Ancient view of cataract in relevance to modern science

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ARTICLE INFO:

Article history:
Received: 25 May, 2016
Received in revised form: 02 June, 2016
Accepted: 20 June, 2016
Available online: 30 June, 2016

Keywords:
Timira
Patala
Lingnasha
Drishti

ABSTRACT

Cataracts are the leading cause of curable blindness, till date there is no medicine claimed to have the capacity to dissolve the cataractous lens. The researches either to delay the onset or to prevent the progress of cataracts deserve great attention as the goal of WHO is to achieve 0.3% reduction of prevalence rate of blindness by the year 2020, and cataract takes 62.6% of total cause of blindness as per national survey conducted 2001-2002 by WHO & NPCB. Ayurveda promises the cure of the initial stage of the pathology of any type of visual failure through internal & external medications and by eye care. The very scientific approach of Ayurveda in explaining the diseases of drishti, its classification, prognosis and treatments can contribute a great deal in this regard.

1. Introduction

There existed a lot of fantasies regarding lens, its position, structure, and also about cataract during 16 & 17th centuries. The position of lens was thought to be in the centre of globe (1514-64), cataract as a corrupt and inspissated humour in between the iris and cornea. It is around the 18th century that a clear cut idea about lens and cataract was made. But years before, ancient Hindu acharya Susruta identified the structure lens and explained signs and symptoms of cataract as a lesion affecting the lens. It is surprising that how scientifically he mentioned the indication, contraindication and complications of cataract surgery along with its management.

According to Susruta normal vision depends on healthy Drishti. When vitiated Doshas localise in different patalas of drishti it may result in various visual abnormalities and finally loss of vision[1]. He specify the importance of drishti, explained a lot of measures to maintain healthy drishti so as to keep clear & good vision.

All Pathologies related to vision are categorised under the title of Drishthigata roga vijnaneeya. Susruta describes 12 varieties of diseases pertained to the Drishti[2]. Among these 6 are linganashas of Various Doshic Origin (vataja, pittaja, kaphaja, raktaja, samsargaja, sannipataja) and 6 other diseases include Gambheerika (total loss of vision with distorted shape and with pain due to vata, Hraswajadya (Microphthalmous along with disturbed vision), pitta vidagdha (Yellow coloured vision), sleshmavidagdha (Night blindness Curable), Nakulandh (incurable night blindness), Dhoomara (A condition of blurred vision without other significant reason).[3]. It may be because of the instability of the condition of Timira that Susruta didn’t consider timira while counting the diseases of Drishti and it is not wise to call the initial pathological states as Linganasha, as Susruta himself gives signs and symptoms of Timira in detail and indicate total loss of vision during the stage of Linganasha and according to him it is possible to cure the initial stage by medicines as the doshas are not deeply situated.

Vagbhata gives more detailed information about Drishtagataraoga. According to him there are 27 eye diseases affecting drishti. Among this, majority are Timira, Kacha & Linganashas of 6 different variety-vataja, pittaja, Kaphaja, samsargaja & sannipataja together with oupasargika linganasha it makes 19 out of 27[3] and eight other disease include Gambheerika, Hraswa, Doshandhaya, Nakulandhya (night blindness of sadhya and yapya types) pittavidagdha (yellow coloured vision), Ushnavidagdha (Difficulty of vision due to over exposure to heat) Amla vidagdha (blurred vision due to over use of sour food items) Dhoomara (dimmunition of vision without specific reason Amblyopia).

Among the various diseases of Drishti, indication of surgical intervention in Kaphaja Linganasa, and the possibility of retaining of vision in Kaphaja Linganasa compared to the other categories, the signs and symptoms of sujata (Mature) & Asamjata (immature) Kaphaja Linganasa[4], clearly indicate the site of lesion in Kaphaja Linganasa is Lens. Lens is one among the units of drishti, which is capable of producing timira, kacha and linganasa limited to this particular structure[5]. It is not possible to get all symptoms related to the initial pathology of cataract under single title, it may mimic mixed symptoms of

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vata, pitta, kapha timira but finally when it becomes mature the signs and symptoms equate with the kaphajalinganasa lakshana.

The general concepts of samprapti of drishti make the better understanding of the pathogenesis related to cataract. Cataract is the common cause of blindness and usually commence as an age related problem in 50-60 yrs of age. The status of doshas in the body in old age being vata, it will be predominant in the body. Pittakshaya is very evident from the features like jataragnimandya leading to dhatwagnimandya - which results in malasanchaya[6]. The structure lens is not an exception. The metabolic activity of the lens reduced significantly i.e. the synthesis of protein, glutathione-which is having great role in oxidation reduction mechanism shows reduction in their action during advancement of age, which is the initial pathological change of lens in old age. Most of the soluble proteins changed to insoluble (malasanchaya) with increase in amount of lipid which can be identified macroscopically in later stages of cataract, the elasticity of the capsule reduced and the permeability increased[7]. The gati (passage) of pranavayu (the component the ‘humour vata’ which is responsible for perception of sense) is obstructed from coming in contact with the indriyartha (the object of vision) resulting loss of vision in the later stage of the disease[8]. Now the status of all doshas in old age lens is clear, all doshas having role in the pathogenesis of cataract. There is slight variation in samprapti of different types of cataract e.g. in nuclear cataract the role pitta is minimal that it may not exhibit pittaimira lakshana (as the main pathology starts as sclerosis or hardening of the nucleus and gradually involve other part of lens), while in cortical cataract pittaimira lakshanas are well developed as it is initiated by difference in ionic transfer, imbibitions of water and stagnation of water molecule in between the lens fibres leading to swelling of the lens[9]. So that it necessitate adopting pittaimira chikitsa.

In case of post subcapsular and posterior polar cataract we should try to elicit the anubanda doshas (possibly in the body, as the eye may not show any other symptoms), because according to acharya the pattern of opacity is not uniform and only doshanibandaja linganasa exhibit such appearance. To explain these Acharya introduced terminologies like Avarthaki, Sarkkara, chinnamsuka etc 6 upadravas or (complications) of K. Linganasa.

Lens one among the units of drishti (in my opinion) is a unique structure, having the 4 patalas inside (as cataracts cause total loss of vision, and at the same time the units of drishti expected to be normal) likewise the other units also. The patalas related with the aetopathogenesis of timira are nothing else the constituents of lens here, the major content of lens is water around 63% the rest 36% is proteins 1% other solids[10]. The water is the medium of transportation here which carry out the function of rasa and raktha here, the way in which avascular lens obtains its nutritive substance and gets rid of its waste products differ from corresponding process in a vascular tissue the metabolites must travel to and from the capillaries through the aqueous or vitreous humour[11]. The adequacy and integrity of the ocular blood supply was proved by many experiments in which cataract developed following the obstruction of arteries or veins entering and leaving the eye. So there is no doubt that there is representation of these two dhatus in its microform in the lens e.g. the carbohydrates, which is the main source of energy inside the lens. Variation in its concentration leads to difference in osmolarity resulting imbibitions of water i.e. Prathama and dwiteeya patalasrita timira, this condition is reversible e.g: In diabetes the additional glucose in the lens is converted to sugar alcohol-named sorbitol by aldose reductose and it is this change that make the difference in concentration gradient and resulted imbibitions of water and swelling of the lens which is reversible. The lens is formed of complex system of lens fibres, which are proteins, there are various kinds of proteins inside the lens, the crystallins or water soluble protein is the critical protein on which the transparency of lens is depend, MIP -membrane intrinsic protein is another important protein which maintain the structure of lens maintaining the normal architecture of the lens or according to Acharya “Dharana” the function of Asthidhatu and “lepana” the role of mamsa dhatu can be attributed towards this proteins as once these are degraded it can’t be retained so that the condition is irreversible etc. The lipid content has been demonstrated between the lens fibres suggesting that it may function as lubricating cement substance. Lubrication is the function of medodhatu.

2. Signs & Symptoms

Acharya Susruta & Vagbhatha explain the Samanya & visesha lakshanamas (general & specific signs and symptoms) of Timira and Linganasa in detail. Susruta has no differentiation like Kacha. According to him Kacha & Linganasa are same while Vagbhatha gives details of 6 different types of Kacha. But both of them are of the view that localisation of vitiated doshas at the level of third patala cause staining of the drishti and is having much significance in evaluating the involved doshas and because of this Susruta termed it as Ragamiragita, and to him Aragi timira[4] (a condition before this state) can be cured . But he used the word Kacha as a synonym of Linganasa.

Acharya mention the signs and symptoms of visual failure in general and also he describe it according to doshic state in three different categories i.e. timira, kacha, Linganasa. Among this Aavyakthameeksheroopan., vyakthamayinimittathatha (transient nature of blurriness), dooram nekshathe (difficulty of distant vision) sookshham nekshathe (difficulty to see small objects) mandalani eva pasyathi (circular spots) Dwidhaikam drishtimadhyayshite (diplopia) Bahudha bahudhe sthithe (polyopia) of general symptoms match with the lakshanamas of cataract in addition to this the specific lakshanamas of kapha timira are snigdham swetaham cha pasyathi (white coloured vision) and slimy appearance of the objects and acharya give examples of jasmine flower, conch, moon etc to indicate the whiteness, but there is no reference of such white coloured vision in cataract[5]. These symptoms were produced when dosas localised in the 1st and 2nd patala of lens or due to partial involvement of the structure lens.
When dosas migrate towards the third patala or further areas of lens it may cause the development of kacha. The general features of Kacha (the intermediate stage of timira and Linganasa) given by Acharya include progressive deterioration of vision. According to him at this stage the patient is not able to appreciate the lower part of his visual field but he can see the upper field that also is as if covered by a cloth (indicating the severity of blurriness in Kacha) and patient also develops colour change at the level of drishti depending on the involved dosha the colour may be varied, Susruthacharya also having the same view he used the term Ragi timira to indicate the occurrence of colour in kacha[6], and both of them are same in the opinion that kacha can’t be cured totally through treatment and the treatment recommended at this stage is to arrest the further progress of the condition.

The specific lakshanas of kaphaja kacha include whitish discolouration of drishti, as we can appreciate drishti from the level of papillary aperture the drishti with naked eye here it refers to the change in colour at the level of pupillary aperture and the patient can’t appreciate the brightness, though they are illuminated well eg: the sun, moon, etc appears to be faded[8].

Finally when all patalas or total lens fibres involved in the pathology it may leads to the formation of Kaphaja Linganasa. Independent of the dosas involved in the pathology of timira at the stage of Linganasa there is total loss of vision in and it is said to be incurable except Kaphaja. Linganasa for which surgery is mentioned. Acharya explains the signs and symptoms of mature and hyper mature cataract as Kaphaja Linganasa lakshana. It may be due to the fact that during that period cataract surgeries are very rare and because of this hyper maturity is very common.

As per Acharya’s description when the kapha sited in moordha vitiated and get localised in eye, the condition get worsened and leads to the development of linganasa at that time a movement can be appreciated inside the eye at the level of drishti which according to him is just like the movement of a drop of water on a lotus leaf, and the drishti becomes constricted in presence of bright illumination and dilated in shade. The movement inside the eye which can be compared to the movement of nucleus in morgagnian cataract or dislocated lens at the level of drishti. He also noticed the variation in the size of pupillary aperture.

3. Conclusion

Thus here we see the vast methodologies and description of timira in our ayurveda texts that are still now relevant in terms of modern era but now with the advancement of diagnostic procedures and technologies, we are able to understand the diseases in a much better way and hence the treatment too. Ayurveda has its basic theories and fundamentals ,the salient features regarding timira has been discussed widely here. The principals of ayurveda are eternal; the modern techniques help us in throwing more light on these facts.

References


[6]. Astanga hridya by vaghbhata , commentary by arundatta,edited by harishashtri,chaukhamba orientalia ,Varanasi,seventh edition ,1982.as hr -12/2,3,4,5 page no. 816.

[7]. Astanga hridya by vaghbhata, commentary by arundatta ,edited by harishashtri,chaukhamba orientalia ,Varanasi,seventh edition ,1982.as hr -14/3 page no. 826.

[8]. Astanga hridya by vaghbhata, commentary by arundatta,edited by harishashtri, chaukhamba orientalia ,Varanasi, seventh edition ,1982.as hr -14/4 page no.679


Source of support: Nil, Conflict of interest: None Declared