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AN AYURVEDIC APPROACH TO KERATOCONUS – A CASE REPORT

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ABSTRACT:

Cornea is a transparent avascular watch- glass like structure which forms anterior 1/6 of the outer fibrous coat of the eyeball. It is the first and most important refractive media of the eye. About 75% of refraction is done by the cornea. Keratoconus is a disorder of the cornea where the normal curvature and thickness of the cornea is altered leading to blurred and distorted vision. In Ayurveda there is no direct reference for Keratoconus but based on the symptoms it can be correlated to VATAJA TIMIRA. As there is no effective treatment in the contemporary science, an effort has been made to find out most effective treatment in Ayurveda.

KEY WORDS: Cornea, Refractive media, Keratoconus, Vataja timira

INTRODUCTION:

Cornea is a transparent avascular watch- glass like structure which forms anterior 1/6 of the outer fibrous coat of the eyeball. It is the first and most important refractive media of the eye¹. About 75% of refraction is done by the cornea. Keratoconus is a disorder of the eyes, which results in progressive thinning and bulging of the cornea. This may result in blurred vision, distorted vision, light sensitivity and multiple images².

It is a non inflammatory bilateral ecstasic condition of the cornea on its axial part. Even though it is bilateral, but asymmetry is common. It usually starts at puberty and progress fastly in later life.

Prevalence:

Many times Keratoconus is misdiagnosed and considered as just refractive error such as Myopia or Astigmatism. According to recent studies nearly 22% of world population is suffering from refractive errors. Among them 6%-10% are usually will have Keratoconus. The prevalence of Keratoconus varies widely depending upon the geographic location, diagnostic criteria and family history. Eventhough Keratoconus is bilateral, but exhibits asymmetrical power between the eyes ³.

Fig 1 – Showing the shape of Normal Cornea and Cone shaped Cornea



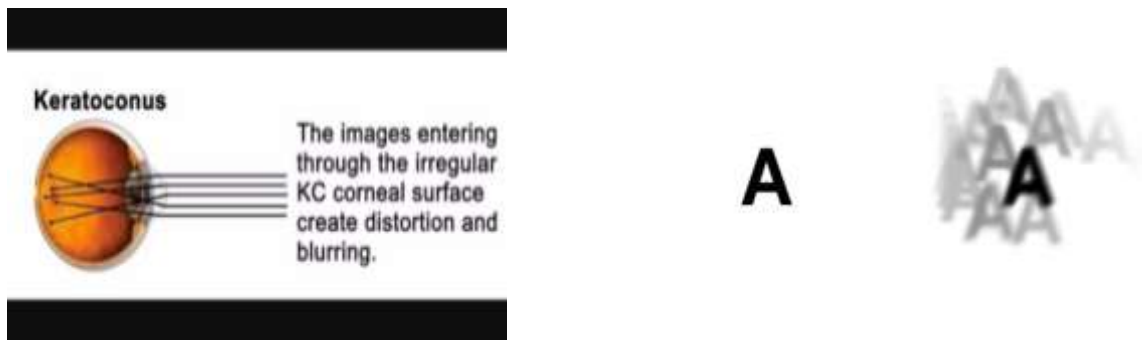
Etiopathogenesis of Keratoconus:

Keratoconus is believed to occur due to a combination of genetic, environmental and hormonal factors. Many of the affected cases have a family history, environmental

factors include eye allergies and rubbing of the eyes and thus changes the spherical cornea to a cone shaped cornea.

As per recent studies, Keratoconus is caused by decrease in protective antioxidants in the cornea. The cornea cells produce damaging by-products which leads to weakness in collagen fibers of cornea, leading to Keratoconus. Normally antioxidants neutralize these by-products and protect the collagen fibers. If antioxidants level are low, the collagen fibers weakens and the cornea bulges out making it cone shape leading to Keratoconus ⁴. The thinning and steepening of the cornea causes the front surface of the eye to become progressively more irregular in shape. This corneal irregularity is what induces the distortion and blurriness of vision in Keratoconus.

Fig – 2 Showing refraction of light rays through Cone shaped Cornea



As a result of distortion and blurring there will be multiple focal point on retina and hence multiple images are formed on the retina. So patient visualises blurred multiple images, which causes discomfort in judging the place of original objects.

Clinical Features: Symptoms⁵

Patients presents with blurred vision, multiple vision

Photophobia, headache and eyestrain

O/E – Signs

Cornea is bulged with cone shaped.

Keratometry depicts extreme malalignment of mires

Placid disc shows irregularity of the circle

Photokeratoscopy reveals distortion of circles

Slit lamp Examination shows thinning and ectasia of central cornea, opacity at the apex and Flescher's at the base of cone, folds in Decemet's & Bowman's membranes.

Treatment adopted :

- ⊙ Spectacles with combination of spherical and cylindrical glasses in case of mild keratoconus.
- ⊙ Contact lenses in mild to moderate keratoconus.

In severe cases – surgeries like

- ⊙ C3R – Cornea Collagen Cross linking Riboflavin.
- ⊙ Laser Surgery - PTK – Photo Therapeutic Keratectomy.
- ⊙ Corneal Transplant

Ayurvedic Prospective of Keratoconus:

According to Acharya Sushruta, Krishna mandala is originated from Vayu Mahabhoota and Vata is responsible for the regular functions of Krishna mandala⁶. Any abnormalities in Vata dosha leads to disturbance in the normal functions of Krishna mandala i.e Cornea. Vitiating of vata dosha leads to Krishna mandalagath Rogas⁷.

In Ayurveda there is no direct reference for keratoconus but based on the symptoms it can be correlated to VATAJA TIMIRA⁸. Acharya Sushruta & Acharya Vagbhata has mentioned Timira vyadhi in the context of Drustigatha rogas, where the Vatadi doshas enter Pratama Patala (Tejo-jala ashrita) and affects Drusti. Hence the person visualises Avila drusti i.e blurred vision⁹. Depending on other symptoms and predominance of doshas, Timira is of 6 types as Vataja, Pithaja, Kaphaja, Raktaja, Sannipataja and Parimlayi.

Vataja Timira Lakshana¹⁰:

In Vataja Timira, the patient visualises the objects as curved or distorted, multiple images, moving, blurred vision, slightly reddish colour and visualises webs, hairs, mosquitoes and rays of light in the visual field.

- ⊙ Considering the etiopathogenesis, Shodana in the form of Snigdha Virechana and Snehika Nasya karma is administered. Sthanika chikitsa like – Netra Seka, Nerta Pindi, Netra Tarpana has been found effective¹¹.

CASE REPORT:

A 20 Yrs male patient C/O blurring of vision for distant objects and multiple visions in both eyes, more in right eye since 6 months. Occasionally gets headache which gets aggravated on eyestrain and is also sensitive to light. Presently using spectacles for the same but not comfortable.

Patient had the similar complaints since childhood and was diagnosed as Keratoconus. 10 months back underwent C3R (cornea collagen crosslink Riboflavin) surgery. Since 6 months again developed the same symptoms.

Visual acuity – before treatment on 27-5-2017

	DISTANT VISION		NEAR VISION	
	Without glass	With glass	Without glass	With glass
B.E	3/60	6/24	N9/10	N6/10
R.E	3/60	6/24	N12/10	N6/10
L.E	3/60	6/24	N12/10	N6/10

Presently using spectacles

	Right Eye				Left Eye			
	SPH	CYL	AXIS	VISION	SPH	CYL	AXIS	VISION
DISTANT VISION	-4.0	-2.5	90*	6/24	-2.5	-2.75	25*	6/24
NEAR VISION	-	-	-	-	-	-	-	-

Treatment adopted:**SHODHANA**

Sadyovirechana with Gandharvahastadi eranda taila.

Nasya karma with Ksheerabala 101 taila for 7 days.

STHANIKI CHIKITSA

Netra seka with Triphala kwatha + ksheera for 20 mins for 7 days.

Netra pindi with Triphala + kumari kalka for 30 mins for 7 days.

Netra tarpana with Jeevantyadi grutha for 7 days.

SHAMANA

1. Triphala choorna – 100gms + Yastimadhu choorna -50gms + Abraka bhasma – 10 gms + Spatika bhasma – 5gms. 3 gms of mixture with triphala grita in empty stomach twice a day.

2. Bruhatvasakadi kashaya – 10 ml twice a day with water after food.

3. Mahasapthamrutha loha – 1 tab twice a day with water after food

- ☉ Sthanika chikitsa like – Netra Seka, Nerta Pindi, Netra Tarpana has been administered.

All these treatments were administered for 3 years,, with an interval of 6 months between the treatments . Visual acuity was checked after every course of treatment and observations were noted as follows.

☉ **Visual acuity – During treatment on 20-12-2017**

	DISTANT VISION		NEAR VISION	
	WITHOUT GLASS	WITH GLASS	WITHOUT GLASS	WITH GLASS
BOTH EYES	3/24	6/24	N9/10	N6/10
RIGHT EYE	3/24	6/24	N12/10	N6/10
LEFT EYE	3/36	6/24	N12/10	N6/10

Visual acuity – During treatment on 15-6-2018

	DISTANT VISION		NEAR VISION	
	WITHOUT GLASS	WITH GLASS	WITHOUT GLASS	WITH GLASS
BOTH EYES	3/12	6/24	N9/10	N6/10
RIGHT EYE	3/12	6/24	N9/10	N6/10
LEFT EYE	3/12	6/24	N9/10	N6/10

Visual acuity – During treatment on 12-12-2018

	DISTANT VISION		NEAR VISION	
	WITHOUT GLASS	WITH GLASS	WITHOUT GLASS	WITH GLASS
BOTH EYES	6/60	6/24	N9/10	N6/10
RIGHT EYE	6/60	6/24	N9/10	N6/10
LEFT EYE	6/60	6/24	N9/10	N6/10

Visual acuity – During treatment on 27-6-2019

	DISTANT VISION		NEAR VISION	
	WITHOUT GLASS	WITH GLASS	WITHOUT GLASS	WITH GLASS
BOTH EYES	6/60	6/24	N6/10	N6/10
RIGHT EYE	6/60	6/24	N6/10	N6/10
LEFT EYE	6/60	6/24	N6/10	N6/10

Visual acuity – After treatment on 20-1-2020

	DISTANT VISION		NEAR VISION	
	Without glass	With glass	Without glass	With glass
B.E	6/36	6/18	N6/10	N6/10
R.E	6/36	6/18	N6/10	N6/10
L.E	6/36p	6/24	N6/10	N6/10

DISCUSSION:

Keratoconus is a disorder of the eyes, which results in progressive thinning and bulging of the cornea. This may result in blurred vision, distorted vision, light sensitivity and multiple images. According to Ayurveda it is considered as Vataja Timira. The treatment principles that are mentioned in Ayurveda Samhitas for Vataja Timira are adopted. As

the condition is progressive, repeated treatments are required. By observing the results after every course of treatment, it is clear that the visual acuity has improved gradually and there is no change in the power of the glasses.

Other symptoms like multiple vision, Photophobia, headache have reduced considerably.

Keratoconus, no doubt is a structural & progressive deformity and hence long term treatments are essential.

As a part of Kayashodana, - Sadyovirechana with Gandharvahastadi taila is beneficial as it detoxifies the body & singdha Virechana is always recommended in Vataja Vyadhis.

Nasya Karma is the best way of Urdwanga Shodana, Ksheerabala 101 taila is best vatahara and also balya & hence can prevent further thinning of Cornea¹².

Probable Mode of Action of Netra Kriya Kalpas:

- ⊙ 1. Netra Seka: As the medicine is poured over the eye lids continuously for a specific time, it improves the circulation locally and strengthens the muscles and nerves of the eyes. The damaged bi-products from the corneal surface may be washed out by constant flow of medicines¹³.
- ⊙ 2. Netra Pindi: The Pindi medicine is absorbed through the skin of the lids and due to usnata, there is mild increase in the local temperature of the skin, leads to vasodilation and increased circulation. Pindi will also help to flatten the corneal curvature by its mechanical pressure and strengthen the cornea by its medicinal effect¹⁴.
- ⊙ 3. Netra Tarpana: Tarpana with Jeevantyadi gritha, has high levels of antioxidants which reduces oxidative stress and minimises the damage and thinning of the cornea. In this procedure the contact time of the drug and tissues are more, so bioavailability of the drug from the corneal surface will be more¹⁵.

The administration of internal medicines will help to improve the general condition and also visual perception.

CONCLUSION:

Keratoconus is a progressive eye disease in which the Spherical cornea changes into bulge, cone shaped Cornea. The use of Spectacles, contact lenses and Lasik surgeries are not effective as the disease is progressive. An Ayurvedic treatment on the line of Vataja Timira has shown promising results in controlling the further progression of the disease and also in reducing the Symptoms without any adverse effects.

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