

Chief Editor

Dr. A. Singaraj, M.A., M.Phil., Ph.D.

Editor

Mrs.M.Josephin Immaculate Ruba

EDITORIAL ADVISORS

1. Prof. Dr.Said I.Shalaby, MD,Ph.D.
Professor & Vice President
Tropical Medicine,
Hepatology & Gastroenterology, NRC,
Academy of Scientific Research and Technology,
Cairo, Egypt.
2. Dr. Mussie T. Tessema,
Associate Professor,
Department of Business Administration,
Winona State University, MN,
United States of America,
3. Dr. Mengsteab Tesfayohannes,
Associate Professor,
Department of Management,
Sigmund Weis School of Business,
Susquehanna University,
Selinsgrove, PENN,
United States of America,
4. Dr. Ahmed Sebihi
Associate Professor
Islamic Culture and Social Sciences (ICSS),
Department of General Education (DGE),
Gulf Medical University (GMU),
UAE.
5. Dr. Anne Maduka,
Assistant Professor,
Department of Economics,
Anambra State University,
Igbariam Campus,
Nigeria.
6. Dr. D.K. Awasthi, M.Sc., Ph.D.
Associate Professor
Department of Chemistry,
Sri J.N.P.G. College,
Charbagh, Lucknow,
Uttar Pradesh. India
7. Dr. Tirtharaj Bhoi, M.A, Ph.D,
Assistant Professor,
School of Social Science,
University of Jammu,
Jammu, Jammu & Kashmir, India.
8. Dr. Pradeep Kumar Choudhury,
Assistant Professor,
Institute for Studies in Industrial Development,
An ICSSR Research Institute,
New Delhi- 110070, India.
9. Dr. Gyanendra Awasthi, M.Sc., Ph.D., NET
Associate Professor & HOD
Department of Biochemistry,
Dolphin (PG) Institute of Biomedical & Natural
Sciences,
Dehradun, Uttarakhand, India.
10. Dr. C. Satapathy,
Director,
Amity Humanity Foundation,
Amity Business School, Bhubaneswar,
Orissa, India.



ISSN (Online): 2455-7838

SJIF Impact Factor : 6.093

EPRA International Journal of

Research & Development (IJRD)

Monthly Peer Reviewed & Indexed
International Online Journal

Volume: 4, Issue:5, May 2019



Published By
EPRA Publishing

CC License





A REVIEW ON MANAGEMENT OF DIABETIC RETINOPATHY IN AYURVEDA

Dr Shyam Kumar Sah¹

¹PG Scholar, SDM College of Ayurveda and Hospital, Hassan, Karnataka.

Dr Deeraj BC²

²Associate Professor, SDM College of Ayurveda and Hospital, Hassan, Karnataka.

Dr Ashwini MJ³

³Professor and HOD, SDM College of Ayurveda and Hospital, Hassan, Karnataka.

ABSTRACT

Diabetic retinopathy (DR) also known as diabetic eye disease is a common metabolic medical condition that develops due to uncontrolled Diabetes mellitus (DM) and one of the leading causes of blindness. It refers to the retinal changes seen in patients with DM.1 The condition can develop by both Type 1 DM (Insulin Dependent DM) and Type 2 DM (Non Insulin Dependent DM).2 Chronic hyperglycemia cause retinal ischemia, neuro retinal degeneration and pathological angiogenesis showing features of retinopathy including microaneurysms, hemorrhage, hard exudates, intraretinal microvascular anomalies (IRMAs) and neovascularization (NV).3 Many advance treatments like Anti Vascular endothelial growth factor (Anti-VEGF), Steroids and Panretinal photocoagulation (PRP) are available but have no satisfactory result. DR can be corelated to Pramehajanya Netraroga in Ayurveda. Faulty dietary habits, excess foods having snigdha and guru guna which vitiates Kapha dosha, sedentary life style and stressful conditions are the major cause of DM (Prameha). Prevalence of DM is increasing rapidly throughout the world where India leads the highest numbers. Recent advances in the diagnosis, prevention and treatment of DR represent a formidable challenge to the health care system. Ayurveda is well recognized for its role in preventing the disease. Application of treatment protocol described in the context of Prameha in the various Samhita as a blackbox model prevents the aetiopathogenesis Pramehaja Netraroga (DR). The Ayurvedic therapy controls the disease by increasing blood circulation, regulating doshas and nourishes retina that helps to slow progression and and improves better routine life.

KEYWORDS: *Diabetic Retinopathy, Retinal ischemia, Neovascularization, Microvascular damages, Pramehajanya Netraroga.*

INTRODUCTION

DR is very common metabolic disorder occurred due to DM. It is the ocular manifestation of the metabolic systemic dearrangement. It is more common in IDDM than in NIDDM. Sight threatening impact is present in up to 10% in IDDM. Prevalance of NIDDM and incidence of IDDM are rapidly increasing.⁴ DM initiates many life limiting and life threatening macrovascular and microvascular complications. DR is one of the multifactorial progressive microvascular diseases and a major cause of avoidable blindness in both the developing and the developed countries. Patients with DR are 25 times more likely to become blind than non diabetics.⁵

The manifestation of the disease depends upon the interaction between nidana, dosha, dushya and the defense mechanism of the body. These factors vitiate kapha, meda, and mutra developing Prameha. Later the prameha affects Netra and produces Pramehajanya Netraroga (DR). There are various risk factors for developing DR.

1. Duration of DM has direct correlation between the frequency and severity of DR.⁶
 - After 10 years, 20% of type I and 25% of type II diabetics develop retinopathy.
 - After 20 years, 90% of type I and 60% of type II diabetics develop retinopathy.
 - After 30 years, 95% of both type I and type II diabetics develop retinopathy.
2. Gender: Female is more affected than male (4:3).
3. Poor control of diabetes⁷: rapid progression of DR.
4. Pregnancy: associated with rapid progression of DR in poor diabetic control.
5. Hypertension control is beneficial in type 2 diabetics with maculopathy.
6. Nephropathy, if severe, is associated with worsening of DR.

7. Other risk factors: hyperlipidaemia, smoking, cataract surgery, obesity and anaemia.

PATHOGENESIS

Nidana, dosha, dushya and kala are the inherent factors involved in the pathogenesis of diseases. Asatmya ahara, vihara (apathyanimittaja/acquired-NIDDM) and bija dosha (hereditary-IDDM) are the major causes of Prameha. Regarding bija doshaja prameha, Shushruta told Sahaja Prameha and Charak told Jataja Prameha.⁸ Foods having snigdha and guru guna, sedentary life style and stressful conditions vitiate Kapha predominant Tridosha→ Saptadhatu along with Avarana and Dhatukshaya→four Dristipatalas of the eye→ development of different stages of Madhumehajanya Netraroga.⁹

DR is a progressive microvascular retinal disease due to chronic hyperglycemia.¹⁰ Loss of intramural pericytes, thickening of the basement membrane and progressive closure of retinal capillaries leads to microaneurysm and break down of blood retinal barrier. Hence edema, hard exudates, dot and blot hemorrhage and superficial flame shaped haemorrhage are seen.¹¹ Occlusion of capillaries leads to retinal ischemia and hypoxia. Ischemia produces cotton wool spots by damage to nerve fibre layers. Hypoxia produces two main conditions:¹²

1. Arteriovenous shunts also called IRMA and
2. Neovascularization

Retinal hypoxia leads to release of vasoproliferative substance VEGF which results in development of neovascularisation at the optic disc (NVD) or elsewhere (NVE).¹³ These neovascular tissues are more fragile, bleed easily and incite a fibroblastic response. Due to proliferation of fibrovascular tissue, formation of epiretinal membrane and irregular fibrovascular bands are seen in the retina and vitrous which on contraction may lead to tractional retinal detachment and blindness.¹⁴

Samprapti of Madhumehaja Netraroga	
Nidana	Madhumeha
Dosha	Rakta-Pitta pradhana Tridosha
Dushya	Rasa, Rakta
Ashraya	Netra patala
Srotodushti	Siragranthi, Atipravriti, Sanga, Vimargagamana

Early Treatment Diabetic Retinopathy Study (ETDRS) classification¹⁵

1. Non-proliferative diabetic retinopathy (NPDR)

- No DR
- Very mild NPDR: microaneurysms only
- Mild NPDR: microaneurysms, retinal haemorrhages, exudates, cotton wool spots, No IRMA or significant beading
- Moderate NPDR: Severe retinal haemorrhages in 1–3 quadrants or

mild IRMA Significant venous beading can be present in no more than 1 quadrant Cotton wool spots commonly present

- Severe NPDR: The 4–2–1 rule-one or more of severe haemorrhages in all 4 quadrant, significant venous beading in 2 or more quadrants and moderate IRMA in 1 or more quadrants
- Very severe NPDR: Two or more of the criteria for severe NPDR

2. Proliferative diabetic retinopathy (PDR)

- Mild-moderate PDR: NVD or NVE
- High Risk PDR: NVD about 1/3 disc area, : Any NVD with vitreous haemorrhage, : NVE greater than 1/2 disc area with vitreous haemorrhage

3. Diabetic maculopathy: DME and CSME.

4. Advance diabetic eye disease (ADED): Persistent vitreous haemorrhage, Tractional retinal detachment (TRD) and Neovascular glaucoma.

Diagnosis¹⁶

- Blood glucose level
- Ophthalmoscopy
- Fundal photography
- Fundal Fluorescence Angiography (FFA)
- Optical coherence tomography (OCT)

Management of DR in Ayurveda

The treatment of DR is solely dependent on tight glycemic control. In madhumeha, dosha is kapha pradhan tridosha and Dushya is meda, mamsa, rakta, vasa, majja, lasika, kleda, shukra and oja. Hence, the treatment modality is adopted for treating etiopathology of madhumeha, Urdhwajatrugata Raktapitta, Avarana, prevention of dhatu kshaya and Kaphaja Timira. For this Samprapti vighatana as well as Samanya Netra Roga Prathishedha along with Shodana and Shamana Chikitsa can be followed for the management of DR.¹⁷

1. Samprapti Vighatana

Srotodushti	Lakshsana	Modern classification	Chikitsa
Siragranthi	Micro aneurysm	Very mild NPDR	Anulomana + Sodhana, Samana & Sthanika chikitsa
Atipravriti	Haemorrhage (dot & blot & superficial -flame shaped hemorrhage)	Mild to moderate NPDR	Sodhana & Urdhwagata Rakta-pitta chikitsa
Sanga	CRVO, CRAO, venous beading, IRMA	Severe to very severe NPDR	Repeated Sodhana Sthanika chikitsa
Vimarga gamana	Neovascularisation, Exudates(+++), VH, CSME, DME, etc	mild to high risk PDR	Yapaya chikitsa (continuous monitoring)

2. Common line of Management

1. Nidana parivarjanama

2. Sodhana: Agni-dipana, Ama-pachana, virechana & Nasya

3. Samana: Urdhwajatrugata rakta-pitta, Vatanulomana, Sothahara & Dhatu-kshaya chikitsa

4. Sthanika: Kriyakalpa, Sirobasti, Sirolepa (Talam & Talapodichil)

Shodhana therapy:

Kaya Shodana chikitsa should be done for eliminating the Amadosha from the Shareera. First dipana pachana drugs like Chitrakadi vati or Trikatu churna is given to pradipta Jatharagni and Dhatwagni. Snehapana with Triphala Ghrita, Maha Triphala Ghrita, Saptamrita Ghrita and Vainthya

Ghrita can be given followed by Virechana (depending upon Doshavastha).¹⁸

Shamana therapy

Shamana chikitsa should be Pramehahara and Chakshushya in action. Ropana, Stambhana and Sheeta drugs can be selected. Triphala is tridosahara so its formulation with amrita satwa and aswagandha powder ksheerapaka is a better drug of

choice for DR. The Avarana should be treated by Yapan Basti and mridu samsodhan therapy. Drugs like Lajjalu, Khadira, Bilwa, Haridra and Ashwagandha in kapha avritta as well as Vasa, Lodhra, Musali, Yashti, Manjista, Sariva, Chandana drugs give a better result in rakta pitta avritta condition. The Rasayan drugs such as Shilajatu, Guggulu, Chyavanprash and Brahma rasayan are useful for the prevention and treatment of Avritta induced disorders. Eranda Taila basti is beneficial in almost all Avaranajanya vyadhi.¹⁹ Besides these, Saptamritha Loha, Asanadi Gana Kashaya, Sameera Panchaka Kashaya, Guduchyadi Kashaya and Shiva gulika can be used.

Sthhanika netra chikitsa

Kriya Kalpa procedures like Seka, Ascotana, Tarpana, Putapaka as well as Shirolepa, Shirotalam, Shirodhara, Shirobasti and Netrabasti can be adopted as sthanika chikitsa. Seka with Vasa, Triphala, Lodhra, Manjishtha and Yashti Kashayas as well as Aschotana and Tarpana with Patoladi ghrita, Jivantyadi ghrita, Drakshyadi ghrita, Triphala ghrita, Maha Triphala ghrita, Doorvadya ghrita and Jeevantyadi ghrita are raktapitta samak, ropaka and having rasayana properties. Shirotalam with Bala, Rasna, Yasthimadhu, Amalaki, Lodhra churna can be applied as per vyadhi condition. Shirodhara and Shirobasti can be done with Shatapaka taila, Asanbilwadi taila and Balaswagandha lakshadi taila. Netrabasti can be done by Madhutailika Basti (Erandmoola Kwath, Madhu taila, Shatpushpa kalka and Saindhava lavana) with Yasthimadhu Kalka. It has Chakshyusya, Pramehahara and Raktapittahara properties.²⁰ Padabhyanga with Satapaka taila, Aswagandha bala lakshadi taila or Ksheerabala taila helps to improve eye sight.²¹

CONCLUSION

Diabetic retinopathy is a common metabolic medical condition that develops due to uncontrolled Diabetes mellitus over a prolonged period and leading cause of blindness. In Ayurveda it is disease of Dristipatala involving all the three Doshas with Rakta and all the dhatus including Oja. Advancement of modern treatment modalities only slow down the progression of the DR. Ayurveda classical managements like Shodhana, Samana and Sthhanika treatments with Chakshushya dravyas help to rectify the problem correcting the dosha and dushya in dhatu level and hence it is rational and judicial to prevent the avoidable cause of blindness due to madhumeahaja netrroga and provide better quality of life. Thus, Ayurveda contributes to achieve the goal of vision 2020 "Right to sight by Ayurveda."

REFERENCE

1. Khurana A.K, Khurana Arjun K, Khurana Bharwana. *Compprehensive Ophthalmology*, 6th ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2015. 12:276
2. Sihota Ramanjit, Tandon Radhika. *Parson's Disease of the Eye*, 22nd ed. Chennai, New Delhi: Elsevier; 2015. 20:312

3. https://en.wikipedia.org/wiki/Diabetic_retinopathy
4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5518557/>
5. Khurana A.K, Khurana Arjun K, Khurana Bharwana. *Compprehensive Ophthalmology*, 6th ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2015. 12:276
6. Khurana A.K, Khurana Arjun K, Khurana Bharwana. *Compprehensive Ophthalmology*, 6th ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2015. 12:277
7. Bowling Brad. *Kanski's Clinical Ophthalmology*, 8th ed. China: Elsevier; 2016. 13:521
8. <https://www.carakasamhitaonline.com/mediawiki-1.28.2/index.php?title=Prameha>.
9. Sahoo Prasanta Kumar, Fiaz Shama. *Conceptual analysis of diabetic retinopathy in Ayurveda. Journal of Ayurveda and Integrative Medicine*. 2017. 8:122-123
10. Khurana A.K, Khurana Arjun K, Khurana Bharwana. *Compprehensive Ophthalmology*, 6th ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2015. 12:277
11. Sihota Ramanjit, Tandon Radhika. *Parson's Disease of the Eye*, 22nd ed. Chennai, New Delhi: Elsevier; 2015. 20:312
12. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5454820/>
13. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5749295/>
14. Sihota Ramanjit, Tandon Radhika. *Parson's Disease of the Eye*, 22nd ed. Chennai, New Delhi: Elsevier; 2015. 20:312
15. Bowling Brad. *Kanski's Clinical Ophthalmology*, 8th ed. China: Elsevier; 2016. 13:522
16. https://en.wikipedia.org/wiki/Diabetic_retinopathy
17. Sahoo Prasanta Kumar, Fiaz Shama. *Conceptual analysis of diabetic retinopathy in Ayurveda. Journal of Ayurveda and Integrative Medicine*. 2017. 8:122-123
18. C. Syam Chandran, Nara Akshata. *Ayurvedic Adaptation to Diabetic Retinopathy. World Journal of Pharmaceutical and Medical Research*. 2016. 2(2):26-29
19. Vagbhata. *Kalpasthanana. Sharma Shivaprasad, Mitra Jyotir. Astanga Sangraha*, 3rd ed. Varansi: Caukhamba Sanskrit Series; 2012. 5(3):600
20. Sahoo Prasanta Kumar, Fiaz Shama. *Conceptual analysis of diabetic retinopathy in Ayurveda. Journal of Ayurveda and Integrative Medicine*. 2017. 8:122-123
21. Shankar Uday. *Textbook of Shalaky Tantra, Vol. I Reprint ed. Varansi: Chaukhamba Orientalia*; 2015. 128:703-704



Dr Shyam Kumar Sah¹

¹PG Scholar, SDM College of Ayurveda and Hospital, Hassan, Karnataka.