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An Ayurvedic insight to Keratoconus - A Case Report

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ABSTRACT

Achievement of scientific integrity and credibility of the concepts can only be with well designed and conducted research studies. Keratoconus is a non inflammatory bilateral ectatic condition of cornea in its axial part presenting with defective vision due to progressive myopia and irregular astigmatism. It is diagnosed by clinical examination and corneal topographic techniques. In contemporary medicine, it is treated with collagen cross linking which may slow down the disease progress, effectiveness of treatment is still questionable. Here comes the need of Ayurveda to explore with better treatments. Based on symptoms in Ayurveda it can be correlated to *Prathama Patalagata Timira*, being *Vatika* predominance. This study describes a 20 Year old female patient diagnosed as Keratoconus and underwent Ayurvedic treatment protocol according to the line of management of *Prathama Patalagata Timira* which is *Vatahara* in nature such as *Mahatriphala Ghrita* internally, *Nasya* with *Anu Taila*, *Tarpana* with *Mahatriphala Ghrita*, *Putapaka*, *Shigru Navaneeta Pindi* for 3 sittings. Results were observed and noted during treatment and follow up period.

Key words: Keratoconus, Vataja Timira, Prathama Patalagata Timira, Timira, Tarpana.

INTRODUCTION

Keratoconus is a non inflammatory bilateral ectatic condition of cornea in its axial part. Usually starts at puberty and progresses slowly.^[1] Etiopathogenesis of which is still not clear (developmental, degenerative, hereditary dystrophy) mostly due to environmental and genetic causes and presents with defective vision due to progressive myopia and irregular astigmatism. Prevalence of keratoconus being 2300 per 100,000 in central India.^[2] It is diagnosed by clinical examination

and corneal topographic techniques. In contemporary medicine, it is treated with collagen cross linking which may slow down the disease progress, effectiveness of treatment is still questionable. Overall efficacy of this treatment is less consistent and reliable in their abilities to halt Keratoconus.^[3] Here comes the need of Ayurveda to explore with better treatments. Based on symptoms, it can be correlated to *Prathama Patalagata Timira*, being *Vatika* predominance and treated accordingly.

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CASE REPORT

Chief complaints

A 20 year old female patient approached Shalaky Tantra OPD of GAMC Bangalore, with chief complaint of diminution of vision for distant objects since 1 year associated with headache occasionally since 6 months.

History of present illness

Patient was apparently normal one year back, gradually she started developing diminution of vision for distant objects for which she consulted an

ophthalmologist and prescribed with spectacles, but she could not find any improvement in vision and underwent correction for 4 times, then after 6 months she started developing headache occasionally for which she consulted the ophthalmologist again and underwent various investigations and diagnosed as having bilateral keratoconus and advised to undergo C3R, she denied and consulted Shalaky OPD of GAMC, Bangalore.

History of past illness

Not a known case of diabetes mellitus or hypertension or any other systemic illness.

Personal history

Aharaja: Diet predominantly of *Katu* and *Kashaya Rasa*, *Rooksha Ahara*.

Viharaja: Straining and rubbing eyes.

Family history: Cousin brother of the patient is a diagnosed case of Bilateral Keratoconus since 2 years.

Ocular history: Using spectacles since 1 year.

Treatment history: Nothing specific

GENERAL EXAMINATION

Asta Sthana Pareeksha

- *Nadi* : *Prakruta*, 78/min
- *Mutra* : *Prakruta*, 4 to 5 times/day, once at night
- *Mala* : *Prakruta*, regular, once a day
- *Jihwa* : *Alipta*
- *Shabda* : *Prakruta*
- *Sparsha* : *Prakruta*
- *Druk* : *Vaikruta*
- *Akruti* : *Pittavatala*

Systemic examination

Respiratory system, Cardiovascular system, Gastro intestinal system. Central nervous system and Musculoskeletal system has shown no abnormality.

Ocular examination

Table 1: Visual Acuity

| | Distant Vision | | Near Vision | |
|----|--------------------|-----------------|--------------------|-----------------|
| | Without spectacles | With spectacles | Without spectacles | With spectacles |
| OD | 6/18 | 6/12 | N-6 | N-6 |
| OS | 6/18p | 6/18 | N-6 | N-6 |

Table 2: Examination of Eye structures

| Structure | Right | Left |
|------------------|-------------|-------------|
| Eye brows | Normal | Normal |
| Eye lids | Normal | Normal |
| Conjunctiva | Normal | Normal |
| Sclera | Normal | Normal |
| Cornea - Size | Normal | Normal |
| Shape | Bulge | Bulge |
| Sheen | Normal | Normal |
| Sensation | Normal | Normal |
| Surface | Clear | Clear |
| Transparency | Normal | Normal |
| Munson's sign | Positive | Positive |
| Rezuttis sign | Positive | Positive |
| Anterior chamber | Deep | Deep |
| Iris | Normal | Normal |
| Pupil | ERLA | ERLA |
| Lens | Normal | Normal |
| IOP | 16 mm of hg | 17 mm of hg |

Distant direct Ophthalmoscopy

Oil droplet sign is positive in both the eyes.

Table 3: Direct Ophthalmoscopy

| Features | Right | Left |
|-------------|-----------------|-----------------|
| Media | Clear | Clear |
| Fundal glow | Normal | Normal |
| Vessels | Normal | Normal |
| Macula | Foveal reflex + | Foveal reflex + |
| Optic disc | Normal | Normal |

Table 4: Slit lamp examination

| Findings | Right | Left |
|---------------------|--------------------|--------------------|
| Shape of the cornea | Conical protrusion | Conical protrusion |
| Fleischer's ring | Not found | Not found |
| Vogt's striae | Not found | Not found |

Table 5: Observation during treatment course.

| V/A | Before Treatment | | After 1 st course of treatment | | After 2 nd course of treatment | | After 3 rd course of treatment | | During first follow up | | During second follow up | |
|-----|------------------|------------|-------------------------------------------|------------|-------------------------------------------|------------|-------------------------------------------|------------|------------------------|------------|-------------------------|------------|
| | Without glass | With glass | Without glass | With glass | Without glass | With glass | Without glass | With glass | Without glass | With glass | Without glass | With glass |
| OD | 6/18 | 6/12 | 6/18 | 6/12 | 6/18 | 6/12 | 6/12p | 6/12 | 6/12p | 6/12 | 6/12p | 6/12 |
| OS | 6/18p | 6/18 | 6/18 | 6/12 | 6/18 | 6/12p | 6/12p | 6/12 | 6/12p | 6/12 | 6/12p | 6/12 |

RESULTS

1. Marked improvement in visual acuity as depicted in Table No. 05 recorded at various levels of treatment and during follow up period.
2. Head ache was reduced
3. Pentacam reports before and after treatment are shown in Figure No. 01, 02, 03, 04.

Keratometric values are maintained after the treatment.

DISCUSSION

Many studies says that keratoconus is caused due to genetic and environmental factors, approximately

Investigations

Corneal topography (Pentacam) - depicted in figure No. 01, 02, 03, 04

Treatment adopted

1. *Mahatriphala Ghrita* 1tsp BD with warm milk for 25 days.
2. *Nasya* with *Anutaila* for 7 days
3. *Tarpana* with *Mahatriphala Ghrita* for 5 days
4. *Snehana Putapaka* for 2 days
5. *Shigru Navaneetha Pindi* for 15 days

Same treatment course is repeated for 3 sittings with a gap of 1 month.

10% of cases have a family background in which mutations are responsible for the disease to be happened, it is inherited as an autosomal dominant trait, mutations are raised specially on gene KTCN1.

Allergies such as eczema, asthma, food allergies and hay fever is responsible for keratoconus, as these allergies are known to cause itching and irritation that leads to eye rubbing, results in weakness of bonding between collagen fibers which is also due to lack of anti oxidants.

According to Sushruta, *Krishna Mandala* is originated from *Vayu Mahabhuta*.^[4] *Vayu* in *Garbhavastha* is vitiated due to *Dauhruda Avamana* leads to *Vikrutakshi*.^[5]

Vayu is said to be *Sarvadhātu Vyuhakara*, *Kartha Garbhakrutinam*, responsible for regular functioning of *Dhatus* in the body, formation of normal body parts, considering all these points in keratoconus *Krishnamandala* of *Netra* which originates from *Vayu* is either malformed or gets degenerated due to abnormal *Dhātu* functioning, by all these factors and considering the symptoms like *Avila Rupa Darshana* and *Avyakta Rupa Darshana*^[6] it is taken as *Prathamapatalagata Vataja Timira* and treated accordingly.

Action of Nasya

Nasa being the gateway for *Urdhwajatru*, *Nasya* being the best treatment for *Urdhwanga*, *Anutaila* being *Tridosahara*, *Shodana*, can circulate in minute *Srothas* and expels *Doshas* is opted for *Shodananga Nasya*.

Action of Ghrita Paana

Mahatriphala Ghrita being *Vata*, *Pittahara*, *Brumhana*, *Chakshushya* having more antioxidants will act as *Vatashamana*, *Brumhana*, *Rasayana*.

Action of Tarpana

Tarpana exert direct pressure on the cornea there may be changes in refractive index of cornea and lipophilic action of *Ghrita* facilitates transformation of drug to the target organ finally reaches the cell through cell membrane which is made of lipid. Corneal epithelium is permeable to lipid soluble substances, moreover *Ghrita* is having rich source of anti oxidants which can reduce the damage of thinned cornea by allowing more tissue contact time and bioavailability of the drug from the corneal surface.

Action of Pindi

In *Pindi* medicine is absorbed through the skin of lids, it helps to flatten the corneal curvature by its mechanical pressure and strengthens the cornea by medicinal effect, *Shigru* is one of the *Chakshushya Dravya* and proved to be *Abhishyandahara* in nature, *Navaneeta* is a *Chakshushya Dravya* in *Sneha* form. Hence this *Chakshushya Sneha* combination is helpful

in bringing down the corneal protrusion by *Dosha Shamana* and mechanical pressure.

CONCLUSION

Considering *Dosha Pradhanyata* and symptoms of the disease, keratoconus is correlated to *Prathamapatala Gata Timira* with *Vata* predominance. *Vataja Timira Chikitsa* which is *Snehana*, *Brumhana* and *Rasayana* is adopted in this patient. Both subjective and objective improvements are seen after treatment, and during follow up period. Since it is a single study it needs to be evaluated further and research should be conducted with more sample size, so further study is needed in this regard. As keratoconus is treated in contemporary medicine with correction and prescription of glasses, Intacs, C3R, results of which are still under question mark, hence Ayurveda has a wide scope of research in this regard to come up with new researches with better results.

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ILLUSTRATIONS

Figure 1: Pentacam of Right cornea - Before treatment

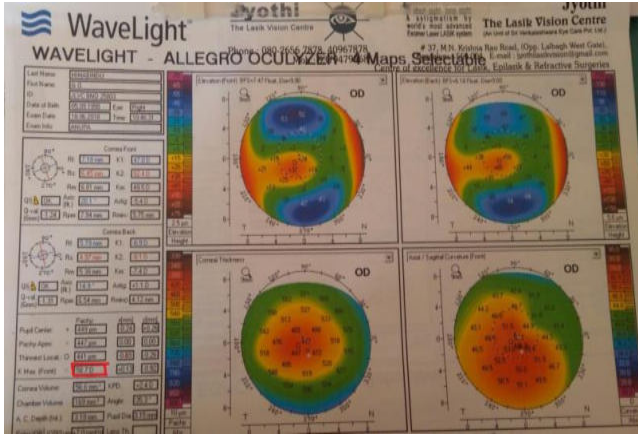


Figure 2: Pentacam of Left cornea - Before treatment

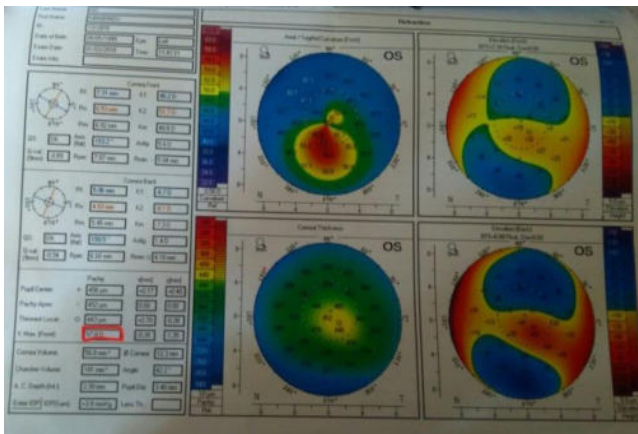


Figure 3: Pentacam of Right cornea - After treatment

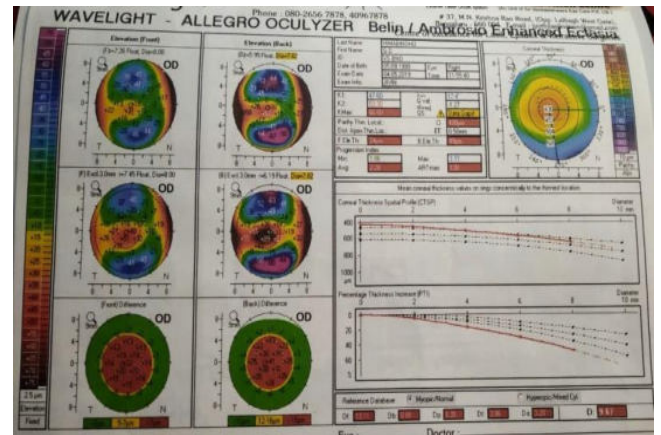
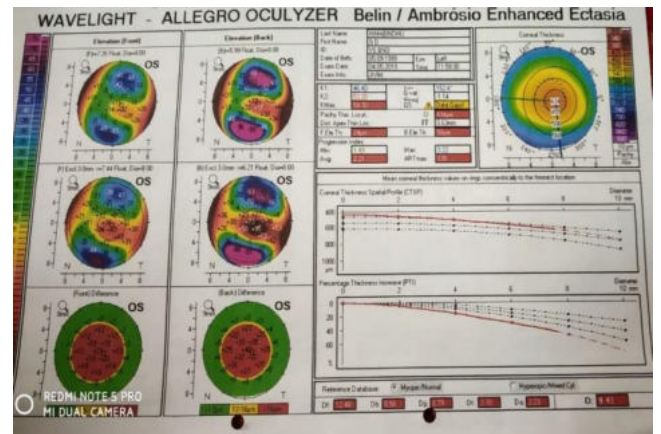


Figure 4: Pentacam of Left cornea - After treatment



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