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Review Article

COMPARATIVE STUDY OF *PHALATRIKADI KWATH BASTI* AND *TRIVRITTA CHURNA VIRECHANA* IN THE MANAGEMENT OF DIABETIC MACULAR EDEMA- A RANDOMIZED COMPARATIEV CLINICAL TRIAL

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ABSTRACT

Introduction: Diabetic macular edema (DME) is the accumulation of excess fluid in the extracellular space within the retina in the macular area, typically in the inner nuclear, outer plexiform, Henle's fiber layer, and subretinal space. The risk of development of blindness in diabetics increases by 20–25 times as compared to the normal population. There is no direct correlation of Diabetic Retinopathy in *Ayurveda* but we find reference in "*Netra Prakashika"* written by *Pujyapada Mahamuni* that *Netra Roga* are caused by *Prameha.* **Material method:** Patients were randomly divided into two groups as Group 'A' and Group 'B' with 30 patients in each group. In **Group 'A'** patients were given *Virechana* by *Trivritta Churna* after *Deepan Pachana* and *Snehana* and *Phaltrikadi Kwath* orally. **Group 'B'** patients were given *Phaltrikadi Kwath Basti* and *Phaltrikadi Kwath* orally. Assessment was done on subjective criteria like Blurred vision (*Vihwal Dristi*), Floaters (*Makshika Mashak Kesh Jaal Pashyati*), Photophobia, scotoma (*Tamas Darshan* black spot in front of eye), Metamorphopsia or distorted vision (*Nasa Akshi Yuktani Vipritani Vikshate*). Objective criteria were visual acuity, fundoscopy, optical coherence tomography (OCT), fundus photography. **Result:** In Group A, statistically significant relief ($p<0.0001$) was found in blurred vision (49.75 %), floaters (50.00 %), distance vision (26.47 %), pinhole vision (31.81 %), best corrected visual acuity for distance (1.5 %)

and central macular thickness (7.6 %). In Group B, statistically significant relief ($p \leq 0.0001$) was found in blurred vision (47.90 %), distance vision (22.00%), pinhole vision (26.92 %), best corrected visual acuity for distance (28.12%) and central macular thickness (3.67 %). In intergroup comparison, Group A showed better results in blurred vision (49.75 %), distance vision (26.47%), pinhole (31.81), near vision (12.5%) and central thickness macular (7.60 %) than Group B. **Conclusion:** Thus, it can be concluded that *Virechana Karma* is more effective than Basti therapy in the management of *Pramahajanya Timira.*

Keywords: Diabetic macular edema, *Pramahajanya Timira. Phaltrikadi Kwath, Virechana, Basti*

1.1 INTRODUCTION

Diabetes mellitus has in recent times, gained importance as one of the most common, non-communicable disease, which contributes to death and disability worldwide. Diabetes affects almost all aspects of intermediary metabolism and is also associated with accelerated aging of the cardiovascular system. Hence diabetes is best defined as a metabolic cum vascular syndrome of multiple aetiologies characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both, leading to changes in both small blood vessels (microangiopathy) and large blood vessels (macroangiopathy) and which is often associated with long term damage, leading to malfunction and failure of various organs like eyes, kidneys, heart, nerves and blood vessels.

Diabetic macular edema (DME) is the accumulation of excess fluid in the extracellular space within the retina in the macular area, typically in the inner nuclear, outer plexiform, Henle's fiber layer, and subretinal space.[i] Diabetes mellitus can be correlated to *Madhumeha* which is a type of *Prameha* which affects all the organs in our body including the vision. Hence this disease has been greatly emphasized by our *Acharyas* as it causes major complications in other organs. Inclusion of *Prameha* among the eight major disorders in Charaka Samhita shows the importance of the disease given by ancient seers. The risk of development of blindness in diabetics increases by 20–25 times as compared to the normal population. There is no direct correlation of Diabetic Retinopathy in *Ayurveda* but we find reference in "*Netra Prakashika"* written by *Pujyapada Mahamuni* that *Netra Roga* are caused by *Prameha.* As Diabetes is a systemic disease which causes symptoms in eye, it's very important to control the disease systemically.

In *Ayurveda, Timira* has been explained in detail by *Acharyas*. Clinical manifestations of *Timira* are *Vihwala Drishti* (Blurred vision), *Makshika Mashaka Kesha Jaala Pashyati* (Floaters), *Tamasa Darshanam* (Scotoma -black spots in front of eyes), and *Nasa Akshi Yuktani Vipritani Vikshate*[1] (Metamorphopsia or distorted vision) which has similarities with features of DME. *Acharya Bhela* also mentioned *Tama* in the complication of *Prameha*. *Acharya Pujyapadamuni* also used the word *Pramehajanya Timira* in his book *Netra Pariksha*, as *Timira* which is developed as a complication of *Prameha. Pramehajanya Timira* is *Pitta*

Pradhana Tridoshaja condition. Two types of *Samprapti* take place in this disease; one is *Aavarana* and another is *Dhatu Kshaya*. Both have an important role in the development of DR as well as DME.

In this study, *Nidana Parivarjana* was achieved by avoidance of *Apathaya Aahara-Vihara* and following *Pathya Aahara-Vihara.* Looking into the gravity of this problem the *Basti Chikitsa* is selected as it is considered as *Ardha Chikitsa* and advocated in those diseases where medical management is not fruitful. The medicine given through rectal route , can be given in high dosage than oral route without any concern for palatability and also have *Chakchusya* property. *Virechana* therapy is very important in S*harir Shodhana* and also acts as *Shothahara* which is very essential in Diabetic macular edema. Hence *Virechana* therapy is also advocated in second group to compare its efficacy with *Basti* and its effect in diabetic macular edema. Hence an attempt has been made on the management of Diabetic macular edema with *Ayurvedic* medications in the form of *Phalatrikadi Kwath Basti* and *Trivritta Churna Virechana* in the management of Diabetic macular edema.

1.2. MATERIAL AND METHOD

i) **Patients—** The patients will be selected from *Netraroga* OPD and IPD of National Institute of Ayurveda, Jaipur.

ii) **Trial drug—**

(a) *Phaltrikadikwath*[ii] as described by Charak in Prameha Chikitsa 6/40.

(b) *Trivritta Churna*[iii] as described by Charak Kalpasthana 7/11.

iii) Sample Size—60 patients

Diagnostic Criteria—it will be established on the basis of history, symptomatology mentioned in classical texts and objective parameters (like blurred vision and floaters) in contemporary texts.

INCLUSION CRITERIA—

1. Diagnosed cases of Diabetes Mellitus Type II.
2. Mild to severe non-proliferative diabetic retinopathy with macular edema.
3. Visual acuity above 6/60
4. Age between 40 -70 yrs.

EXCLUSION CRITERIA-

1. Visual acuity- less than 6/60
2. Hypertensive patients with systolic BP>150 and diastolic BP>100 mm Hg.
3. Pregnant diabetic patients.
4. Diabetic patients with other cardiovascular problems like CAD, Post MI, post CABG cases

STUDY DESIGN — Selected patients were randomly divided into two groups as Group 'A' and Group 'B' with 30 patients in each group. **Group 'A'**— Total 30 patients were registered in this group and advised *Virechana* by *Trivritta Churna* after *Deepan Pachana* and *Snehana* and *Phaltrikadi Kwath* orally. **Group 'B'**— Total 30 patients were registered in this group and advised *Phaltrikadi Kwath Basti* and *Phaltrikadi Kwath* orally.

DOSE AND DURATION OF TRIAL—

Group I received *Virechana* by *Trivritta Churna30-50* gms after *Deepana Pachana* with *Panchakola Churna* and *Snehana* with *Triphala Ghrita* for 3 days followed by *Samsarjana Karma* for 3 days and *Phaltrikadi Kwath* orally twice daily with water 30 ml for 30 days.

Group II was administered *Phaltrikadi Kwath Yoga Basti* daily for 8 days in which 3 *Niruha* (300-400 ml) and 5 *Anuvasana* with *Tila Taila* (50-60 ml) along with 30 ml *Phaltrikadi Kwath* twice daily with water for 30 days.

Regular follow up was done at an interval of one month for 3 months. The patients were evaluated at the end of the treatment and at every follow up.

ASSESMENT CRITERIA- Clinical signs and symptoms were graded and evaluated as per Early Treatment Diabetic Retinopathy Study (ETDRS.) Subjective criteria assessed for the study were Blurred vision (*Vihwal Dristi*), Floaters (*Makshika Mashak Kesh Jaal Pashyati*), Photophobia, scotoma (*Tamas Darshan* black spot in front of eye), Metamorphopsia or distorted vision (*Nasa Akshi Yuktani Vipritani Vikshate*). Objective criteria assessed for the study were visual acuity, fundoscopy, optical coherence tomography (OCT), fundus photography.

Gradation index of subjective parameters:

Blurred vision (*Vihwala Drishti*)	
Grade 0	No blurred Vision
Grade 1	Blurred vision but without imitating(inhibiting) Activities
Grade 2	Sometime difficulty in performing routine work
Grade 3	Unable to go out independently

Floaters (*Makshika Mashaka Kesha Jaala Pashyati***)**	
Grade 0	No perception of floaters
Grade 1	Occasionally interfering with routine work.

Grade 2	Regularly interfering with routine work.
Grade 3	Can't perform routine work
Distorted images (*Nasa Akshi Yuktani Vipritani Vikshate*- Metamorphopsia**)**	
Grade 0	No perception of distorted images
Grade 1	Occasionally interfering with routine work
Grade 2	Regular interference with routine work
Grade 3	Unable to perform routine work
Photophobia	
Grade 0	Absent
Grade 1	Mild (Occasionally present and not disturbing daily routine)
Grade 2	Moderate (Frequently present and disturbing daily routine)
Grade 3	Severe (Present continuously and patient unable to perform his/her routine work)
Perception of black spots/ Scotoma (*Tamasa Darshanam***)**	
Grade 0	No perception of black spot
Grade 1	Occasionally interfering with routine work
Grade 2	Regular interference with routine work
Grade 3	Unable to perform routine work
Amsler's grid	
Grade 0	No distorted lines
Grade 1	Lines are crooked or bent
Grade 2	Boxes appear different in size and shape from each other
Grade 3	Boxes and Lines are wavy, missing

Gradation index of objective parameters:

1. Assessment of distance vision, pinhole vision and best corrected visual acuity for distance were done by using Log MAR

Visual acuity Notations				
Best corrected visual acuity (Snellen's Distant) comparisons with Log MAR Values.	Snellen`s (6/6)	LogMAR	Snellen`s 6/6)	LogMAR
	6/3	-0.3	6/48	0.9
	6/4	-0.2	6/60	1.0
	6/5	-0.1	5/60	1.1
	6/6	0	4/60	1.2

	6/7.5	0.1	3/60	1.3
	6/9	0.2	2.5/60	1.4
	6/12	0.3	2/60	1.5
	6/15	0.4	1.5/60	1.6
	6/18	0.5	1/60	1.8
	6/24	0.6	0.5/60	2.0
	6/36	0.7		

2. Assessment of near vision and best corrected visual acuity for near was done using Decimal notation.

Table 2.3. Equivalent visual acuity notations for near

Visual angle (minutes)	*Snellen equivalent*	*American Medical Association notation*	*Decimal notation*	*Jaeger notation*	*Faculty's Roman test types notation*	*Metre notation (m)*	*Central visual efficiency for near (%)*	*Vision loss (%)*
5.00	20/20	14/14	1.00	J1	N5	0.37	100	0
6.25	20/25	14/17	0.80	J1	N6	0.43	100	0
7.50	20/30	14/21	0.66	J2	N8	0.50	95	5
10.00	20/40	14/28	0.50	J4	N10	0.75	90	10
12.50	20/50	14/35	0.40	J6	N12	0.87	50	50
15.00	20/60	14/42	0.33	J8	N14	1.00	40	60
20.00	20/80	14/56	0.25	J10	N18	1.50	20	80
25.00	20/100	14/70	0.20	J1	N24	1.75	15	85
50.00	20/200	14/140	0.10	J17	N36	3.50	2	98

Figure No. 1: Equivalent visual acuity notation for near vision (from Optics and Refraction Khurana)

3. Central macular thickness measured by 3D-Macula OCT Topcon.

Statistical analysis- The scoring of assessment criteria was analyzed statistically in terms of means of values of before treatment (BT), after treatment (AT), standard deviation (SD), standard error (SE). Various observations made and results were obtained statistically using student- t test, Wilcoxon match pairs signed ranks test and Mann Whitney test on INSTAT software. Wilcoxon matched pairs signed ranks test was used for nonparametric data and student paired - t test was used for parametric data in individual Group A and Group B. In intergroup comparison between Group A and Group B, Mann Whitney test was used for nonparametric data and student unpaired - t test was used for parametric data. The results obtained were considered significant for p value ≤ 0.0001 to ≤ 0.05 and non- significant for p value >0.05.

1.3. OBSERVATION

In the present trial total 60 patients (120 eyes) were registered and divided into two groups, each group having 30 patients.

Maximum number of patients 58.34% (35) patients were suffering from diabetes since 5 to 10 years. 30% (18) patients were reported duration of 11-15 years, 5% (3) reported 16-20 years and 3.33% (3) each reported less than 5 years and more than 20 years duration. Majority of patients (75%) had initial fasting blood sugar less than 200 mg/dl. 16.16% patients were reported their initial fasting blood sugar 200-300 mg/dl and 8.33 % were reported more than 300 mg/dl. In this study 76.67 % (49) patients had negative family history and 23.33 % (15) patients had positive family history. It was observed that maximum 58.33 % (35) patients were not having other associated diseases. 36.67% (27) patients were having hyperlipidaemia, 25% (15) patients were having hypertension. Maximum 65% patients were reported with indulgence in Guru-Snigdha Dravaya, followed by 63.33% in Dadhi, 40% each in in Amla-Lavana Rasa andin Navannapana, 33.33% in Gramya- Anupa- Audaka Mansa, 16.67% in Sheetala Dravyas and 5% in Payasa.It was observed that maximum 68.33% patients were reported with Divaswapna, followed by 58.33% with Avyayama, 46.67% with Achinta, 16.67% with Asyasukha, 18.33% with Swpnasukha and 5 % patients had Aalasya. Maximum 68.33% patients were reported with indulgence in Diwaswapna followed by 66.67 % in Krodha, 51.67% in Chinta, 35% in Shukta-Aarnaa-Amla Nishewnam, 15% in Ratrijagaran,3.33 % each in Vashpanigraha, and in Sukshma Nirikshan,and 1.56 % had Shiroabhighata. Presenting symptoms wise distribution shows that 100% (60) patients were having blurred vision, 70% (42) patients were having floaters, 11.66% (07 eyes) patients were having photophobia, 10% (6) patients were having black spots in front of eyes (scotoma) and 5% (3) patients were having distorted images (metamorphopsia). 36.66 % (44) eyes were diagnosed as early DME, 32.5% (39) as diffuse DME, 16.66% (20) were diagnosed with cystoid DME, 1.66% (2) was diagnosed with CSME and Epiretinal membrane each.

1.4. RESULT:

Table No.1: Effect of therapy on Complaints in Group A (Wilcoxon matched paired single rank test, N=60)

Symptoms	**Mean**			**% relief**	**SD±**	**SE±**	**W**	**P**	**R**
	BT	AT	D						
Blurred vision	2.01	1.01	1.0	49.75	0.40	0.05	1540	<0.0001	S
Floaters	0.62	0.30	0.31	50.00	0.51	0.06	78	<0.0001	S
Distorted image	0.12	0.09	0.03	31.66	0.21	0.02	6	0.25	NS
Scotoma	0.12	0.09	0.03	31.66	0.21	0.02	6	0.25	NS
Photophobia	0.14	0.12	0.02	14.28	0.42	0.05	15	0.06	NS

Table No. 2: Showing effect of therapy in objective parameters in Group A (Student paired t test, N=60)

Symptoms	Mean			% relief	SD±	SE±	T	P	R
	BT	AT	D						
Distance Vision	0.68	0.49	0.18	26.47	0.14	0.01	9.66	< 0.0001	S
Pinhole vision	0.66	0.444	0.21	31.81	0.24	0.03	6.80	< 0.0001	S
BCVA distance	0.42	0.29	0.12	28.57	0.13	0.01	7.84	< 0.0001	S
Near vision	0.16	0.14	0.02	12.5	0.05	0.01	3.79	0.0003	S
BCVA near	0.64	0.62	0.01	1.5	0.08	0.01	1.68	0.11	NS
CTM	250	231	19	7.6	27.4	3.73	4.77	<0.0001	S

Table No.3: Effect of therapy on complaints in Group B (Wilcoxon matched paired single rank test, N=60)

Symptoms	Mean			% Relief	SD±	SE±	W	P	R
	BT	AT	D						
Blurred vision	1.94	1.01	0.93	47.90	0.58	0.07	1182	<0.0001	S
Floaters	0.5	0.13	0.36	72	0.55	0.07	190	<0.0001	S
Distorted image	0.05	0.01	0.03	60	0.18	0.02	3	0.50	NS
Scotoma	0.17	0.08	0.08	47.05	0.28	0.03	15	0.06	NS
Photophobia	0.12	0.06	0.05	41.66	0.29	0.03	3	0.50	NS

Table No. 4: Showing effect of therapy in objective parameters in Group B (Student paired t test, N= 58)

Symptoms	Mean			% relief	SD±	SE±	T	P	R
	BT	AT	D						
Distance Vision	0.59	0.45	0.13	22%	0.13	0.00	471.8	<0.0001	S
Pinhole	0.52	0.37	0.14	26.92	0.13	0.02	479.5	<0.0001	S

vision									
BCVA distance	0.32	0.22	0.09	28.12	0.16	0.00	275	<0.0001	S
Near vision	0.24	0.25	0.01	4.17	0.05	0.01	0.86	0.3911	NS
BCVA near	0.69	0.70	0.01	1.45	0.10	0.01	1.0	0.3215	NS
CTM	218	210	8	3.67	19.4	2.54	3.12	0.0029	S

Table No. 5: Effect of therapy on subjective parameters in intergroup comparison (Mann Whitney test)

Characters	**Groups**	**Mean**	**SD±**	**SE±**	**U**	**P**	**R**
Blurred vision	Group A	1.00	0.40	0.05	1297.5	0.01	S
	Group B	0.70	0.58	0.07			
Floaters	Group A	0.31	0.51	0.06	1061	0.34	NS
	Group B	0.18	0.55	0.07			
Distorted image	Group A	0.05	0.21	0.02	1683	0.74	NS
	Group B	0.01	0.18	0.02			
Scotoma	Group A	0.05	0.21	0.02	1683	0.6084	NS
	Group B	0.01	0.28	0.03			
Photophobia	Group A	0.11	0.42	0.05	1476	0.1945	NS
	Group B	0.01	0.29	0.03			

Table No. 6: Effect of therapy on objective parameters in intergroup comparison (Unpaired student t test N1=60, N2=60)

Characters	**Groups**	**Mean**	**SD±**	**SE±**	**T**	**P**	**R**
Distance vision	Group A	0.18	0.14	0.01	1.68	0.09	NS
	Group B	0.13	0.13	0.02			
Pinhole vision	Group A	0.21	0.24	0.03	1.60	0.11	NS
	Group B	0.14	0.13	0.02			
BCVA distance	Group A	0.12	0.13	0.01	0.22	0.82	NS
	Group B	0.09	0.16	0.00			
Near vision	Group A	0.02	0.05	0.01	2.29	0.12	S
	Group B	0.01	0.05	0.01			
BCVA near	Group A	0.01	0.08	0.01	0.77	0.4409	NS
	Group B	0.01	0.10	0.01			

CTM	Group A	19	27.40	3.72	2.29	0.0237	S
	Group B	8	19.40	2.54			

Comparative Efficacy between both the groups shows that the improvement in subjective And objective parameters in Group B was better than Group A with 25.98% and 30.38% in group A and B respectively.

1.5. DISCUSSION

Virechana- In the present study, *Trivritta Yoga* was used for *Virechana*. It contains *Trivrita Churna* taken with luke warm water. The drugs are safe for use in *Prameha* as well as in *Netra Roga* that is *Pramehajanyaa Timira*. *Virechana* drugs act in *Pachyamana Avastha* i.e. when the digestion of the drug is in process. These drugs are having *Ushana, Tikshana, Sukshma, Vyavayi, Vikasi* properties. *Virechana Dravyas* gets absorbed by its *Virya*, it reaches *Hridya* then the *Dasa Dhamani* and thereafter it reaches *Sukshmati Sukshma Srotos* (macro and microchannels of the body *Ushna Guna* has *Agneya* properties by which the *Dosha Sanghata* is liquefied (*Vishyandana*)). Hence it facilitates the movement of morbid *Doshas* towards *Koshtha*. Due to *Tikshana Guna*, *Mala* and *Doshas* break up in the microform that helps in quick excretion. Due to the effect of *Sukshma Guna*, it opens microchannels and makes the *Doshas* move towards *Koshtha*, Due to *Vyavayi Guna* these drugs spread quickly throughout the body and start their action before its digestion. *Vikasi Guna* of drugs causes loosing of the bond between *Dosha* and *Dhatu* causing *Dhatu Shaithilya*. From all these properties *Doshas* are driven to *Koshtha*. As we know that Prameha is *Kapha* dominant disease. Also there is vitiation of *Rakta Dosha* in retinopathy stage also there is accumulation of *Kleda*, *Virechana Karma* acts on all *Dosha* in general and *Pitta* and *Rakta* in particular. *Virechana* has *Pitta Shodhana & Rakta Prasadana* property lead to *Kleda Harana*. Due to the *Mana prasadana* property it reduces stress & stress related symptoms.

The main feature in *Prameha* which leads to DR is *Kleda Guna* of *Kapha*, so by reducing this *Kleda* due to excretion of *Kapha*/ mucus by *Virechana*, it helps in acting at the starting step of *Samprapti*. Moreover, in the pathology of DR there is leakage from capillaries due to *Rakta* vitiation. As according to *Ayurveda Rakta* is *Samana Dharmi* to *Pitta*, removal of *Pitta* from body will indirectly helpful for *Rakta Prasadana.* (Fig 1)

Basti:

Basti is administered in the *Pakvashaya*, it has action throughout the body. According to *Acharya Sushruta*, a properly given *Basti* remain in the *Pakvashaya, Sroni*, and below *Nabhi* and through the *Srotas* , the *Veerya* of *Basti Dravya* is spread to the entire body. Similarly though *Basti* remains in the body only for short time and it is excreted along with *Mala* by the action of *Apana Vayu*, due to the *Veerya*, the *Doshas* /morbid factors situated from the head to foot are also forcibly thrown out of the body. In the words of *Suhsruta*, it is like the sun which though situated light years away, due to its *Ushna, Tikshna Prabhava* absorbs the *rasa* of *Prithavi*. *Basti* is having two actions, expelling the *Doshas* and nourishing the body.

First potency of *Basti* drugs get absorbed to have its systemic action. Its second major action is related with the facilitation of excretion of morbid substances responsible for the disease process into the colon, from where they are evacuated.

Oral therapy:

Phalatrikadi has 6 ingredients such as *Haritaki, Amalaki, Vibhitaki, Indravaruni, Musta and Daruharidra*. *Tikta Rasa* has *Deepana, Pachana, Lekhana, Vishagna, Tvakamamsa Sthirikaran* and *Kleda-Meda-Vasa-Majja-Pitta-Kapha Upshoshana* properties, hence it alleviates *Ama* and cleans the channels, thus breaking down the *Samprapti* (pathogenesis)[iv]. *Kashaya Rasa* has *Sandhanakara, Ropana, Shoshana, Stambhana, Kapha-Pitta-Rakta Prashamana* properties, hence it causes absorbs and removes the excess of *Kleda.* This formulation mainly has *Laghu* and *Ruksha* properties that counteract with *Snigdha-Guru* properties which have been increased by *Nidana Sevana*. *Phalatrikadi kwath* formulation has *Ushna Virya* and of *Sheeta Virya*. Hence this acted on *Kapha Dosha* by *its Ushna Virya* and the Pitta did not increase due to the presence of *Sheeta Virya*. This formulation has *Tridoshahara (*mainly *Pitta-Kapha Shamaka*) properties. Due to this property, it acts on *Pitta-Kapha Dosha* and does not increase the *Vata Dosha* which is involved in disease pathology directly or indirectly. The majority of contents of this formulation are having *Rasayana, Chakshushya, Pramehaghna, Shothahara, Raktapasadana/ Raktashodhaka* properties which are having a direct effect on pathological events occurring in the development of the disease i.e. *Pramehajanya Timira* (DME). All the contents of this formulation are having anti-hyperglycemic or hypoglycemic, anti-inflammatory and antioxidant potential. Lu K, Chakroboty D et.al, showed in their study that *Triphala* and its active constituent chebulinic acid are significantly inhibited VEGF-induced angiogenesis[v]. *Khavaigunya* may be corrected by the *Chakshushya* property as well *Nidana Parivarjana*. *Rasayana* property may correct *Sira Shaithilya, Dhamani Shaithilya* and *Sandhi Shaithilya* by improving *Prashasta Dhatu* formation. Correcting already existing *Prameha Samprapti* by *Pramehaghna* property and decreased fluid volume by *Sothahara* action. *Prenana* and *Jeevana qualities in Rasa-Rakta* Dhatu were improved by *Rakta Prasadana* and *Rakta Shodhaka* action. The *Agnibala* was improved by *Deepana* and *Pachana* properties of drugs. (Fig 2)

1.6. CONCLUSION

It can be concluded that, in Group A, statistically significant relief ($p<0.0001$) was found in blurred vision (49.75 %), floaters (50.00 %), distance vision (26.47 %), pinhole vision (31.81 %), best corrected visual acuity for distance (1.5 %) and central macular thickness (7.6 %). In Group B, statistically significant relief ($p\leq0.0001$) was found in blurred vision (47.90 %), distance vision (22.00%), pinhole vision (26.92 %), best corrected visual acuity for distance (28.12%) and central macular thickness (3.67 %). In intergroup comparison, Group A showed better results in blurred vision (49.75 %), distance vision (26.47%), pinhole (31.81), near vision (12.5%) and central thickness macular (7.60 %) than Group B.

Thus, it can be concluded that *Virechana*, *Basti*, and *Phaltrikaadi Kwatha* orally is effective in the management of *Pramahajanya Timira.*

1.7. REFERENCES

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