



ROLE OF CHAKSHUSHYA BASTI IN THE MANAGEMENT OF DIABETIC RETINOPATHY

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ABSTRACT

Diabetes is a widely prevalent disease in the current era. It can be defined as a metabolic disorder caused due to the combination of environmental or hereditary factors resulting in abnormally high blood sugar levels. Long term high blood sugar levels will have negative effects on the entire body and its functions and may lead to Diabetic Neuropathy, Diabetic Nephropathy and Diabetic Retinopathy. The risk of development of blindness in diabetes increases by 20-25 times as compared to the normal population. Diabetic Retinopathy, being a microangiopathy which affects the retinal precapillary arterioles, capillaries and venules, is the most difficult to manage and disabling as it affects the vision of the patient. Our *Acharyas* have considered *prameha* as a “Mahagada” and stated it as *Krichrasadhya* or *Yapya*. Inclusion of *prameha* among the eight major disorders in *Charaka Samhita* indicates the importance given to the disease by our ancient seers. The complication of *prameha* is considered to be the *kledata* in *rakta* and *raktavahsrotas* leading to the vitiation of *tridoshas* and causing *vikruthi* in all the *trimarmas*. In *shiras* it usually affects the *netra indriya* leading to a wide range of complications that may lead to blindness. Information about the role of *chakshushya basti* in diabetic retinopathy is taken from contemporary textbooks of Ayurveda to understand the treatment approach. While describing the importance of *basti chikitsa*, *Acharya Susruta* has mentioned ‘*Chakshushyuhu prinayati*’ which improves the vision. *Acharya Vaghbata* has mentioned about *Chakshushya basti* which acts both as *Rasayana* for *chakshu* and has *Raktapittahara* effects. Hence this treatment modality exhibits both preventive as well as curative aspects in the management of diabetic retinopathy.

KEYWORDS: Diabetic Retinopathy, *Drishtipatalagata roga*, *Madhumehajanya Timira*, *Chakshushya Basti*.

INTRODUCTION

Diabetic Retinopathy is one of the major complications of diabetic mellitus. It is a leading cause of blindness in the developed as well as the developing countries.

According to VISION 2020 up to 80% of the world’s blindness is avoidable. Diabetic retinopathy is a chronic progressive, potentially sight threatening disease of the retinal microvasculature associated with prolonged hyperglycemia and other conditions linked to diabetic mellitus such as hypertension, hyperlipidemia, proteinuria, etc. Almost all the patients with Type 1 diabetes develop retinopathy in about 15 years. In those with Type 2 diabetes, the risk of DR increases with the duration of diabetes accompanying hypertension and smoking. Estimates show that the number of people with DR will grow from 126.6 million in 2011 to 191 million by 2030. After viewing the magnitude of the problem of the disease, a comprehensive and thorough analysis of all the important literature of both modern and Ayurveda

should be done. Though there are no direct references available regarding *Madhumeha/Pramehajanya timira*, enough evidences are available in all the leading treatises of Ayurveda which substantiate that *timira* can be a complication of *Madhumeha*. All the three *doshas* along with the *rakta dosha* and *sapthadhatus* and the four internal *Drushti patalas* of the eye are affected in *Madhumehajanya timira* in different stages of the disease. *Avarana* and *dhatukshaya* too have an important role in the development of diabetic retinopathy due to the prolonged and uncontrolled hyperglycemia. *Agnimandya* related *Ama* formation has a role in the pathology of diabetic retinopathy which is quite similar to the oxidative theory of diabetic retinopathy. *Urdhwanga raktapitta*, *ojas kshaya*, *raktavrita vata* and *pranavrita vyana vata* are the other causes leading to the development of diabetic retinopathy. While describing the importance of *basti chikitsa*, *Acharya Sushruta* has mentioned ‘*Chakshyuhuprinayati*’ which improves the vision. *Acharya Vaghbata* has mentioned about

Chakshushya basti which acts as *rasayana* for *chakshu* and has *raktapittahara* effects. Hence this treatment modality exhibits both preventive as well as curative aspects in the management of diabetic retinopathy.

AIMS AND OBJECTIVES

1. To review the literature of Diabetic Retinopathy as a *Madhumehajanya upadrava*.
2. To evaluate the role of *Chakshushya Basti* in the management of Diabetic Retinopathy.

MATERIALS AND METHODS

Various Ayurveda compendia with their commentaries by different authors, various textbooks, previous research papers and articles, web searches were referred to acquire the present knowledge of this topic.

CLASSIFICATION

Diabetic Retinopathy has been variously classified as.

I. Non Proliferative Diabetic Retinopathy (NPDR).

- Mild NPDR
- Moderate NPDR
- Severe NPDR
- Very severe NPDR

II. Proliferative Diabetic Retinopathy (PDR).

III. Diabetic Maculopathy.

IV. Advanced Diabetic eye diseases.

AETIOPATHOGENESIS

Diabetic retinopathy basically a *drishtipatalagata roga*, is mainly attributed to *sirasroto abhisyanam* and *raktavaha srotodushti* due to a variety of *achakshushya ahara* and *vihara karanas* especially in *prameha* patients. *Prameha* is a *kapha* dominant disease and the major *samprapti ghataka* is *kleda* which contributes to *upadrava rogas*. Due to *nidana sevana* there is *prakopa* of *kaphapradhana tridosha* leading to *agnimandhya*. These *prakupita doshas* undergo *'koshtat urdhwagamana'* through *pratiloma gati* of *vyana vayu* and reaches *netra* through *rupavahi siras*. This stimulates the process of *srotorodha* in *sukshma raktavahi srotases* which can be correlated to microvascular occlusion leading to *atipravritti* of *utkleshita doshas* which can be correlated to neovascularisations further causing *siragranthi* which can be justified as formation of aneurysms. The *utkleshana* of *doshas* in *srotas* due to *srotorodha* deranges the vasculature and permeability of retinal vessels causing *sroto abhisyanam* and giving rise to *sroto dushti* of *raktavaha srotas* manifested as microangiopathy in the form of *atipravti, sanga* and *granthis* as hemorrhages, exudates and venous beading respectively in diabetic retinopathy. In this context of *sroto abhisyanam* in eye diseases, the *ashrayasthanam* is *srotas*, affected *dhatu* is *rakta* and vitiated *dosha* is *kapha pradhana tridosha*. *Prameha* brings out changes in the *drishti patalam* which greatly affects vision. In the initial stage, the etiological factors promote *utklesha* in vessels which causes changes in the permeability of the vessels especially of the head region which is the basic

pathological changes for the development of eye diseases. In the stage of *netra abhisyanam*, if there is further vitiation of *doshas* the condition further aggravates and will be confined to *drishtipatalam*. The texture of the vessels is damaged and hence the permeability increases. This results in leakage and hemorrhage from the blood vessels. The blood oozes out like sweat. Due to lack of circulation there is localized hypoxia which results in the development of new vessels. As the vessels are fragile they rupture easily. Exudates formation, neovascularization and proliferation of these tissues lead to degenerative changes in retina. This causes lack of circulation of *pitta* and *rakta* in areas having *shanikapandu lakshana* leading to *rasayani dourbalya* which represents cotton wool spots of the ischaemic area of the retinal nerve fibre layer. This further leads to the impairment of *roopaalochana* causing *aviladarshana*, thus leading to *Madhumehajanya timira*.

AYURVEDIC MANAGEMENT

Acharya Sushruta has mentioned in the *Nidana sthana* that *Prameha* is caused due to the vitiation of *Apana Vayu*. *Basti* is the best line of treatment in the diseases caused by *Vata*. For diabetic retinopathy such treatment should be planned that it is beneficial for both *Prameha* as well as *Chakshu*. *Basti* has its effect both on *Vata* and *Agni* which is responsible for the formation and nutrition of *Dhatu*s. Hence by regulating *Vata* all the *dhatu*s are able to perform their normal functions. *Acharya Vagbhata* has mentioned *Chakshushya Basti*, which is a type of *Siddhabasti* having all the contents of *Madhutailika basti*, along with *Yashtimadhu Kalka*. It acts as *Rasayana*, *Pramehahara*, *Chakshushya* and has *Raktapittahara* effect. Being *Yapana basti* it can be given in any season without any complications and improves the strength of the body. *Acharya Charaka* has mentioned *Panchatikta Pancha Prasrtika Basti* which is considered to be *chakshushya* and has *madhumehahanashaka* properties. Other *Chakshushya Basti* formulaions like *Sthiradi Niruha Basti* and *Mustadi Yapana Basti* can be advised in different stages of Diabetic Retinopathy.

CONTENTS AND PREPARATION OF CHAKSHUSHYA BASTIS

Madhutailika Chakshushya Basti

(A.Hr. k. 4/27,28)

Ingredients

1. *Erandamoola Kwatha*: 4 *prasrita* (380ml)
2. *Madhu*: 2 *prasrita*
3. *Taila*: 2 *prasrita*
4. *Kalka*(*Shatpushpa*+*Yashtimadhu*): 1 *prasrita*
5. *Saindhava*: 1 *karsha*

Dose - 9 *prasrita*

Preparation: Standard method of preparation of *Niruha Basti*.

Sthiradi Niruha Basti (Ch. Si. 3/36-38).

Ingredients

1. *Sthiradi Gana Dravyas – 1 prastha*
2. *Chhaga mamsa rasa – ½ prastha*
3. *Kalka – Priyangu, Krishna, Ghana*
4. *Taila*
5. *Sarpi*
6. *Madhu*
7. *Saindhava*

Dose: 12 *prasta*

Preparation: One *prastha* of the decoction of drugs belonging to *Sthiradi gana* or *Vidarigandha, Prisiniparni, Brihati, Kantakari, Eranda, Kakoli, Chandana, Ushira, Ela, Madhuka, Bala, Patola, Trayantika, Eranda* and *Yava* and half a *prastha* of the soup of goat meat should be cooked together till one *prastha* of liquid remains. To this paste *priyangu, krsna, Ghana*, oil, ghee, honey and rocksalt should be added.

Panchatikta Panchaprasrtika Basti

(Ch. Si. 8/8).

Ingredients

1. *Kwatha of Patola, Nimba, Bhunimba, Rasna, Saptaparna - 4 prasrta.*
2. *Kalka – Sarshapa.*
3. *Ghritha – 1 prasrta.*
4. *Madhu - 80ml.*
5. *Saindhava - 5g.*

Dose: 12 *prasta*.

Preparation: Four *prasrtas* of the decoction of *Patola, Nimba, Bhunimba, Rasna* and *Saptacchada* and one *prasrta* of ghee should be added with the paste of *Sarshapa*. The quantity of *Sarshapa* is not specified in the above recipe. Therefore it is to be determined according to general rule. In twelve *prasrtas* of liquid for *niruha*, 2 *palas* of the paste is to be added.

Mustadi Yapana Basti

1. *Kwatha Dravyas: Musta, Ushira, Bala, Aragvadha, Rasna, Manjishtha, Trayamana, Punarnava, Patha, Vibhitaki, Guduchi, Shalaparni, Brihati, Tikta, Kantakari, Prishnaparni, Gokshura,*
2. *Madanaphala*
3. *Kalka Dravyas: Shathapushpa, Yastimadhu, Kutaja, Rasanjana, Priyangu*
4. *Mamsa rasa*
5. *Goksheera*
6. *Goghritha*
7. *Madhu*
8. *Saindhava*

Dose

Preparation: *Churna*(coarse powder) of all the *Kwatha Dravyas* are taken along with *Madana phala churna*. *Kashaya* is prepared by adding water to it and heating. *Ksheera* is further added to the *kashaya* and heated until

only *ksheera* is left. This *ksheera* is mixed with already prepared *mamsarasa* and added to the paste prepared using *Madhu, Saindhava, Ghritha* and *Kalka* of the *dravyas* mentioned above. The contents are mixed well.

DISCUSSION

Diabetic retinopathy is a disease of retinal microvasculature due to prolonged uncontrolled hyperglycemia. It is a *Drishtipatalagata roga* and the dosha involved in the pathogenesis of diabetic retinopathy are *Kapha* predominant *Tridosha* and the main *Dhatu* vitiated are *Rasa, Rakta, Mamsa* and *Medha dhatu*. *Srotas* affected is *Raktavaha srotas*. As *Murdha*(*Shiras/head*) is the seat of *Pranavayu* and *Netra* is the seat of *Alochaka Pitta*, the treatment of most *Drishti rogas*, have to be implemented on the line of *Vata* for *Murdhashodhana* and *Pitta Shamaka Chikitsa* for pacification of *Alochaka Pitta*. *Basti* does both *Shodhana* and *Shamana* pharmacologically along with enhancement of the nutritional status of *dhatu*s in the body which applies to the *dhatu*s or *patalas* of the eye also. The rationale behind the use of *basti* in the posterior segment diseases of the eye including diabetic retinopathy is to introduce large volume of drugs through the systemic route. *Basti* treatment meets all the properties which influence the drug absorption and bioavailability to the ocular tissues and delivers enormous amount of drug to the posterior segment of eye for effective therapeutic effect in the ocular conditions. It indicates that the pharmacological action of *basti* can penetrate the blood retinal barrier and may result in vision improvement by alleviating *Vata dosha*. The *Chakshushya Basti* mentioned by *Acharya Vagbhata* is a type of *Siddhabasti* which contains the ingredients of *Madhutailika Basti* along with *Yastimadhu Kalka*. It has *Chakshushya, Pramehahara* and *Raktapittahara* properties and can be administered in severe NPDR and PDR cases. The *Yogavahi, Raktapittahara* and *Sandhana* properties of *Madhu* help in better absorption of the drugs and healing of the intra retinal blood vessels. *Saindhava*, with its *Sukshma* and *Tikshna Guna*, reaches upto the micro channels and breaks down the morbid *mala* and *Dosha Sanghata* and liquefies the *Doshas*. *Chakshushya* effect of *Saindhava lavana* attributes to temporary osmotic BRB disruption for better enhancement of drug absorption in *Basti* procedure. *Taila* is best known for *Vata Dosha* alleviation. *Vyavayi, Ushna, Guru* and *Snigdha* properties of *Taila* pacify *Vata Dosha* and improve drug permeability of the cell membrane. *Rasayana, Chakshushya* and *Ropana* properties of *Yastimadhu* help in repair and regeneration of intra retinal blood capillaries. *Shatapushpa* has *Akshirogahara* properties and increases the retention time of *basti*. *Erandamoola Kashaya* has *Vrishya* and *Vatahara* properties which help in pacifying *vata*, regeneration of retinal capillaries and provide nutrition to the retinal ganglion cells. **Panchatikta Panchaprasrtika Basti** can be advised in the initial stages of diabetic retinopathy cases having active *Siraabhishtyanda* and vasculopathy. By the virtue of its *Tikta Kashaya Rasa*

Pradhana Dravyas, Chakshushya, Ropana, Rasayana, Madhumehanaashaka and *Shothohara* properties, *Panchatikta Panchaprasritika Basti* is effective in promoting *Srotoshodhana* of *Raktavaha Srotas*, thereby helping in improvement of the vision. The antioxidant properties of the drugs in this *basti* help in detoxification and reduction in *Ama* formation. The anti-inflammatory, hypolipidemic and *Anti oxidant* properties of the drugs help in the reduction of hard exudates and soft exudates in DR. The *Lekhana* property of the drugs cleanses the *srotas*, reduces *Meda* and *Kleda*, thereby helping in regulating the movement of *vata*. In the *Dhatukshaya* stages of DR, *Mustadi Yapana Basti and Sthiradi Niruha Basti* can be administered which has nutritive effect on the retinal neuronal layers. By the virtue of *Guna* and *Karma* of its drugs, *Sthiradi Niruha Basti* alleviates *Vata Dosha* along with *Pitta*. *Mamsa* is considered to be the best *Bramhana Dravya* and helps in enhancing the *bala*. *Acharya Charaka* has mentioned *Sthiradi Niruha Basti* as *Mamsabalaprada* and *Chakshubalakaraka*. *Mustadi Yapana Basti* with its *laghu, ruksha guna* and *ushna virya*, help in breaking the *avarodha* of *meda* and *kleda*, and has *kaphashamaka* and *balya* properties. Thus different types of *basti* maybe administered with *Chakshushya Dravyas* in different stages of diabetic retinopathy.

CONCLUSION

Diabetic retinopathy is the one of the emerging disorders of the twenty first century, posing a major challenge for the ophthalmologists across the world for optimum therapeutic effect. The treatment efficacy is dependent on the drug delivery to the target tissue of the eye for optimum therapeutic effect. *Basti* has all the properties to increase the drug permeation to the ocular tissues and can cross the Blood Aqueous Barrier (BAB) and the Blood Retinal Barrier (BRB) as well. In this context, *basti* may prove to be a effective therapy to treat the posterior segment diseases of the eye as against the routes of drug administration that are currently used in contemporary medicine like the intraocular and periocular routes which are believed to be invasive methods often associated with many complications. The *Chakshushya bastis* mentioned by our *Acharyas* can be used for preventive as well as curative measures in Diabetic Retinopathy. In newly diagnosed patients or in patients having diabetes for 2 or 3 years, *Chakshushya basti* when given acts as a preventive measure and the further complications of diabetes can be avoided. In patients with diabetic retinopathy, administration of *Chakshushya basti* can help in healing of hemorrhages and improve the blood supply to retina resulting in improvement of the vision. Thus *Chakshushya Basti* can be considered as a safe treatment modality for the patients which lowers the risk factors, proves to be cost effective and avoids further progression and complication of the disease, thereby paving way for Ayurveda in such disorders which have a limitation in the Contemporary Science.

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