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Review Article

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A FOCUS ON DRISHTI CONCEPT IN SHALAKYA LITERAL REVIEW

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ABSTRACT

There are five sense organs i.e. eye, ear, nose, tongue and skin. Among these sense organs, Ayurveda gives prime importance to the eye. It says "sarvendriyaanam nayanam pradhanam". Innumerable researches and experiments are going on in the field of Ayurveda but some controversies are still remaining. Drishti is one of the controversial terminologies in Shalakya Tantra and there are many concepts which have been given time to time and are still evolving. At some places Drishti is taken as a functional entity and at other places as a structural unit. It also appears to have both structural and functional properties in few contexts. Our ancient Acharyas have explained Netra Rachna

Sharir, Netra Kriya Sharir in a beautiful descriptive manner, still there is need of exploring the terminologies for proper understanding of pathogenesis of Netra Rogas and their treatments so that implementation of Ayurvedic concepts can be done in eradication of Drishtigata Rogas in a fruitful manner to serve the humanity.

KEYWORDS: Drishti, Drishtigat roga, Shalakya, Ayurveda, Netra Rachna Sharir.

INTRODUCTION

Shalakya tantra is an important branch of Ayurveda which deals with the diseases manifesting above clavicular region. supraclavicular region including eyes, ear, nose, throat, head and neck. Out of these; eyes have been given prime importance because of dealing with vision. Acharya Sushruta has first given the detailed description of Netra Sharira (eye anatomy), well organized classification of eye diseases and their management both by medical and surgical means. Drishti is an important part of eye and in classics it is interpreted in various aspects. It is considered as a controversial entity in Ayurveda till today and debates are going on over its structural and functional properties. In the present study attempts are

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made to elaborate Drishti and its relation in different aspects according to Ayurvedic and modern sciences.

AIM AND OBJECTIVES

Various texts including Ayurvedic literature, Sanskrit literature and other modern literatures were studied and all the related points have been elaborated in this study.

Literary Review

Etymology of Drishti - Different types of etymology for Drishti are given in Indian classical texts and these can be summarised as follows: Drish-to see + KtinKarane means source or tool with which one sees. Drishbhave + Ktin mean seeing, viewing, intellect. [1]

The measurement (pramana) of Drishti is described as 1/7th of Krishnamandala, 1/9th of Taraka, Masoordala matra(size equivalent to the cotyledon of Lentil)in Ayurvedic classics. [2,3.4] Drishtvantaraterm has been used to measure distance between two Drishti (interpupillary distance) as four angulas is narrated. [5] Drishti Mandala is said to be derived from both paternal and maternal factors in Ayurveda. [6] Formation of Drishti occurs with sara of Panchamahabhutaakasha, vayu, agni, jala and prithvi (Panchabhuta prasadajam) as explained in Sushtuta Uttaratantra. According to Ayurveda Drishti never increases in size during whole lifetime.^[7] Daily use of Anjana and Ashchyotanaare said to be beneficial for eyes making Drishti as clear as a moon appears in the sky.^[8] While explaining prognosis and treatment of many diseases, term Drishti has been used as an anatomical entity. When Savrana shukla affects Drishti, its prognosis becomes poor. [9] Acharya Vaghbhata explained Shukla roopata (whitish discoloration) on involving Krishna mandala as well as Drishti as an asadhya (incurable) lakshana of Shukra. [10] When Arma reaches upto Drishti, chedana karma (excision)is advised as a treatment by Acharyas. [11] While explaining Linganasha changes in colour of Drishti are given according to involvement of Doshas by Acharya Sushruta and Acharya Vaghbhata. [12,13] According to Acharyas colour of Drishti changes when Doshas affect Tritya Patala, finally Doshas further progress to Chaturtha Patala and completely block the vision.^[14] Drishti gets shrunken in Gambhirika due to constriction of Sira by Vata.^[15] All the above references indicate towards Drishti being an anatomical entity.

Drishti In Physiological Point of View

Properties of Drishti- It performs better in shade and cold atmosphere (Sheet satmya). Drishti as knowledge-Drishti visharada is a term used for persons having extreme knowledge.

Drishti as Vision- In Ayurvedic classics there are several references which indicate that Drishti term is used for vision. Few textual references are as following

When Tejo Dhatu does not reach Drishti, congenital blindness (Jatyandha) is developed. [16] If poison is given in Anjana form (Visha Samsrishta Anjana) then blurring of vision (Drishti vibhrama) occurs. [17] Controlling vega (natural urges) like Kshudha and Adhovaayu leads to defective vision. [18,19] If Adhimantha is not treated properly it leads to loss of vision (Drishtihanana). Acharya Vaghbhata used term Drishti Mushita darshanam for loss of vision in Aupsargika Lingnasha.^[21] AcharyaSushruta used term Drishti runaddhi for loss of vision in Linganasha. [22] Drishtiprada Vartiis mentioned by Acharya Charaka in Trimarmiya adhyaya for treatment of Netrarogas and it is said to be potent enough to provide vision to even blind persons. [23] There are several references for Ahara sevana affecting Drishti (vision). Food prepared in ghrita, as well asintake of Mudga is said to be Drishti Prasadaka (helpful for vision). [24,25] Food materials which are prepared in Taila are said to be Drishtighna (harmful for vision). [26] Intake of Kalinda is said to be Drishti kshyakara (harmful for vision)Drishti Dushana (Vision impairment) occurs due to intake (sevana)of Viruddha dhanya. [27] Putapaka Kriyakalpa is considered as Drishti balartha parama by Acharya Sushruta whereas Acharya Vaghbahata described Putpaka as Driga baladhana, both of which indicate improvement in vision by putapaka. [28,29] Nasya procedure is also said to be Drishti prasadana. [30] As a result of Mukhalepa, strengthening of vision (Drishtibala) occurs. [31] Taila-abhyanga and Padabhyanga are also said to be helpful in improving vision (Drishti Prasada) according to both Acharya Vaghbhata and Acharya Charaka respectively. [32,33]

All the above references denote that Drishti term has come mainly for functional outcome – vision.

Drishti in Both Physiological and Anatomical View Ropana anjana is considered as Drishti Varnya and Bala Vardhanam that means eyes become clean externally along with improvement in vision. [34]

In Pitta Vidagdh Drishti, Kaphavidagdha Drishti and Nakulandhya structural and functional both deformities occur in Drishti. [35]

In Abhigataja linganasha structural and functional both deformities occur (Drishti Vidiryate, sidati, hivate).[36]

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In Animittaja Linganasha there is loss of vision (Drishtihanyate) but Drishti appearsclear (Vaidurya varna/Vimala varna) which shows vision is hampered in spite of intact structural integrity.^[37]

Above are the references of Drishti indicating for anatomical as well as physiological aspect

DISCUSSION

All the Ayurvedic texts imply that Drishti can be taken as an anatomical entity (eyeball, central part of cornea, pupillary aperture, lens, retina or optic nerve) as well as a physiological outcome -vision.

Discussion on Anatomical aspect of Drishti Drishti as Eyeball: There is description regarding protection of Drishti during Agnikarma and also while doing Mridusweda (mild fomentation) of Drishti, covering it with different leaves has been advised. Since all these objects can only be applied only externally to a body part and thus here Drishti can be considered as eyeball.

Drishti as Cornea: While describing prognosis of Savranashukra it is said to be asadhya (incurable) when this disease involves Drishti. In modern texts similar type of condition is seen in corneal ulcer and corneal opacity where central as well as deeper layers of cornea are involved, it results into blurring of vision and in advanced cases it may lead to even blindness. Drishti is said to be covered by Bahayapatala. As per Ayurvedic classics Bahya patala is Tejo-jala ashrita which is further explained in Dalhana commentary that this patala is considered as Accha (clear) that helps in Roopa grahanam (vision) by Drishti. It indicates towards transparent structure which is helpful in vision also. In modern ophthalmology Cornea is explained as a clear and transparent structure through which light rays pass and reach upto retina. Any disturbance in its transparency causes defective vision. It is also a fact that all ocular structures related to vision are helpful in vision provided cornea is healthy. Hence here Drishti can be considered as cornea.

Drishti as Pupil: Drishti is said to have glow-worm like appearance as per Ayurveda; it can be due to the fact that eyes reflect some amount of light and this is visualized in pupil. The feature of Vivarakriti implies a hollow structure as explained in Ayurveda as well as modern ophthalmology. According to modern ophthalmology pupil is a hollow aperture in the centre of the iris that allows light to pass into retina. Measurement of Drishti is given as 1/7 of Krishnamandala (cornea) and 1/9th of Taraka(iris) which can be clarified taking into

consideration that pupil constrict or dilate according to the amount of light received and hence changes in size occur. It is also regarded as Masoordalapramana which again signifies the same dilating or constricting actions of pupil. In the description of Kaphajalinganasha, constricting and dilating feature of Drishti to light and dark comes, which signifies the property of pupil as Drishti.

In context to Arma, surgery (chedanakarma) is avoided if it is situated near Drishti. Here Drishti can be considered for pupil and pupillary margins. All these points indicate towards close resemblance of Drishti to pupil.

Drishti as Lens: Drishti plays an important role in pathogenesis and progression of Timira roga as there is wide description of this roga under the umbrella of Drishtigataroga. All three forms of this roga-Timira, Kaacha and Linganasha are found in different patalas of Drishti. All these features given for changes in colour of Drishti in Timira or kacha or linganasha can be depicted in modern texts and can be correlated with the disease of lens called as cataract. In cataract various colour changes along with different pattern of lens opacification are seen, these can be correlated with colour of Drishti in different types of Timira. Taking these facts into consideration, lens as an anatomical entity has a resemblance with Drishti.

Drishti as Retina: Drishti has origin from sara of panch mahabhuta with predominance of tejomahabhuta which is considered as light media for eye. Roopa with the help of teja travels into chakshu and then reached to chaksurendriya and then to chakshubudhhi where perception of the object occurs and finally perceived by atma which provide information of the object and all this can be considered as pathway for visual impulse received by eyes and thus enabling it to see. IndriyaArtha (object has form) IndriyaDravya (light media) Indriya Adhisthana (eyes) Indriya (photoreceptor cells of retina (rods and cones) IndriyaBuddhi (transmission of image via visual pathway) Atma (higher centre i.e. visual cortex)-Processing of vision according to Ayurveda The diseases explained in Drishtigataroga like Pittavidagdha Drishti, Kaphavidagdha Drishti, Nakulandhya or Hriswajadya have features of night blindness, day blindness, distorted vision and loss of vision. Here Drishti can be considered as retina because in all these diseases the retinal involvement is present which affects the visual outcome.

Drishti as Optic Nerve: In a disease Hatadhimantha, which is a complication of Adhimantha, Drishti pratikshipan (shrinkage of Drishti) is found as a clinical feature. In Gambhirika roga also feature of shrunken eyeball is given by Acharyas which can be correlated with a condition of Pthisis bulbi according to modern science which is defined as shrunken, non-functional eye. Thus Drishti can be correlated with atrophy of optic nerve in modern ophthalmology. In a previous study it was concluded that Drishti should be referred as pupil in context of anatomy, intraocular lens in context to Kaach, Timira, Linganasha and it can be taken as optic nerve or retina as a whole in context to Pittavidagdhadrishti, shleshmavidagdhadrishti. In an another study DrishtiKacha term was compared to Lens, DrishtiPatala to Retina, Drishtinadito Optic Nerve and DrishtiMarga to Visual Pathways System.

Discussion on Physiological aspect of Drishti Drishti as visual outcome: In some disease like Animittaja Linganasha and Aupsargikalinganasha there is no structural deformity but there is physiological dysfunction in eye (vision loss). It indicates that vision can be hampered even when eye appears quiet as seen in few conditions like retrobulbar neuritis in modern ophthalmology. Discussion on Anatomical as well as Physiological aspect of Drishti In Abhighatajalinganasha there is destruction of structure as well as loss of vision, which implies that Drishti can be taken as an anatomical and physiological unit both. In modern ophthalmology also it is seen that when there is any trauma occurs in eye, structural as well as physiological loss is seen.

CONCLUSION

The word Drishti has got several meanings in context of Netra rogas. It has to be understood what it implies in relation to where the word drishti is being used. As explained above, in context of anatomy it should be referred as pupil, in context of kanch, timir, linganaash (drishtigata rogas) it should be considered as intraocular lens whereas in pitta vidagdha drishti, shleshma vidagdha drishti etc. drishtigata rogas it must be taken as optic nerve or retina as a whole. To treat any disease one should have thorough knowledge of terminologies used in ancient texts and their multiple meanings. From the above references the concept of drishti has been explained in detail to serve the mankind with the ancient life science principles.

REFERENCES

- 1. Apate VS The Student's Sanskrit English Dictionary, Motilal Banarasidas Publishers, Delhi, Second edition, Reprint, 2005.
- 2. Kaviraj Shastri Ambikadutta uttaratantra Aupdravikam adhyaya.in: Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 7: 13.
- 3. Kaviraj Shastri Ambikadutta Aaturopkramniya adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita Sutrasthana Part 1 reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 169: 14.
- 4. Kaviraj Shastri Ambikadutta uttaratantra Drishtirogavijaniya adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary Susruta Samhita Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 40: 3.
- 5. Kaviraj Shastri Ambikadutta Aaturopkramniya adhyaya. in: Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita Sutrasthana Part 1 2013 reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 169: 13.
- 6. Ashtanga Samgraha by ShrimadaVridhavaghbhataSaroja Hindi Commentary by Dr.RaviduttTripathiChaukhamba Sanskrit Pratishthana Reprint 2006 Sharirasthana chapter 2.
- 7. Kaviraj Shastri Ambikadutta Garbhavyakaranasharira adhyaya. in: Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita Sharirasthana Part 1 2013 reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 49 shloka 59.
- 8. Pt. Sastri Kashinatha Dr. Chaturvedi GorakhaNatha Matrashitiya adhyaya in Vidyotini Hindi Commentary of CarakaSamhita of Agnivesha revised by Caraka and Drdhabala introduced by Vaidya-Samrata Sri Satya Narayana Sastri Padmabhushana sutrasthana Part 1 reprint Chakhambhabharati academy, 2008; 114 shloka 18,19.
- 9. Kaviraj Shastri Ambikadutta uttaratantra Krishnagatarogarogavijaniya adhyaya. in: Ayurveda Tattva Sandipika Hindi Commentary Susruta Samhita Uttaratantra Part 2 reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 31 shloka 5. 15.
- 10. Vaidya Upadhyaya Yadunanadana ed. Uttarasthana Sandhisitasitarogavijaniya in Vidyotini Hindi Commentary of Ashtangahridayam of Vaghbhata by KavirajaGuptAtridev Uttarasthana reprint Chaukhambha Prakashana Varanasi, 2016; 661 shloka 28,29.

- 11. Vaidya Upadhyaya Yadunanadana ed.Uttarasthana Sandhisitasitarogavijaniya in Vidyotini Hindi Commentary of Ashtangahridayam of Vaghbhata by Kaviraja Gupt Atridev Uttarasthana reprint Chaukhambha Prakashana Varanasi, 2016; 660 shloka 2.
- 12. Hindi Commentary SusrutaSamhita Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 44 shloka 29-32.
- 13. Vaidya Upadhyaya Yadunanadana ed. Uttarasthana Drishtirogavijaniya in Vidyotini Hindi Commentary of Ashtangahridayam of Vaghbhata by KavirajaGuptAtridev Uttarasthana reprint Chaukhambha Prakashana Varanasi, 2016; 667 shloka 9-22.
- 14. Vaidya Upadhyaya Yadunanadana ed.Uttarasthana Drishtirogavijaniya in Vidyotini Hindi Commentary of Ashtangahridayam of Vaghbhata by Kaviraja Gupt Atridev Uttarasthana reprint Chaukhambha Prakashana Varanasi, 2016; 667 shloka 7.
- 15. Kaviraj Shastri Ambikadutta uttaratantra Drishtirogavijaniya adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary Susruta Samhita Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 47 shloka 42.
- 16. Kaviraj Shastri Ambikadutta Shukrashonitshuddhisharira adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita Sharirasthana Part 1 2013 reprint edition Chaukhambha Sanskrit Sansthan Varanasi 2013 pp 20 shloka 38.
- 17. Kaviraj Shastri Ambikadutta Kalpasthanam annapaanarakshakalpa adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita Uttaratantra 2013 reprint edition Chaukhambha Sanskrit Sansthan Varanasi 13 shloka 69.
- 18. Kaviraj Shastri Ambikadutta uttaratantra Udavartapratishedha adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary Susruta Samhita Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 519 shloka 16.
- 19. Vaidya Upadhyaya Yadunanadana ed.Sutrasthana Roganutpadniya adhyaya in Vidyotini Hindi Commentary of Ashtangahridayam of Vaghbhata by Kaviraja Gupt Atridev Sutrasthana reprint Chaukhambha Prakashana Varanasi, 2016; 46 shloka 2.
- 20. Kaviraj Shastri Ambikadutta uttaratantra Sarvagatarogavijaniya adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 33 shloka 20.
- 21. Vaidya Upadhyaya Yadunanadana ed.Uttarasthana Drishtirogavijaniya in Vidyotini Hindi Commentary of Ashtangahridayam of Vaghbhata by Kaviraja Gupt Atridev Uttarasthana reprint Chaukhambha Prakashana Varanasi, 2016; 669 shloka 31.

- 22. Kaviraj Shastri Ambikadutta uttaratantra Drishtigatarogavijaniya adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 42 shloka 16.
- 23. Pt. Sastri Kashinatha Dr. Chaturvedi GorakhaNatha trimarmiyachikitsa adhyaya in Vidyotini Hindi Commentary of CarakaSamhita of Agnivesha revised by Caraka and Drdhabala introduced by Vaidya-Samrata Sri Satya Narayana Sastri Padmabhushana sutrasthana Part 2 reprint Chakhambhabharati academy, 2008; 760 shloka 254,256.
- 24. Kaviraj Shastri Ambikadutta sutrasthana annapanavidhi adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita sutrasthana reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 277 shloka 411.
- 25. Kaviraj Shastri Ambikadutta sutrasthana annapanavidhi adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita sutrasthana reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 244 shloka 29.
- 26. Kaviraj Shastri Ambikadutta sutrasthana annapanavidhi adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary Susruta Samhita sutrasthana reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 277 shloka 411.
- 27. Kaviraj Shastri Ambikadutta sutrasthana annapanavidhi adhyaya. in: Ayurveda Tattva Sandipika Hindi Commentary Susruta Samhita sutrasthana reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 277 shloka 410. 36.
- 28. Kaviraj Shastri Ambikadutta uttaratantra Kriyakalpa adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita part 2 Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 95 shloka 22.
- 29. Vaidya Upadhyaya Yadunanadana ed.Sutrasthana Tarpanaputpakavidhi adhyaya in Vidyotini Hindi Commentary of Ashtangahridayam of Vaghbhata by Kaviraja Gupt Atridev Uttarasthana reprint Chaukhambha Prakashana Varanasi, 2016; 187 shloka 12.
- 30. Kaviraj Shastri Ambikadutta Chikitsasthana dhoomnasyakawakgrahachikitsa adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary Susruta Samhita part 2 Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 225 shloka 2.
- 31. Vaidya Upadhyaya Yadunanadana ed.Sutrasthana Gandushadividhi adhyaya in Vidyotini Hindi Commentary of Ashtangahridayam of Vaghbhata by KavirajaGuptAtridev Uttarasthana reprint Chaukhambha Prakashana Varanasi, 2016; 181 shloka 22.
- 32. Vaidya Upadhyaya Yadunanadana ed.Sutrasthana Dincharya adhyaya in Vidyotini Hindi Commentary of Ashtangahridayam of Vaghbhata by KavirajaGuptAtridev Sutrasthana reprint Chaukhambha Prakashana Varanasi, 2016; 24 shloka 8.

- 33. Pt. Sastri Kashinatha Dr. Chaturvedi GorakhaNatha Matrashitiya adhyaya in Vidyotini Hindi Commentary of CarakaSamhita of Agnivesha revised by Caraka and Drdhabala introduced by Vaidya-Samrata Sri SatyaNarayanaSastriPadmabhushana sutrasthana Part 1 reprint Chakhambhabharati academy, 2008; 129 shloka 91.
- 34. Kaviraj Shastri Ambikadutta Uttaratantra Kriyakalpam adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita part 2 Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 99 shloka 55.
- 35. Kaviraj Shastri Ambikadutta uttaratantra Drishtigatarogavijaniya adhyaya. in:Ayurveda Tattva Sandipika Hindi Commentary SusrutaSamhita part 2 Uttaratantra reprint edition Chaukhambha Sanskrit Sansthan Varanasi, 2013; 45-47 shloka 53,36,37,38,41.
- 36. Dr. Thakrala kewal Krishna uttaratantra Drishtigatarogavijaniya adhyaya in hindi translation of Nibandhasangraha Commentary of Sri Dalhanacharya and the Nyayachandrika Panjika of Sri Gayadasacharya on Sushruta Samhita Uttaratantra reprint edition Chaukambha Orientalia Varanasi, 2017; 42 shloka 45.
- 37. Dr. Thakrala kewal Krishna uttaratantra Drishtigatarogavijaniya adhyaya in hindi translation of Nibandhasangraha Commentary of Sri Dalhanacharya and the NyayachandrikaPanjika of Sri Gayadasacharya on Sushruta Samhita Uttaratantra 2017 reprint edition Chaukambha Orientalia Varanasi, 42 shloka 43,44.