VISUAL DISORDERS IN ANCIENT INDIAN SCIENCE
(INTERPRETATIVE STUDY)

C. SRINIVAS*

ABSTRACT

Sushruta classified and mentioned visual disorders in his classical text of 'Sushruta Samhita' under 76 eye diseases and also classified structural and treatment wise. Many authorities of the subject have praised Sushruta in their works and regarded him as a pioneer of ophthalmology. The saying 'nayanam pradhanam' shows that, without it there is no correspondence with external world. Sushruta showed a special interest in 'Drushtigata Rogas' and described thirteen such diseases.

The visual disorders described in ancient Indian medical science by Sushruta are enlightened and presented in this paper analytically, diagrammatically with the help of modern ophthalmology.

Introduction

Vision is the most complex problem even today though the ophthalmology advanced enormously. Inspite of its advancements it could not understand clearly the formation, process of vision and its disorders. But 3000 years back the ancient Indian medical scientists, like Sushruta classified and mentioned visual disorders in his classical text of 'Sushruta Samhita' under 76 eye diseases and also classified structural and treatment wise (Su.Ut. 1–13 chapters). It may be the probable that Duke Elder, Kirby and Bradley praised Sushruta in their books and regarded him as a pioneer of ophthalmology.

The visual disorders like myopia, hypermetropia, astigmatism and defective vision in cataract and maculopathy are recent inceptions of ophthalmology. Johannes Kepler

* Department of ophthalmology, Govt. Nizamia General Hospital Hyderabad-500 002.

KEY WORDS - Su. Ut. Sushruta Uttarasthana.
(1571-1630) and Isaac Newton (1642-1727) brought out the details of refractions and dioptic systems. These visual disorders briefly mentioned in Indian medicine though the names and treatment may not be similar, but the signs and symptoms are the same and the treatment part is a quite new dimension which requires scientific and experimental study. The signs and symptoms can be critically analysed with co-relation of modern ophthalmology (Srinivas - 1979). In this paper it is tried to co-relate the ancient ophthalmology of Suśruta.

The saying 'Nayanaṁ Pradhānanāṁ' means importance of the eyes, shows that without it there is no correspondence with external world. It expresses in other terms that the blind man is useless to himself and to the society as well. Suśruta showed a special interest in 'Drṣṭigata Rogas' (Drṣṭi-Vision, Roga-Disease) and described 13 such diseases in the 'Suśruta Sarṣihita'.

Anatomical and Physiological Concepts of Drṣṭi & Paṭāla

A brief description of definition, anatomy and physiology is given in Su.Ut. 7th chap 3 & 4. The description, like the word Masūra (round pulse) indicatnig the shape and size can be considered as pupil and lens and further description like šīta sātmyaṁ (šīta - cold, sātmyaṁ - affinity) is an indicative of its nature, as it is seen in modern Ophthalmology that excessive heat like radiation, solar exposure, welding causes cataract and macular disorders. Chāyāyāṁ Vispharati (Chāya-shadow, Vispharatidilatation). It indicates that the pupillary reaction with light is also a physiological and important diagnostic approach in Ophthalmology.

Concept of the paṭāla (layer) is controversial (Srinivas-1979). Apte considers that paṭāla is a film or coating of the layer. Gardiner also mentioned the layers while describing the lens. They are 6 in number, two in vartma (lids) and 4 in eye proper. When the four paṭālas are vitiated then 'Drṣṭigata Rogas' (visual disorders) like Timira (Timir-darkness-hazy/misty look) a dreadful visual diseases occur (Su.Ut. 1st chap. 17).

Pathology and its clinical features in Drṣṭigata Roga (Visual Disorders)

When the Doṣas are vitiated, the term is used and the important physiological humours which are disturbed by any reason and invade the paṭāla then below mentioned visual defects occur which are described here analytically and pictorially.

Signs and symptoms of the Prathama (first) Paṭāla (layer)

When the Prathama (first) paṭāla (layer) is affected it produces "Avyaktāni Sa Rupāni" (Avyaktāni-not clear; Sa roopāni-Objects) (Su.Ut. 7th chap. 6) means the
objects appear hazy or misty (fig. no. 1). This kind of visual defects are seen in lenticular haze or in myopia.

**Signs and symptoms of the Dwitiya (second) Patala (layer) (Su. Ut. 7th chap. 10)**

When the second patala is affected visual disturbances are more confusing (fig. No. 2).

The patient visualises false images of flies, gnats, hairs, webs, circles, flags, mirage and ear rings. All the images are moving and rainy appearance. The distant object appears to be nearer and the near appears to be far away. Unable to put the thread in the needle. (Fig No. 2)

All the above findings seen in hyperopia, astigmatism and aphakia. Dabezies mentioned that most annoying complications in vision like magnification, aberration and near vision problems are common in aphakia. Troutman and Willard mentioned the visual disturbances in aphakic patients.

**Signs and symptoms of the Tiriya (third) Patala (layer) (Su. Ut. 7th chap. 1-14)**

When the third patala is affected "Urthvam 'Paśyati" (Urthvam - top, Paśyati - able to see) means able to see the top but not the basal objects (fig. No. 3).

Able to see the big objects without nose and ears (fig. No. 3) and also seen the symptoms according to the dosa vitiation mentioned below:

a) If the dosa is in the lower part, the patient is unable to see the near objects.

b) If the dosa is in the upper part, the patient cannot visualise the distant objects.

c) If the dosa affects sides, corresponding visual disturbs (Scotopic) (fig. No. 4, 4a, 4b).

d) If dosa is allround, object appears to be overlapping.

e) If dosa is in centre, the patient sees double (fig. No. 5).

f) If dosa affects in two places, the object appears more polyopia (fig. No. 5).

These findings seen in developmental lenticular opacity and nuclear cataract etc.

**Signs and symptoms of the Caturtha (fourth) Patala (layer) (Su. Ut. 7th chap. 15-17)**

When the fourth patala affects 'Līnganāśa' (Līnga = objects or shape; Nāśa = failed or dead) means fiber of complete vision and patient can recognise luminous objects like Moon, Sun, Fire and Stars (fig. No. 6).

In other words Līnganāśa called Kāca (Kāca = pearl). Here it can be interpreted that the cataract externally looks like a pearl in centre of the eye. Even in Arabic literature
also it was called as 'Pearl of the Eye' (Duke Elder).

Comments:

The visual disorders described under drṣṭigata rogas in Suṣruta Samhitā are brief and the treatment mentioned in it also needs experimental and clinical work (Srinivas-1981, 1982), studied some errors clinically and found some encouraging results. It is rather essential to have sound modern knowledge of the subject to understand the Suṣruta's visual disorders.

The above mentioned interpretations and imaginary drawn pictures based on the Suṣruta's concepts have been given here. All the signs and symptoms mentioned under drṣṭigata rogas are seen in visual disorders mainly in lenticular opacities during its developmental stages like hazy look, rainy look, confusion, diplopia and polyopia near and distant visual defect. Complete visual loss and perception of light are main symptoms of mature cataract.

The findings like hazyness, floating bodies are the manifestation of Myopia, Confusion, Rainy look are seen in hypermetropia and astigmatism.

The drṣṭigata rogas are enlightened with the help of modern ophthalmology. It also requires more analytical study to illuminate the hidden science.

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Fig. No. 1 – Showing the symptoms of first Patala afflictions.

Fig. No. 2 – Showing the symptoms of second Patala afflictions.
Fig. No. 3– Showing the symptoms of the third Paṭala afflictions.

Fig. No. 4– Normal appearance of the building.
Fig. No. 4 a – Corresponding visual disturbance and looks central part.

Fig. No. 4 b – Showing the sides affected in third Paṭala.
Fig. No. 5– Symptoms of third Paṭala of Diplopia and Polyopia.

Fig. No. 6– Showing the conditions of appreciation of perception of light in fourth Paṭala.
मसूरवलमांग तु प्रकृतप्रसादादाम।
शक्तिविन्दुशहायामित्रं तेजोनिविष्यं।। सु-उ. 7/8।।
अवृतं पटलेनापणोवैनाथं विविधकृतं।
शोतसरस्यां नृणां दृष्टिमात्रेनभिन्नं।। सु-उ. 7/4।।
द्वे वर्द्धितत्वो विश्रावचतर्यांणी वक्षिण।
जाते तिरिकं येषु अविधं: परमदारणं।। सु-उ. 1/17।।
सिद्धान्तिशाश्वप्पे विधुणोडव्यन्तरे प्रभुम।
प्रथमे पत्ते दोषे यथा दृष्टो ध्यासितं।। सु-उ. 7/8।।
अंकुरकारण स रूपाणि सर्वाण्वेय प्रपन्तत।
दृष्टि चूणि विकृति द्वितीयं पत्तं गते।। सु-उ. 7/7।।
मकरा मरकानं केशाक्षलकामं च पश्चय।
मण्डलानि पताकांपं मरीचो: कुपोलानि च।। सु-उ. 7/8।।
परिप्राणं च विप्रियान वर्षमं सत्मासं च।।
दूरस्थात्यं रूपाणि मन्यते च समपोत।। सु-उ. 7/9।।
समीपस्थानि दूरे च दृष्टेणोचविभ्रमात्।
यतात्वाङ्ग च चाल्यति सूचिपां न पश्चय।। सु-उ. 7/10।।
ऊँच्च पश्चय नाध्यसातसुतीयं पत्तं गते।
महान्त्यं च रूपाणि: चार्धितानीतव वाङ्ग।। सु-उ. 7/11।।
कथ्यनासात्यमुक्तानि विप्रित्यानि: वैक्षेत।
यथादोषं च वज्येत दृष्टिदोषं बलोपासि।। सु-उ. 7/12।।
अधि: सतीये समीपस्थं दूरस्थं चोपरिदिशिष्टे।
पांश्विरिष्टे तथा दोषे पांश्विरस्यानि न पश्चय।। सु-उ. 7/13।।
समांतं: सतीये दोषे सहकुलानीव पश्चय।।
दृष्टिमर्याद्यते दोषे स एकं मन्यते द्विषा।। सु-उ. 7/14।।
ह्यान्त्यि: दिरवा पश्वेदतुध्वाचाडनिष्टे।
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रूपाणि: सर्वां दृष्टिकोणश्र: स उच्चते।
तिमिराश्व: तमोरूपे नातिकुले महागदे।। सु-उ. 7/16।।
चंद्राहिन्यं सनक्षांशान्तरीकों च: विविषु:।
निम्नलानि च तेजानि स्नार्जिष्णूनि च पश्चय।। सु-उ. 7/17।।
सारांश

प्राचीन भारतीय विज्ञान में दृष्टिगत विकार
(व्याख्यातामक अध्ययन)

-सी. श्रीनिवास

सुभृत संहिता में दृष्टिगत विकारों का वर्णन एवं वर्षण 76 नेत्र विकारों के अंतर्गत किया गया है। इन विकारों का संरचनात्मक एवं चिकित्सात्मक दृष्टिकोण से भी वर्णकरण मिलता है। इस विषय से संबंधित अनेक विशेषज्ञों ने अपनी क्रियाओं में सुभृत की प्रशंसा की है और उन्होंने सुभृत को नेत्र चिकित्सा विज्ञान के क्षेत्र में प्रथम प्रदर्शक माना है। "नन्दनप्रभातम् रद्दहोता" कि, नेपामाव में बाहरी संसार से संपर्क असम्भव है सुभृत ने दृष्टिगत विकारों में विशेष रूप से दिखावे हुए। ऐसे विकारों का वर्णन किया है।
# REFERENCES

1. **Bradley, W.**

2. **Duke-Elder, Sir.**
   Systems of Ophthalmology.

3. **Gardiner, P.A.**

4. **Dabezies, D.H. Jr.**

5. **Kirby, B. Danial**

6. **Srinivas, C.**

7. **Srinivas C, Thakur, V. Deshpande, P.J.**

8. **Sharma, A.D.**

9. **Singhal G.D. Sharma, K.R.**