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Mode of Ayurvedic intervention in Diabetic Retinopathy (*Sannipathika Kacha*) associated with Chronic Renal Failure - A Case Study

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ABSTRACT

Diabetic retinopathy and nephropathy are microvascular complications of diabetes mellitus affecting eye and kidney respectively. The patient has reported gradual loss of vision (counting finger at a distance of 70cm) in both eyes for one month associated with history of Chronic Renal Failure. In Ayurvedic classics defective urination and diminution of vision are mentioned in the context of *Prameha* (Diabetes mellitus). Ophthalmoscopic examination revealed haemorrhages and fluid collection at the level of retina especially at macula due to microvascular damage. The derangement of *Pittadosha* (humor) by improper dietary habits and irregular lifestyle result in the vitiation of *Raktha*, which is more evident in eyes. The condition showing clinical similarity with *Sannipathika Kacha*, a disease affecting *Dhrishtipatala* of the eye. The logical interpretation on the basis of both subjective and objective clinical findings concluded the diagnosis as *Pittadhika Sannipathika Kacha*. The treatment principle adopted was *Rakthasthambhana*, *Pittakaphasophahara*, *Abhisyandhahara* and *Srothovisodhana* with good metabolic control. The treatment was planned without giving any internal herbal medicines except medicated porridge. After treatment his vision has improved as 6/24 (Rt. Eye) and 6/12 (Lt. eye). The study discusses about the Ayurvedic management of diabetic retinopathy associated with chronic renal failure.

Key words: *Sannipathika Kacha*, *Prameha*, *Diabetic Retinopathy*, *Chronic Renal Failure*.

INTRODUCTION

India is set to emerge as the diabetic capital of the world. According to the WHO, 31.7 million people were affected by diabetes mellitus (DM) in India in the year 2000. This figure is estimated to rise to 79.4 million by 2030, the largest number in any nation in

the world.^[1] Almost two third of all Type 2 and almost all Type 1 diabetics are expected to develop diabetic retinopathy over a period of time.^[2] A systematic review of 35 population based global studies (2012) showed that the prevalence of diabetic retinopathy, proliferative diabetic retinopathy, diabetic macular oedema and vision threatening diabetic retinopathy among individuals with diabetes are 34.6%, 7.0%, 6.8%, and 10.2% respectively.^[3] In India diabetic retinopathy is emerging as an important cause out of 4.7% cases of blindness due to posterior segment disorders.^[4] While considering global statistics data of vision threatening diabetic retinopathy and increasing prevalence of diabetes mellitus in India, diabetic retinopathy will occupy the major share of visual impairment in future. Diabetic retinopathy is the most common cause of vision loss among people with diabetes and a leading cause of blindness among working age adults.^[5]

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Diabetic retinopathy and diabetic nephropathy are major chronic microvascular complications of diabetes mellitus. In diabetic retinopathy growth of immature new blood vessels in the retina as well as macular oedema lead to severe vision loss or blindness. Diabetic nephropathy is the damage to the microvasculature of kidney which can lead to chronic renal failure.^[6]

As per Ayurvedic references the condition of diabetic retinopathy is having clinical similarity with *Sannipathika Kacha*, a *Drishtigatharoga* (disease localized in retina). The gradual loss of vision is the characteristic feature of *Sannipathika Kacha* with the involvement of *tridoshas*.^[7] The treatment was done by considering the *Doshik* predominance in the light of ophthalmoscopic findings. The critical assessment of pathogenesis concluded the disease as *Pithadhika Sannipatha Kacha*. The medicines and mode of intervention were selected as per the final diagnosis decided by means of both subjective and objective clinical findings. The main challenge faced in the treatment was the restriction of internal medicines due to chronic renal failure.

CASE REPORT

Presenting complaints with duration

1. Gradual loss of vision in both eyes - 1 month
2. Generalised swelling over face - 1yr
3. Swelling over both foot - 1 yr
4. Reduced urine output - 1yr

History of presenting complaints

A male patient aged 56 years with known diabetic for 21 years was apparently normal upto last year. For the last one year he has noticed swelling over both foot and face and reduced urine output but he did not go for medical advice. In December 2017 he had a history of fall, admitted in a hospital for one day and diagnosed as Blood pressure variation, got relief with primary management. After a week he had experienced gradual loss of appetite and nausea for few days, consulted an allopathic physician and advised to do full body check-up including CT (brain)

in January 2018. From the investigation they diagnosed the diseases as chronic renal failure, consulted a nephrologist at Medical College Hospital, Trivandrum, Kerala, and has continued regular allopathic medication. Mean while he has experienced gradual loss of vision in both eyes since mid - January 2018. He also observed blurring of vision while looking at a bright object. He was not able to see objects in the normal light which affected his daily activities. He consulted an ophthalmologist, underwent laser therapy but vision was deteriorating. He was referred from Medical College Hospital, Trivandrum to Regional Ayurveda Research Institute for Life Style related Disorders, Trivandrum for Ayurvedic management of diabetic retinopathy.

History of past illness

- Type II Diabetes Mellitus since 21yr
- Hypertension since 5yrs
- Dyslipidaemia since 3yrs
- Chronic renal failure since 1 and 1/2 months
- CAD since 12 yrs
- Gall bladder surgically removed at 31 yrs of age.

Medicine history

1. Lasix 40mg(once daily)
2. Diamicon XR 60mg(twice daily)
3. Deplat A 150mg(twice daily)
4. MetolarXR (once daily)
5. Tab. Statin 10mg (once daily)
6. Cilicar 10mg (once)
7. Tab. Celizaren (twice daily)
8. Insulin inj (15U---0U)

General examination

- Pallor : Present
- Icterus : Absent
- Cyanosis : Absent
- Clubbing : Absent

- Lymph nodes : Non palpable
- Swelling over face : Present
- Swelling over both foot : Present

Vital data

- BP : 120/80 mm of Hg
- Pulse : 80/mts
- Resp. Rate : 20/mts
- Height : 166cm
- Weight : 56kg

Systemic Examination

C N S, RS, GIT, CVS, integumentary and locomotor system: No abnormality noted

Genito-urinary system

Urine output less, Dark yellow colour urine

Eye Examination

1. **Head posture** : No signs of squint or ptosis, Head is kept straight without any tilt.
2. **Forehead and facial symmetry** : No signs of facial palsy or ptosis, both eye brows and eyelids are at the same level, Symmetrical nasolabial folds, Symmetrical angle of mouth in both sides
3. **Eye brows** : Cilia present, level of eye brows are normal, Curved with convexity upwards
4. **Eyelids** :
 - a. **Position**: Within normal limits, Upper eyelid covers 1/6 of cornea, Lower lid touches the lower border of cornea.
 - b. **Movement**: No lagophthalmosis, no blepharospasm, no abnormal movements noted.
 - c. **Margin**: No entropion, no ectropion, no scales present, no swelling noted.
 - d. **Eye lashes**: No trichiasis, no poliosis, Upper lid directed forward, upwards and backwards, Lower lid directed forwards downwards and backwards.

e. **Skin**: No skin lesion noted, Generalized periorbital swelling present.

f. **Aperture**: No ptosis, no lagophthalmosis.

5. **Lacrimal apparatus**: No signs of epiphora, no signs hyperlacrimation, no signs of dacryocystitis, No signs of dacryoadenitis

6. Eye ball

a. **Position**: No signs of exophthalmos, no signs of enophthalmos.

b. **Visual axis**: No squint

c. **Size**: No abnormality noted

d. **Movement**: No signs of extra-ocular muscle palsy, Uniocular and binocular movements are possible

7. Conjunctiva

Bulbar and palpebral, Slightly hazy and pale, no congestion of vessels, no chemosis, no follicle, no pterygium.

8. **Sclera**: No discoloration and no inflammatory changes

9. Cornea:

a. **Size**: No signs of micro or megalocornea

b. **Shape (curvature)**: No signs of keratoglobus/ keratoconus

c. **Surface**: Smoothness is present

d. **Sheen**: No signs of dry eye

e. **Transparency**: Hazy (corneal oedema)

f. **Vascularization**: Nil

g. **Sensations**: No abnormality detected (no fifth nerve involvement)

10. **Endothelium, back of cornea**: No deposits present

11. **Anterior chamber**: No Foreign body, no aqueous flare, Shallow in both eyes –torch light method

12. Iris:

a. **Colour and pattern**: Crypts, ridges and collarette present, No cyst, No nodules

13. Pupil:

- a. **Number:** One in number
- b. **Size:** No mydriasis, No miosis
- c. **Shape:** Round
- d. **Location:** Centrally placed
- e. **Colour:** Greyish white [Immature senile cataract] in both eyes
- f. **Reaction:**
 - Direct Light Reflex : Sluggish reaction
 - Consensual Light Reflex : Within normal limits
 - Swinging Flash Light Test : No Relatively Apparent Pupillary Defect
 - Near Reflex : Within normal limits

14. Lens: Phakic eye with immature senile cataract

- a. **Position:** No dislocation, No subluxation
- b. **Shape:** Within normal limits
- c. **Colour:** Greyish white, no deposits on the anterior lens surface

AYURVEDIC INTERVENTION**Internal medicines**

Patient was advised to take *Hraswapanchamoola* porridge internally on regular basis as lunch.

External treatment

Rakthastambhana (treatment to support stoppage and absorption of haemorrhages)

1. **Prathimarsanassya** (Transnasal drug administration) for 7days by using *Durvaswarasa* (2.5ml) +cane sugar (2gm) + milk (2.5ml) mixed and instilled 2 *bindu* in each nostril (two times daily)
2. **Thalam** (Application of medicine over vertex) for 7days by using *Ksheerabalathaila* and *Kachooradhichoorna* (two times daily)
3. **Mukhalepa** (application medicines over face) for 7days by using *Triphala choorna* and *Yashtichoorna* (once daily)

4. **Nethraseka** (pouring medicated milk over the eyes) for 7 days by using *Triphala* and *Yashtiksheerakashayam* (4.5mts in each eye) (twice daily)
5. **Aschothana** (instilling of medicine in the eyes) for 7 days by using *Chandhanadhigulika* and rose water (12 drops in each eye) (twice daily)
6. **Jalookavacharana** (bloodletting by medicinal leech) for 2 days-both forehead and palpebral conjunctiva of upper and lower eyelid of each eye (one sitting in each side)

Pittakaphasophahara and Vatanulomana

1. **Thakradhara** (pouring medicated buttermilk over forehead- 45minutes) for 7 days by using *Dasamoolachoorana* and *Dhathrichoorana* (once daily)
2. **Prathimarsanassya** (Transnasal drug administration) for 7 days by using *Durvaghrutha* - 2 *bindu* in each nostril (once daily)
3. **Rookshavasthi** (medicated enema) for 5 days by using *Amruthashadanga Kashaya* - 300ml and *Shaddharana Choorna* - 25 gm (once daily)
4. **Nethraseka** (pouring medicated milk over the eyes) for 7 days by using *Triphala* and *Yashtiksheera Kashaya* (4.5mts in each eye) (once daily)
5. **Aschothana** (instilling of medicine in the eyes) for 7 days by using *Pasupathagulika* and rose water (12 drops in each eyes) (once daily)

Brumhana

1. **Nassya** (transnasal drug administration) for 7days by using *Ksheerabalathaila* (21 *avarthi*) 6 *bindu* in each nostrils; **Thalam** along with *nassya* by using *Ksheerabala Thaila* and *Kachooradhi Choorna*; **Urdwabhaga-abhyangam** (external application of medicated oil over upper part of body)pre-operative to *Nassya* by using *Ksheerabalathaila* (once daily).
2. **Anjana (collyrium)** for 7 days by using *Elaneerkuzhambu* once daily followed by *kshalana*

(wash the eye) with *thriphala Kashaya* (once daily).

RESULTS

We have observed the patient has showed improvement in following aspects

1. Vision improved as 6/24 in Rt. Eye and 6/18 in Lt. eye without glass and 6/9 in Rt. Eye and 6/6 in Lt. Eye with glass. [Table -2 (a, b, c, d, e)]
2. The vitreous haziness reduced [Table 5 & 6]
3. Urine output improved. [Table 7]
4. Intraocular pressure reduced [Table 3]
5. Visual field improved [Table 4]
6. Serum creatinine, serum urea reduced [Table 1]

Table 1: Changes in blood test

Blood test	27/02/2018	04/04/2018
Haemoglobin (gm%)(11-16)	10.2	9.7
ESR (mm/hr) (5-10)	38	38
FBS (mg/dl) (70-105)	84	101
PPBS (mg/dl) (80-110)	190	252
Blood urea (mg/dl) (10-55)	73.2	20
Serum creatinine (mg/dl) (0.7-1.4)	4	3.6

Table 2: Changes in visual acuity

A. Vision test 26/02/2018

Visual acuity	Right eye	Left eye
Without glass	Counting Finger 70 cm	Counting Finger 70 cm
With glass	No improvement with glass	No improvement with glass

B. Vision test 05/03/2018

Visual acuity	Right eye	Left eye
Without glass	6/36	6/18

With glass	6/24	6/12
Near vision	N-36	N-36

C. Vision test 27/03/2018

Visual acuity	Right eye	Left eye
Without glass	6/24	6/18
With glass	6/18	6/12
Near vision	N-36	N-18

D. Vision test 04/04/2018

Visual acuity	Right eye	Left eye
Without glass	6/24	6/18
With glass	6/18	6/12
Near vision	N-18	N-18

E. Vision test 07/05/2018 [one month after inpatient treatment]

Visual acuity	Right eye	Left eye
Without glass	6/24	6/18
With glass	6/9	6/6
Near vision	(+3.00)N-6	(+3.00)N-6

Table 3: Changes in Intraocular pressure (IOP)

IOP	26/02/2018	04/04/2018
Rt. Eye	22.4 mm of Hg (5.5 gmwt) at 10 am	17.3 mm of Hg (5.5 gmwt) at 10 am
Lt. Eye	22.4 mm of Hg (5.5 gmwt) at 10 am	17.3 mm of Hg (5.5 gmwt) at 10 am

Table 4: Changes in visual field (confrontation test)

Date	Eye	Visual field
26/02/2018	Right	Patient cannot identify the object at a distance of one meter
	Left	

05/04/2018	Right	Patient can see the object keeping at maximum angle in different directions
	Left	

Table 5: Fundus examination findings - 26/02/2018

Fundus findings	Rt. Eye	Lt. Eye
Fundal glow	Positive	Positive
Media	Hazy	Hazy
Optic disc	Round with CDR=0.4	Round with CDR=0.4
Macula	FR-distorted, fluid collection present, dot haemorrhages noted	FR-distorted, fluid collection present, dot haemorrhages noted
Blood vessels	Attenuated arterioles, crossing over changes, micro aneurysms in the macular area, dilated veins	Attenuated arterioles, crossing over changes, micro aneurysms in the macular area, dilated veins.
General background	Blot and dot haemorrhages in all quadrants	Blot and dot haemorrhages in all quadrants
Diagnosis	Diabetic retinopathy [Gr-4] with clinically significant macular oedema	Diabetic retinopathy [Gr-4] with clinically significant macular oedema

Table 6: Fundus examination - 04/04/2018

Fundus findings	Rt. Eye	Lt. Eye
Fundal glow	Positive	Positive
Media	Clear	Clear
Optic disc	Round with CDR=0.4	Round with CDR=0.4
Macula	FR-dull, fluid collection resolving stage, no dot haemorrhages	FR- present, fluid collection resolved, no dot haemorrhages noted

	noted	
Blood vessels	Attenuated arterioles, crossing over changes, micro aneurysms in the macular area, dilated veins	Attenuated arterioles, crossing over changes, micro aneurysms in the macular area, dilated veins.
General background	No Blot and dot haemorrhages observed	No Blot and dot haemorrhages observed
Diagnosis	Diabetic retinopathy [Gr-4] with clinically significant macular oedema(resolving stage)	Diabetic retinopathy [Gr-4] with clinically significant macular oedema(resolved)

Table 7: Changes in urine output

Date	Input (ml)	Output (ml)
2/3/18	1000	855
5/3/18	650	550
7/3/18	900	750
10/3/18	875	1200
14/3/18	950	1605
20/3/18	990	1100
24/3/18	1060	1400
28/3/18	940	1240
1/4/18	1040	1150
3/4/18	1000	1550

DISCUSSION

Diabetic Retinopathy is a most prevalent microvascular complication of Diabetes Mellitus contributes the major share of visual impairment. In

the stage of non-proliferative diabetic retinopathy, haemorrhage along with vascular leakage causes vision impairment. The progression of the disease from non-proliferative diabetic retinopathy to proliferative diabetic retinopathy results in irreversible vision loss.^[8] As per the pathogenesis concept of *Susrutha* diabetic retinopathy comes under the last stage of *Prameha* (diabetes mellitus). Intake of *Pitta* and *Kapha* vitiating food along with *Vataprakopa Viharas* imparts *Tridoshadushti* which accelerate the progression of the disease. As time progresses the pathogenesis of *Prameha* reaches to the stage of irreversible *Madhumeha* of *Vata* predominant type.^[9] In the case of eye disease also as the pathogenesis progresses from *Thimira* to *Kacha* and finally to *Linganasa* (total loss of vision).^[10] Hence the eye disease should be addressed at the earliest to arrest the progress of the disease and preserve the vision.

The logical interpretation on the basis of both subjective and objective clinical findings concluded the diagnosis as *Pittadhika Sannipathika Kacha*. The treatment principles adopted were *Rakthasthambhana*, *Pittakaphasophahara*, *Abhishyandhahara*, *Srothovisodhana* and *Brumhana* with good metabolic control. The treatment was planned without giving any internal medication except medicated porridge as per the instruction of nephrologists from Medical College Hospital, Trivandrum. The medicated porridge containing five ingredients namely *Bruhathidwaya* (*Solanum melogena*, *Solanum anguivi*), *Amsumathidwaya* (*Desmodium gangettium*, *Pseudarthria viscida*) and *Gokshura* (*Tribulus terrestris*).^[11] The combination of drug has the property of *Madhura* (sweet) in *Rasa* (taste) and *Vipaka* (metabolism), not so cold or hot in *Virya* (potency) and *Tridoshasamana* (pacify all *Doshas*).^[12] The combined effect of these drugs regulates the glomerular filtration rate and maintains the fluid balance of body. The treatment principle of *Urdwagatha Rakthapitta* was employed to stop and absorb retinal bleeding.^[13] For which transnasal administration of *Durva* (*Cynodon dactylon*), application of *Ksheerabala Thaila* and *Kachooradhi*

Choorna over vertex, *Thriphala* and *Yashti Ksheera Kashaya Netraseka* (pouring medicated milk over the closed eye), *Aschothana* with *Chandanadi Gulika* and rose water and *Jalookavacharana* (bloodletting) were executed. After bleeding getting absorbed *Thakradhara* (pouring of medicated buttermilk over forehead) started with *Dashamoola* (herbal formulation containing roots of ten drugs) and *Dhathrichoorna* (*Phyllanthus emblica*) and *Rookshavasthi* (medicated enema) with *Amruthasadangam Kashaya* (decoction made from following ingredients *Tinospora cordifolia*, *Cyperus rotundus*, *Santalum album*, *Gingiber officinalis*, *Coleus vettiveroides*, *Fumaria parviflora*, *Vetiveria zizanioides*) and *Shaddharana Choorna* were performed. Finally, *Nasya* with *Ksheerabala 101 Avarthi Thaila* and *Eleneer Anjana* were employed to stabilize retina and to pacify localized *Pitta*.

CONCLUSION

Vision threatening diabetic retinopathy is a microvascular complication of diabetes mellitus. Here *Sannipathika Kacha* with *Pitta* predominance was treated with drug having *Rakthastahmbana*, *Kaphapitthahara* and *Vatanulomana* properties. The drugs used in the treatment were also having both *Abhishyandhahara* (reduce complications related with microvascular damage) and *Chakshusya* (suitable for the constitution of eye) properties. The improvement in the urine output showed the effectiveness of the medicated porridge in renal function. As the disease is a complication of *Prameha* (diabetes mellitus) the prognosis is *Yapya*^[14] (can be managed with regular medicine and diet control) and patient advised to continue medicated porridge and transnasal drug administration of *Anuthaila* in the follow-up for one month. The action of topical interventions easily reaches the target tissues of the eye and achieves their high bio-availability. The vision improvement facilitated by reduction in vitreous haziness and sub-retinal fluid and absorption of dot and blot haemorrhages at the level of retina. The improvement of both eyes after one month follow-up period was suggested the mode of Ayurvedic intervention is

effective in improving as well as stabilizing the visual acuity.

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