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FUNDOSCOPIC EXAMINATION OF RETINA: AN OPPORTUNITY NOT TO BE MISSED IN PREECLAMPSIA

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ABSTRACT

Background: Preeclampsia is multisystem disorder causes morbidity and mortality in obstetrics in the world. It can involve cardiovascular system, hematologic, renal, liver abnormalities, ocular and neurological manifestations. **Objective:** To determine frequency of retinal changes in women with preeclampsia and observe association between retinal changes and blood pressure, proteinuria and severity of the disease. **Method:** This Cross sectional study was conducted from June 2019 to May 2020 at Gynae & Obst department at Abbasi Shaheed hospital. Eighty preeclamptic females were selected. Fundosocpy was done to observe retinal changes according to Keith Wagener classification into Grade I to Grad IV. Percentages and frequencies were calculated for demographic variables. The association of frequency of retinal changes and blood pressure, proteinuria was calculated by using chi square test with P value less than 0.05 as significant. **Result:** In our study most of female (83.75%) had normal fundoscopy, while 16.25 % had retinal changes. The most common retinal changes noted is grade I (12.50 %) followed by grade II (3.75%). There was significant association between retinal changes, symptoms, blood pressure, proteinuria and severity of preeclampsia (p value-0.000). **Conclusion:** This study highlights the retinal changes in preeclampsia and significant association found between retinal changes blood pressure, proteinuria and severity of preeclampsia. Therefore fundoscopic examination of eye is an excellent choice for direct assessment of micro vascular changes in pregnancy.

KEYWORDS: Fundoscopy, Preeclampsia, Retinal changes.

INTRODUCTION

Pregnancy induced hypertension is the most common cause of maternal mortality in the world around 10-15%, and the severe maternal morbidity is a consequence of PIH and pre eclampsia.[1] The Global Burden of Disease estimates that Pakistan, the world's sixth top country, stand the world's third highest burden of maternal mortality.[2] Ocular involvement is commonly reported in PIH and preeclampsia.[3] There is no physiological changes in fundus during normal pregnancy. But studies showed significant changes occurred in women with preeclampsia.[4]

The onset of visual symptoms during pregnancy can be the first symptom of development of preeclampsia Visual symptoms including scotoma, diplopia, diminished vision are reported in 25% of women with pre eclampsia and in 50% with Eclampsia.[5] The commonest ophthalmological abnormality in retinal arterial spasm and narrowing. Other changes include hemorrhages, cotton wool spots, retinal edema and papilloedema.[6] But preeclampsia related retinopathy usually resolve after delivery.

Retinal vessels assessment in pregnant women can provide valuable information about the status of placental circulation and fetal wellbeing.[7] Therefore fundoscopic examination of eye is an excellent choice for direct assessment of microvascular changes in pregnancy. There is lack of data in this part of the world on retinal changes in preeclampsia, so we planned this study to determine frequency of retinal changes in women with preeclampsia and association between retinal changes and blood pressure, protienuria and severity of the disease.

MATERIAL AND METHOD

This is a prospective cross sectional study was carried out at Gynae Unit Abbasi Shaheed hospital affiliated with Karachi medical & dental college from June 2019 to May 2020. Permission from the institutional ethical review committee was taken prior to conduction of study. The study was conducted according to Helsinki Declaration. Sample size of eighty were calculated by Epi info sample size calculator.[8] Eighty women with preeclampsia were selected by purposive sampling technique. Patient with Ocular diseases (glaucoma, cataract, H/o trauma, Laser treatment, corneal opacities), Diabetes CVS disease (essential HTN), Vasculitis, Connective tissue disorder were excluded. After taking informed consent patients detail history was taken including age, parity, gestation, Blood pressure and proteinuira including detail history obstetrical history including symptoms of preeclampsia (headache, visual disturbance, epigastric pain). The dipstick method was used to test proteinuria. The

severity of preeclampsia was categorized as mild, moderate and severe according to blood pressure and presence of proteinuria. Blood pressure >140/90 mmhg with+1 proteinuria was taken as mild preeclampsia, Blood pressure 140/90-150/110 mmhg with+2 proteinuria as moderate and <150/110 mmhg blood pressure with +3 proteinuria or symptoms of severe preeclampsia taken as severe preeclampsia.

Fundosocpy was done by on ophthalmologist of the same hospital to observe retinal changes according to keithe Wagener classification into Grade I to Grad IV.
Grade I- Mild moderate narrowing of arterioles
Grade II- Moderate to marked narrowing of arterioles
Grade III- Consist of Retinal arteriole Narrowing, Retinal edema, cotton wool spots, and hemorrhage.
Grade IV) Papilledema and Macular scar

All data including fundoscopy findings were recorded on predesigned Performa by researcher. Data analysis was done on SPSS version 20. Mean, standard deviation, percentage were used for generating frequencies of numerical variable e.g. age of pregnancy, parity and gestation. The association of frequency of retinal changes and blood pressure, proteinuria was calculated by using chi square test with P value less than 0.05 as significant.

RESULT

The mean age of patient was 27.07±5.07 years and mean gestational age was 34.51±3.81 weeks. Most of patients had moderate preeclampsia (%) as shown in table 1.In our study most of female (83.75%) had normal fundoscpy, while 16.25 % had retinal changes.

Around 66.25 % of women with preeclampsia presented with mild disease entity as shown in table 1. Blurring of vision was found in 3.8 % of cases of moderate preeclampsia. The visual acuity was found normal in all study cases. The most common retinal changes noted is grade I followed by grade II in 16.25 % cases as shown in table 2. There was significant association between retinal changes, symptoms and blood pressure, proteinuria and severity of preeclampsia(p value-0.000) as shown in table3.

Table 1: Demographic characteristics.

S. no.	Variables	Frequency (n)	Percentages (%)
1	Age(year)		
	<19	02	02.55%
	20-29	67	83.75%
	>30	11	13.75%
2	Parity		
	Primigravia	19	23.75%
	2-4	53	66.25%
	>4	08	10.00%
3	Gestation(weeks)		
	21-28	07	08.75%
	29-32	19	23.75%
	33-36	26	32.50%
	>36	28	35.00%
4	Severity of preeclampsia		
	Mild	53	66.25%
	Mild	11	66.25%
	Severe	16	20.00%
5	Proteinuria		
	+1	57	71.25%
	+2	18	22.50%
	+3	05	06.25%
6	Symptoms		
	No	53	66.30%
	Headache	21	26.30%
	Blurring of vision	03	03.80%
	Epigastric pain	03	03.80%

Table 2: Retinal changes according to keith wagener classification.

S. no.	Retinal changes	Frequency (n)	Percentages (%)
1	Grade1	10	12.50%
2	Grade2	03	03.75%
3	Grade3	00	00.00%
4	Grade4	00	00.00%
5	Nil	67	83.75%

Table 3: Association between retinal Changes and Various variables of disease.

S. no.	Variables	Retinopathy Present	Retinopathy Absent	Total	p-value
1	**Symptoms**				0.000
	Headache	07	14	21	
	Blurring of vision	02	01	03	
	Epigastric pain	02	01	03	
2	**Blood pressure**	13	67	80	0.000
3	**Albuminuria**				
	+1	04	53	57	0.000
	+2	06	12	18	
	+3	03	02	05	
4	**Severity of preeclampsia**				
	Mild	02	51	53	0.000
	Moderate	00	11	11	
	Severe	11	05	16	

DISCUSSION

Preeclampsia is multisystem disease that can involve cardiovascular changes, hematologic, renal, liver abnormalities, ocular and neurological manifestations. It affects around 5% of pregnant females.[8,-11] Approximately one third of women affected with ocular complications. The retinal vascular changes have been positively correlated with the severity of disease.[12] The retinal changes were observed among 16.25 % cases of preeclampsia closer to other findings.[11] In this study 12.5 % of cases were grade I and 3.75 % were grade II but no changes of grade III and grade IV were detected. While other studies showed quite higher incidence of grade I and grade II changes as compared to our study.[8,11,12] While some studies showed quite higher percentages of grade I ,grade II and few cases of grade III & IV types of retinal changes might be due to samples in these studies included were pregnancy induced hypertension, preeclampsia and eclampsia.

In present study majority of patients belong to age between 20 to 30 years, and mean age was 27.07±5.06 years similar to other studies.[12,13] The incidence of retinal changes in preeclampsia is reported more in primigravida as compared to multigravida.[12,14] While the frequency of retinal changes were noted more in multigravida in our study (66.25%) which is not consistent with other studies.

The most of ocular symptoms are manifestation of systemic involvement which developed in preeclampsia. In our study blurring of vision is the ocular symptom experienced by the patients in 3.8 % like other study.[15-17] Hypertensive crises during pregnancy are associated

with vascular spasm and micro vascular proliferation. This study shows statistically significant association between retinal changes and blood pressure, proteinuria and severity of preeclampsia (p-value=0.000), but no association was found with age, parity and gestational age. Similar findings are reported regarding association of retinal changes in others studies.[11,15] So the retinal examination by fundoscopy should be scheduled in all preeclampsia patients to assess the severity of disease and ocular involvement in order to prevent further complications. The strength of our study is that we have taken only patients of preeclampsia.

One of the limitations of this study is that we did not follow up the patient regarding ocular outcome after delivery in women with retinal changes.

CONCLUSION

This study highlights the retinal changes of grade I and grade II in 16.25% of women with preeclampsia. There was significant association between retinal changes and symptoms, blood pressure, proteinuria and severity of preeclampsia (p value-0.000). Fundoscopy plays an important role in rapid diagnosis, so early treatment resulted in reversal of ocular manifestation associated with preeclampsia. Base line fundocsopy should be carried out in all pregnant women presented with hypertensive disease.

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