DIABETIC RETINOPATHY AND ITS MANAGEMENT IN AYURVEDA- A SPECIAL CASE REPORT
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ABSTRACT
Diabetes Mellitus is a common metabolic disorder in which there is high blood sugar level over a prolonged period and occurs in one of two forms: Type1 or Insulin Dependent Diabetes Mellitus (IDDM) and Type2 or Non-Insulin Dependent Diabetes Mellitus (NIDDM). Diabetic retinopathy is most common and serious complication of Diabetes and changes in the retina are observed by 10 years of Diabetes history or even earlier due to modified lifestyle in present era. This disease results in generalized macro and micro vascular complications linked to glycaemic control and affectses resulting in poor vision or even blindness. Despite of better understanding of its pathogenesis, satisfactory treatment is yet to be established. Ayurveda is well recognized for its role in preventing the disease, but as such no description is available in text which clarifies the progression of Prameha to loss of vision. So Ayurvedic treatment purely lies on the basis to pacify the pathological changes which occurs in eye as a result of diabetes according to modern parameters. This case presentation reviews the Pathophysiology of diabetic retinopathy with a view to understand therapeutic target and discusses the possible role of Ayurveda in its management.

Keywords: Diabetic Retinopathy, Diabetic Mellitus, Exudates, Hemorrhages

INTRODUCTION
PRESENTATION: A moderately built male patient aged 40 years came to Shalakya Tantra OPD of SKAMCH & RC with chief complaint of blurred vision. The Patient’s medical history was significant for Diabetes mellitus for 11 years without any visual complaints till 6 months.

COMPLAINT HISTORY: About 6 months back the patient suddenly developed dragging sensation in the right eye in his work place and thus he relaxed for about 10 minutes. Later experienced blurred vision in both the eyes and through the right eye, the objects appeared to be completely red from lateral side. On gazing straight he was not able to perceive light and was unable for any sort of identifications. His sugar level was not under control during this presentation and his HbA1c was found to be 12.8%. During this phase his blood pressure was said to be raised.

TREATMENT HISTORY: On consulting an ophthalmologist it was told that retina is damaged in right eye which was diagnosed as Proliferative Diabetic Retinopathy and cannot be corrected. In left eye haemorrhages were observed in retina for which LASER was done to stop the bleeding. Patient underwent LASER surgery pan retinal photocoagulation (PRP) in 3 sittings for Left eye but vision remained same after one and a half month. Due to this when the patient consulted an-
other ophthalmologist he was diagnosed cataract in left eye and lens extraction (Phacoemulsification) was done. Even after the surgery for cataract vision improvement was not appreciated.

Apart from this he was also diagnosed as Hypertensive, for which he was advised medications. For Diabetes the patient was taking oral hypoglycaemic agents (OHA) and from past 2 years he was on Insulin.

His familial history revealed mother was known case of Diabetes mellitus.

INVESTIGATIONS: B-scan was advised prior to the treatment. The impression in the Right eye showed the total posterior vitreous detachment (PVD) with attachment to disc and nasal Tractional retinal detachment (TRD) with Haemorrhages and Exudates.

EXAMINATION
Visual Acuity For Distant Vision
BE – CF (1/2 Metre distance)
RE – On gazing, bright light perception
LE – CF (1/2 Metre distance)

Test For Color Vision: Ishihara Color Plates
Patient could identify the color of book which is black in color and couldn’t identify the colored patterns and numbers in the plates.

TABLE NO. 1: CONFRONTATION TEST

<table>
<thead>
<tr>
<th>OCULAR EXAMINATION</th>
<th>RIGHT EYE</th>
<th>LEFT EYE</th>
<th>NORMAL VALUES IN DEGREES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above</td>
<td>Not appreciable</td>
<td>Not appreciable</td>
<td>50 degree</td>
</tr>
<tr>
<td>Below</td>
<td>Not appreciable</td>
<td>Not appreciable</td>
<td>70 degree</td>
</tr>
<tr>
<td>Medial (Nasal side)</td>
<td>Till 10 degree HM+ve</td>
<td>Till degree HM+ve</td>
<td>60 degree</td>
</tr>
<tr>
<td>Lateral (temporal side)</td>
<td>Till 20 degree HM+ve</td>
<td>Till 20 degree HM+ve</td>
<td>90 degree</td>
</tr>
</tbody>
</table>

TABLE NO. 2 : EXTERNAL OCULAR EXAMINATION

<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>RIGHT EYE</th>
<th>LEFT EYE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conjunctiva</td>
<td>No abnormalities</td>
<td>No abnormalities</td>
</tr>
<tr>
<td>Cornea</td>
<td>Sensitivity-Diminished</td>
<td>Sensitivity-Normal</td>
</tr>
<tr>
<td>Lens</td>
<td>Opaque, in centre</td>
<td>Pseudophakia, IOL in situ</td>
</tr>
<tr>
<td>Pupil</td>
<td>Normal</td>
<td>Normal</td>
</tr>
</tbody>
</table>

FUNDOSCOPIC EXAMINATION:

TABLE NO. 3: DIRECT OPHTHALMOSCOPY

<table>
<thead>
<tr>
<th>MEDIA</th>
<th>RIGHT EYE</th>
<th>LEFT EYE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUNDUS</td>
<td>Not clear</td>
<td>Trational bands, venous looping and beading neovascularisation at disc (NVD)</td>
</tr>
<tr>
<td>VESSELS</td>
<td>Not clear</td>
<td>Haemorrhages +++</td>
</tr>
<tr>
<td>MACULA</td>
<td>Not appreciated</td>
<td>Not appreciated</td>
</tr>
<tr>
<td>OPTIC DISC</td>
<td>Not appreciated</td>
<td>NVD</td>
</tr>
</tbody>
</table>

TABLE NO. 4: INDIRECT OPHTHALMOSCOPY

<table>
<thead>
<tr>
<th>RIGHT EYE</th>
<th>LEFT EYE</th>
</tr>
</thead>
</table>
Neovascularisation at disc, Pale fundus, Tractional retinal bands seen

<table>
<thead>
<tr>
<th>TABLE NO. 5: SLITLAMPBIOMICROSCOPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIGHT EYE</td>
</tr>
<tr>
<td>2ND Grade Nuclear SCLEROSIS</td>
</tr>
</tbody>
</table>

Tractional bands, Neo vascularisation at disc, Retinal haemorrhages, Tortous vessels, diffused LASER scars seen

INVESTIGATIONS:
- B-Scan
- Blood Test

TREATMENT COURSE AT THE HOSPITAL: The patient was admitted in the hospital for a period of 40 days with an interval of 10 days in between, the following treatment was employed:
- Amapachana with Trikatuchurna
- Snehapana with Guggulutiktaka ghrita
- Sarvangaabhyanga with Dhanvantaram Taila followed by bashpa sweda
- Virechana with Avipattikarachurna

After Samsarjana Krama, Madhuthalika Kala basti was administered:
- Anuvasana Basti with Murchita Taila and Maha Triphala Ghrita
- Niruha Basti with Saindhava, Madhu, Murchita Taila, Maha Triphala Ghrita, Eranda moola kwatha, Yashimadhu kwatha and Mishreya churna.

After Basti Karma the following Kriya Kalpas and Sthanika upakramas were performed:
- Netra bandha with Kadalikandha
- Padabhyanga with Ksheerabala taila
- Netra seka with kwatha of Triphala, Yastimadhu, Lodra and Musta
- Bidalaka with Triphalachoorna and Rasanjana
- Shirodhara (Takradhara) with vasa-guduchyadikwatha
- Tarpana with Mahatriphala ghrita
- Prasadana Putapaka of Ajamamsa, Yastimadhu, Triphala, Dadima, Kharjura, Draksha, Kamala Pushpa.

Internally Patient was advised with:
- Vasa Guluchyadi Kwatha
- Amruttotaram Kwatha
- Tab. Arogya Vardini
- Tab. Saptamrutam Louha

During the course of the Treatment Blood Sugars were monitored regularly which varied between 64mg/dl to 123mg/dl. Patient was advised to take insulin only when GRBS>200mg/dl but was asked to continue his OHA (Oral Hypoglycemic Agent).

PROSPECTUS AT THE TIME OF DISCHARGE:
- Was able to identify whether the person is wearing spectacles or not whereas he was not able to do before.
- Was differentiating the borders on the floor.
- Could walk confidently without any support.
- Could identify the primary colours like red and maroon confidently.
- Blood sugar was under control throughout the course and HbA1c was 6.6% at the time of discharge.

FOLLOW-UP: During the subsequent follow-ups clarity of vision had improved in the right eye and blood sugar was well under control without Insulin.

DISCUSSION
There is a common etiological factor for Timira and Prameha. Nidana Sevana like amla rasa, sukta-aranala, maasha, vegadhara, swapnaviparyaya are achakshushya factors in Prameha which
leads to Timira samprapti\(^{11}\). 

Timira is a special disease one among the drishhtigata rogas, which means darkness / increased dampness (kleda) in the eye. Timira explained based on different dosha predominance can be compared to DR and can be termed as Madhumehajanya Timira and in this patient as it was a advanced stage Chaturthapatalagata Timira treatment was employed.

- Tejo guna dominated by Pitta dosha in netra will always have fear from kapha dosha. The combination of kleda and kapha in Prameha, through pratilomagati of vyana vayu and rasavahinis reaches netra and stimulates the process of srotorodha in sukshma raktavahi srotases which can be correlated to microvascular occlusion due to loss of pericytes and thickening of basement membrane causes occlusion (Capillaropathy). Deformation of erythrocytes and rouleaux formation, increased plateletstickiness and aggre- gation of platelets (Haematological changes) causes endothelial cell damage\(^{12}\).

- Subsequently due to srotorodha their causes atipravritti of utkleshitadoshas which can be neovascularisations caused by vasoformative substances (growth factors) elaborated by hypoxic retinal tissue in an attempt to revascularise hypoxic retina.

- Further causing siragranthi can be justified to formation of aneurysms where there will be localised saccular outpouchings due to physical weakening of the retinal vessels.

- The utkleshana of doshas in srotas due to srotorodha deranges the vasculature and permeability of retinal vessels causing sroteobhisyanda and giving rise to hard exudates.

- Due to increased kapha and kleda in Prameha it increases sara guna and drava guna of pitta and rakta in srotas and also the abhisyandi srotas causes leakage of the blood vessels causing dot and blot haemorrhages, which simulates raktapitta samprapti.

- The srotorodha in siras resulting in agnimandya at the level of dhatwagni and bhutagni causes lack of circulation of pitta and rakta in those areas where there will best shanika pandu lakshana which represents as cotton wool spots of the ischaemic area of the retinal nerve fibre layer.

The treatment planned in this patient possessed properties like madhumehahara properties, shothagna properties, shonitasthapana, ropana, kaphanisaraka, raktaprasadana, srotodushtinirharana, chakshushya and balya properties.

The drugs used for the bahya and abhyantara chikitsa had content of tannins which are astringent in nature help to reduce the exudates and haemorrhages, Flavonoids a remarkable group of phytonutrients have good effect on permeability of vascular capillaries and inhibiting hard exudates and are also antioxidants. They help to improve circulation in the retina by reducing microvascular and capillary blockages. The alkaloids contains oxygen and
sulphur which are bitter in taste helps to oxygenate vessels there by reducing localised ischaemia and endothelial cell damage. Saponins are immune stimulants, kills protozoans and mollusces and are antioxidants causes hypoglycaemia. The antioxidant property of most of the drugs scavenges free radicals and releases prostacyclin from the endothelium which releases the blockages and inhibits platelet aggregation. Triphala used in all the combinations are rich in Vitamin C has superoxide dismutase which prevents oxidation of lipids.

CONCLUSION

Restoration of structural and functional integrity in disease of drushtipatala caused due to Prameha, was the objective of treatment in this case. Ayurveda treatment principles can help to arrest the progression of the disease and in this patient in subsequent follow-ups improvement were noticed though he presented with advanced stage. Tractional bands and venous looping had reduced and fundus of the right eye were appreciative with presence of tractional banda and blot haemorrhages on retina which is mainly due to receding large vitreous haemorrhages which made fundus visible which was not visualized before treatment.

The treatment modalities employed was efficacious in controlling raktasrava and shotha, promoting resorption, improving visual perception, clearing sthanika pandu lakshana and Madhumehahara properties of the drugs helped to hold insulin and reduce the dosage of OHA (Oral Hypoglycemic Agent).

All patients are not benefited by laser. It creates blind spots in the peripheral vision and renders the part damaged and useless. Hence, laser treatment may accidentally damage the normal retinal tissue resulting in blurring of vision. All these can be combated with the efforts of Ayurvedic treatment modalities.

As a prophylactic treatment a proper screening of patients by chakshu visharada’s at regular interval with proper intervention of kriyakalpa, life style modification, pathyapathya along with oral medicines at appropriate time will definitely retard the progression of the disease and maintains the retinal function.

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