- **A**nnalepa for 7 days
- **K**ataka Phala drops- 2⁰ - 0 - 2⁰
- **T**arpana with Mahatriphalagrita for 5 days
- **S**higrupallava + Navaneetapindi.

Effect of therapy

- Blurriness and photophobia were completely relieved.
- Visual acuity improved in left eye 5/60 to 6/12p for distant vision.

**DISCUSSION**

- Keratoconus usually manifest as a small island of irregular astigmatism in the inferior paracentral cornea.
- As the cornea bulges outwards, the amount of astigmatism increases due to progressive distortion of corneal surface.
- Based on the signs and symptoms keratoconus considered as Vataja Timira.
- Considering the Dosha involvement the treatment should be Vatahara. In this disease the Stanika treatment like Nasya, Tarpana and Pindi is helpful.

**Action of Nasya**

Nasya is beneficial when the symptoms of Doshas are just manifested and not involved the whole eye in Vataja Timira.

**Action of Tarpana**

Tarpana\(^1\) exert direct pressure upon the cornea there may be changes in refractive index of cornea and Ghrita has the quality of trans passing into the minute channels of body, it enters deeper layers of Dhatus and cleans very minute part. The lipophilic action of Ghrita facilitates the transformation of the drug to the target organ finally reaches the cell because the cell membrane also contains lipids. The corneal epithelium is permeable to lipid soluble substances; moreover, the medicine used for Tarpana is mainly Ghrita. Ghrita has high levels of anti-oxidants which can reduces the damage of thinned cornea by allowing more tissue contact time and bioavailability of the drug form the corneal surface.\(^2\) Tarpana is indicated in Timira, the commonly used Ghrita Yogas like Jeevantyadi Ghrita, Triphala Ghrita, Mahatriphala Ghrita and Shatavari Ghrita. Mahatriphala Ghrita has high level of antioxidants of thinned out cornea. It helps in bulging down corneal protrusion by Dosha Shamana and mechanical pressure. In contemporary science C3R and intact is advised to strength the stroma tensile and flatten the central cornea but there is no assurance of cure as their methods are not without complications.

**Action of Pindi**

In Pindi,\(^3\) medicine is absorbed through the skin of lids. By practice Pindi can advise to overnight that helps to flatten the corneal curvature by its mechanical pressure and strengthens the cornea by medicine effect. Pindi is indicated in Shotha and Kandu. Shigru is proven to have Abhishyanadahara nature. Navaneeta is a Chakshushya Dravya in Sneha form. So,this Chakshushya Sneha combination is helpful in bringing down the corneal protrusion by Dosha Shamana and mechanical pressure. In contemporary science, contact lens are advised to correct the myopia and astigmatism, aspheric lens with high eccentric value helps to flatten the cornea quicker. Compare to other lenses the main effect of contact lens is to provide a best vision to keratoconus patient, same effect gets my Pindi procedure.

**CONCLUSION**

Keratoconus is a progressive eye disease in which the normally round cornea thins and bulges out to form a cone shaped structure. Keratoconus is considered as Twakgata Vata. Ayurvedic treatment is done on the line of Twakgata Vata gives interesting results and above all no complications. Modern counterpart has
done tremendous effort but there is no assurance of cure as their methods are not without complications.

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