

A CONCEPTUAL STUDY ON DIABETIC RETINOPATHY AND ITS MANAGEMENT THROUGH AYURVEDA

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ABSTRACT

‘Ayurveda’ The Life Science, which is one of the ancient medical science deals with all kinds of disease, one of them is Diabetes. Now a Days India stands as a capital of Diabetes. People with diabetes can have an eye disease called Diabetic retinopathy (die-uh-BET-ik ret-in-NOP-uh-thee). This is when high blood sugar level causes damage to blood vessels in the retina. Diabetes has many complications; one of them is Diabetic retinopathy which causes of blindness in diabetes patient. In this disease the blood vessels around the retina of the eye got damaged due to micro-angiopathy and neo-vascularization, which may cause difficulty in vision, blurring and loss of eye sight permanently. According to the Ayurveda, it is caused by the imbalance of tridosha. In Ayurveda to maintain the balance of all doshas , It suggest many therapeutics medicines, panchkarma and netrakalpa will keep the balance of doshas, maintain and control the blood sugar level; it will improve the blood circulation in the retina of eye and clear the passage of blood vessels. This paper will deal with the effect, mode of action, pathogenesis of diabetic retinopathy and its Ayurvedic treatment.

KEYWORDS: Diabetic retinopathy, panchkarma, netrakalpa

INTRODUCTION

The word diabetes mellitus is derived from Greek word “Diabetes” means “Siphon” and “mellitus” which means honey tested urine¹. It is a major risk factor of blindness in worldwide regarding diabetes. It is estimated that diabetes mellitus affects 4% of world population, almost half of whom have some degree of diabetic retinopathy especially of more than 10 years duration. Diabetic retinopathy is a condition that implies damage to the retinal pre-capillary arterioles, capillaries & venules caused by complications of diabetes, that can eventually leads to blindness.

In chronic and uncontrolled diabetes the blood vessels around the retina may get damaged due to narrowing of the blood vessels. Visual disability from diabetes mellitus is a significant public health problem and if managed with timely intervention, the quality of life can be preserved. Almost 90% of the diabetic retinopathy cases can be avoided if a diabetic patient is able to detect it and start treatment in the early stage of disease. The longer a person has uncontrolled diabetes, the higher his or her chances of developing diabetic retinopathy. This article aims to

providing an overview about diabetic retinopathy and comparative, consolidate study regarding the Ayurveda concepts and scientific approach of treatment.

Ayurved Review

According to Ayurveda, there is vitiation of Vata and Pitta doshas. Both doshas lodge in the (Rakta) blood, blood being the site of pitta dosha is a major factor in this disease². When pitta will increase in blood, it may cause oozing from the blood vessels in retina and vitreous. Vata, being the controlling dosha and responsible for neurological connections, which gets disturbed due to pitta vitiation³. The aim of Ayurvedic treatment for diabetic retinopathy is to pacify vata and pitta. Ayurveda is capable to prevent this disease, but as such there is no clear text which justifies the progression of *Prameha* to loss of vision. Ayurvedic treatment is concentrated regarding to pacify the pathological changes, which occurs in eye due to long term complication of diabetes.

Diabetic retinopathy is caused due to ischemia, obstruction, internal bleeding which effects blood vessels of retina and adjacent anatomical blood supply due to microangiopathy or neovascularisation. Siragranthi (Obstruction and ischemia) are caused by Vata and Kapha, bleeding is caused by pitta dosha along with rakhta and effect to all seven Dhatus. Diabetic retinopathy can be compared with Timira because there is common etiological factor of *Timira* and *Prameha*⁴. Nidanasevan like amla rasa, sukta-aranala, maasha, vegadharana, swapnaviparyaya are achakshushya factors in *Prameha* which

leads to *Timira samprapti*. In *Timira*, patient wills complaint about blurred vision and darkness and increase dampness (*Kleda*) in the eye. *Prameha* is a kapha dominant disease and major samprapti ghataka is *kleda* which contributes to *updrava rogas*⁵. *Timira* explained based on different dosha predominance can be compared to Diabetic retinopathy and can be termed as *Madhumehjanya Timira*.

Modern Review

Diabetic retinopathy is a disease of eyes in which the blood vessels of retina and vitreous become weak and fragile resulting in leakage inside retina and vitreous. This leakage vessel inside the eyes directly blocks the vision. Sometimes there is minor leakage resulting in black spots or floaters in the field of vision (this is called *macular ischemia*). On the other hand, there can be heavy bleeding in retina or vitreous causing complete loss of vision. It is eventually divided into three broad categories. The severity of disease increases with the advancement of stage.

1. Non proliferative diabetic retinopathy (*NPDR*)⁶-This is the early stage of diabetic retinopathy with non-proliferative diabetic retinopathy due to tiny blood vessels leak, making the retinal swell. When the macula swells, it is called macular edema. This is the most common cause, the people who lose their vision due to diabetes. In this type the blood vessels in the eye become larger in certain spots (micro aneurysms). Chances are there that the blood vessels may also get blocked. There also may be small amounts of bleeding (retinal hemorrhage), and fluid may leak into the retina. When it happens,

blood cannot reach the macula, sometimes tiny particle called exudates can form in the retina. This can lead to noticeable problems with vision.

2. Diabetic Maculopathy (DM) – The macula is the most well used area of the retina and provides us with our central vision. Maculopathy refers to a progression of background retinopathy into the macular. This can cause vision problems such as difficulties with reading and or seeing faces in the centre of the vision due to focal or exudative, cystoids, ischemic or mixed.

3. Proliferative diabetic retinopathy (PDR)- It happens where the retina starts growing new blood vessels, this is called neo-vascularization. These fragile new vessels often bleed in to the vitreous. If they only bleed a little; patient might see a few dark floaters. If they bleed a lot, it might block all vision. Small scars would develop, scar tissue can cause problem with a macula or lead to a detached retina. It is very serious, and can steal both central and peripheral vision.

Pathogenesis and Course of Diabetic Retinopathy⁷

Retinal neo-vascularization occurs in response to retinal ischemia. Angiogenic factors have been isolated from ocular tissues in Proliferative diabetic retinopathy. There are three major factors have particular relevance in PDR. Vascular endothelial growth factor (VEGF), Basic Fibroblast Growth factor (b-FGF), and Insulin like growth factor (IGF). These factors stimulate endothelial cell proliferation, migration and organization into three dimensional collagen matrices to form capillary like tubes. New

vessels may once formed progress along the routes of least resistance. The absence of a true internal limiting membrane on the disc explain about the prevalence of new vessels at that location. Also, neo-vascularization seems to grow more easily on a preformed connective tissue framework. Thus, a shallow detached posterior vitreous face is a frequent site of growth of new vessels. The new vessels, initially naked, undergoes through a stage of further proliferation with connective tissue formation. The fibrous component becomes more prominent with the fibrotic tissue being either vascular or avascular. The fibrovascular type is found in association with vessels that extends into the vitreous cavity or with abnormal new vessels on the surface of the retina or disc. The avascular variety usually results from organization or thickening of the posterior hyaloid face. These proliferations exert traction on the retina and may lead to retinal detachment. Finally, at the end of stage, it is characterized by regression of the vascular systems. No further damage may take place, but there may be contraction of the connective tissue components, development of sub-hyaloid bands, and thickening of the posterior vitreous face, appearance of the retinoschisis, retinal detachment and formation of retinal break.

Symptoms of Diabetic Retinopathy⁷

- 1) Blurred vision.
- 2) Spots or dark strings floating in vision (*Floaters*).
- 3) Partial, total loss of vision or a shadow across field of vision.
- 4) Pain, pressure or constant redness of the eye.

- 5) Difficulty of vision during night.
- 6) Photophobia
- 7) Watering and dryness of eyes.
- 8) Impaired color vision
- 9) Vision loss

Trigger Factors of Diabetic Retinopathy⁷

- 1) Prolonged high blood glucose level in uncontrolled diabetes.
- 2) Hereditary factor.
- 3) Body constitution.
- 4) Stress and strain.
- 5) Dietary and other habitual factors.
- 6) Smoking
- 7) Blood pressure

What should be done and don't⁷

- 1) Rigid control of blood sugar level is mandatory.
- 2) Avoid strained eye activities like watching T.V, reading for longer duration and heavy exercise.
- 3) Avoid bright light.
- 4) Regularize the G.I.T.
- 5) Consult the doctor immediately if there is sharp loss of vision.
- 6) Brisk walking, regular exercise, yoga and controlled diet are also necessary.
- 7) Apply paste of sandal wood or rose water over closed eye lids.
- 8) Amalaki and bottle guard juice can be taken daily morning in empty stomach.

Management of Diabetic Retinopathy through Ayurveda

Onset of diabetic retinopathy can be prevented by proper Ayurvedic management and practices. By the Ayurvedic therapy, the first stage of diabetic retinopathy is too easy to treat. Diabetic retinopathy suffering from severe headache, watering or floating of the eyes (*Epiphora*), blurring of the vision,

redness of the eyes after bath needs to treat the causes and control the blood sugar level, then starts the kinds of procedures through medication with medicines, dietary modification and other external treatments leading a healthy lifestyle, eliminating stress, maintaining diabetic blood levels and controlling high blood pressure are some of the important ways to control the severity of deterioration on diabetic retinopathy. Due to diabetic retinopathy, the eye doesn't receive proper nourishment. In Ayurveda focus on the chief factor of the disease, by controlling to these factors by the panchakarma therapy, which plays an important role in this disease. This therapy clears the passage of blood vessels in the macro levels and improve the blood circulation on the retina. According to Ayurved concept, channeling the treatment in a systemic way can control the diabetic retinopathy to a great extent and can leads to incredible improvement in the vision and Netravasti therapy are mainly used for treatment, which nourishes eyes also. In this treatment, the dough of wheat flour is prepared Ghee is put in between, which nourishes eyes and it showcase its effect slowly. Use of this therapy halts the disease and possibility of its cure increases. There are few medicines also available in Ayurved which enhance the retina power and cure this disease completely without side effect. Following procedures also are effective in treating diabetic retinopathy. Like- lepa over eyes, takradhara, netradhara, anjana, tarpanam, virechana, thalam, thalapothichil, putapakam, shirolepa and shirodhara. With these Ayurveda treatment, this disease can be cure completely, most of

the patients suffering from diabetic retinopathy become complete loss of vision by other ways of treatment. Internal medicines also helps to will control diabetes increases in blood circulation.

These procedures are generally administrated by physician depending upon the condition of the patient. Initially, detoxification of the body is recommended so as to clear the channels and stop the perfusion. Along with the other steps should be taken to control the level of diabetes. After this, appropriate treatments for preventing the congestion or hemorrhage in retinal blood vessels and for the degeneration of the retinal nerves has to be done⁸.

The Panchkarma therapy plays an important vital role in the treatment of Diabetic retinopathy, this therapy clear the passage of blood vessels in the macro vessels and improves the blood circulation on the retina. Every person suffering from diabetes must get his or her eyes examined through an eye specialist at least once in a year even if he doesn't have any symptoms. These procedures are potent enough to provide strength in blood vessels of retina so that there will not be any further hemorrhage or any leakage from the blood vessels also gets re-absorbed. The nourishing Ayurveda medicines provide strength to retina and optic nerves thus clearing the vision. For these procedures to be done, patient has to be hospitalized for a minimum three weeks under the supervision of an Ayurveda eye specialist.

DISCUSSION: Diabetic retinopathy is a disease of Drishti patal (Retina) and

complication of long standing uncontrolled diabetes due to defective metabolism and endocrine dysfunction. All the three doshas are affected with rakta (as both dosha and dushya) mainly vata, pitta, kapha and rakta anubandha⁹. All dhatus are affected with rakta, meda and masma predominant, sirastrotas of raktavahasrotas of raktavaha and Ojawaha dhamani gets affected in successive stages. Diabetic retinopathy has all four features of srotovaigunya i.e. Atipravriti can be correlated with Neo vascularization; where new blood vessels are formed, *Sanga* can be correlated with retinal vessels occlusion and microangiopathy which may cause ischemia and necrosis, *Siragranti* would be development of microaneurysm, and *Vimarggamana* can be compared with retinal hemorrhage. Ayurveda treatment likelepa over eyes, takradhara, netradhara, anjana, tarpanam, virechana, thalam, thalapothichil, putapakam, shirolepa and shirodhara mainly clear the vessels and its obstruction. These procedures enhance the blood circulation and maintain the blood sugar level. Hence Ayurveda treatment is better in this chronic and vision threatening disease without any complications

CONCLUSION

The Diabetic retinopathy is seen in almost every patient of uncontrolled blood sugar levels for a longer duration. The changes in the blood vessels are sometimes also seen in those with good control of blood sugar levels¹⁰. Awareness of Diabetic retinopathy and prompt referral of diabetes plays a crucial part in the management of this potentially vision threatening condition. Diabetic

retinopathy screening is essential for early case detection because it is symptom less in early stages. Proper treatment and follow-up of patients are highly essential for preservation of vision in diabetes. In eyes not amenable to laser treatment or where the retinopathy shows progression even after laser treatment, early and appropriate vitreo-retinal surgery is successful in regaining some useful vision in modern surgery¹¹. The Ayurveda treatment used in Diabetic retinopathy is planned according to Dosha, Nidaanparivarjan, Shodana and Shamana. Treatment will be based upon medicine and method/ procedures which have madhumehahara properties, shothagana properties, shonita sthapana, ropana, kaphanisaraka, raktpasadana, sroto dushti nirharana, chaukshya and balya properties.

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