



CLINICAL STUDY OF OCULAR MANIFESTATIONS IN SEVERE PREGNANCY INDUCED HYPERTENSION, IN TRIBAL POPULATION OF SOUTH RAJASTHAN

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ABSTRACT Visual complains are common in pregnancy (1) Pregnancy causes significant changes in all the systems of the body. (2). Severe degree of Pregnancy induced hypertension occurs in more than 5% of cases (3) and 20% to 30 % of these patients suffer from serious ocular consequences and complications. (4) the ocular vascular changes co relate with the severity of hypertension (5) present study has been conducted to evaluate the consequences and to highlight the effect of early diagnosis and prompt treatment. In this prospective study 1200 cases of severe pregnancy induced hypertension cases were studied and 52 cases (4.33 %) were detected to have visual manifestations.

KEYWORDS : pregnancy Induced Hypertension (PIH), preeclampsia, eclampsia, ocular manifestations, fundus changes in hypertension, ophthalmoscopy, funduscopy in pregnancy

INTRODUCTION

Ocular changes during pregnancy are categorized as physiological or pathological. (6) Pregnancy-related pathological changes may present as new ocular developments, changes in existing ocular pathology, and ocular complications (7) The most frequent pregnancy-related physiological change is an increase in pigmentation around the eyes. Darkening of the face during pregnancy is referred to as pregnancy mask, cloasma or melasma and develops through increased estrogen, progesterone and melanocyte-stimulating hormone. (8) Unilateral ptosis has been reported during pregnancy and following normal delivery. Ptosis is believed to develop as a result of fluid and hormonal effects on the levator aponeurosis, and it resolves postpartum. (9) . Visual symptoms such as scotoma, diplopia, dimness of vision, photopsias and cortical blindness have been reported. (10) Visual disturbances may be precursors of seizure. in preeclampsia-related retinopathy As per the **Keith, Wagener, and Barker classification of hypertensive retinopathy** Grade I—slight or modest narrowing of the retinal arterioles, with an arteriovenous ratio $\geq 1:2$ Grade II—modest to severe narrowing of retinal arterioles (focal or generalised), with an arteriovenous ratio $< 1:2$ or arteriovenous nicking

Grade III—bilateral soft exudates or flame-shaped haemorrhages Grade IV—bilateral optic nerve oedema-related retinopathy with underlying diabetes, chronic hypertension and kidney disease may be more severe. Optic nerve findings in preeclampsia are papillary edema, ischemic optic neuropathy and optic atrophy. Exudative retinal detachment is seen in 1% of preeclamptic patients and 10% of eclamptic patients. (11)

MATERIAL AND METHODS

Prospective study has been conducted from mar 2019 to mar 2021. Place of study has been Tertiary Care Hospital at Pacific Institute of Medical Sciences Umarda Udaipur. All antenatal patients were screened for presence of pregnancy induced hypertension. Those patients with blood pressure more than 160/100 with or without edema feet and proteinuria were selected.

Maternal age, parity, education, socio-economic status, period of gestation is recorded. Pre-existing maternal disease, anemia, hypertension, heart disease and liver disease were recorded.

Maternal weight at first visit, maternal height, total ante natal visits, obstetric complications, drug and medication use, tobacco use were recorded. Maternal symptoms, amenorrhea swelling feet, weakness headache, bleeding or discharge per vagina were recorded. Physical findings, anemia, swelling feet and body, BP more than 160/100 mm of hg, twins, mal presentations were recorded.

all cases of severe pregnancy induced hypertension were referred to ophthalmology department for thorough evaluation of oculo vascular

findings and fundus evaluation . Laboratory studies, hemoglobin, leucocyte count , blood sugar, urea, creatinine, liver enzymes ,urine albumin and sugar were recorded. Imaging studies, gestational age, ultrasonography , Placental localization, cervical length twins , congenital defects presentation and positions were noted. Fluid balance, tocolytic use and type, evidence of pre-eclampsia, infection, premature rupture of membranes, pre term labor and therapeutic measures type of delivery normal or caesarean section were also recorded.

Pregnancy outcomes included gestational age at delivery, birth weight, mode of delivery, and Apgar scores were recorded. Observation fetal weight at birth and sex of neonate. single live births were included. Twin delivery, stillbirth , intrauterine deaths and congenital defects were recorded.

Observations

Table 1 Maternal Age distribution of ocular changes

s.no	Age in years	No of patients	percentage
1	Less than 20	23	44.23
2	20- 25	22	42.30
3	26-30	3	5.76
4	31-35	3	5.76
5	36 and more	1	1.95
		52	100

Table 2 Maternal Parity distribution of cases of ocular changes

s. no.	Parity	Number	Percentage
1	0	24	46.17
2	1	19	36.54
3	2	3	5.76
4	3	3	5.76
5	4	1	1.92
6	5	2	3.85
		52	100

Table 3 Maternal ante natal care education socio economic status distribution of vascular changes

s.no	Maternal antenatal visits	No of patients	percentage
1	nil	35	67.32
2	1-2	15	28.84
3	3 and more	2	3.84
	Maternal education		
4	Less than class 5	41	78.85
5	Class 5 to class 10	8	15.39
6	More than class 10	3	5.76
	Socio economic class		
7	Very low	38	73.08

8	low	10	19.24
9	middle	2	3.84
10	high	2	3.84

Table 4 maternal risk factors of ocular manifestations

S.no.	Maternal risk factors	number	percentage
1	Pre existing hypertension	2	3.84
2	Past history of pregnancy induced hypertension	2	3.84
3	Pregnancy induced hypertension	48	92.30
	Mild 130/90 and above	4	7.69
	Moderate 160/100 and above	21	40.38
	Severe 170/110 and above	27	51.92
	Eclampsia	3	5.76
5	Abruptio placentae	2	3.84

Table 5 ocular manifestations in pregnancy induced hypertension patients

sn	Fundoscopy Vascular lesion	no	Percentage
1	Narrowing of retinal arteriols	38	73.07
2	Arterio venous nicking	38	73.07
3	Bilateral soft exudates and flame shaped haemorrhages	32	61.53
4	Optic nerve edema	23	44.23
5	Ischaemic optic neuropathy	1	1.95
6	Optic atrophy	1	1.95
7	Exudative retinal detachment	1	1.95
8	Blurring to blindness of vision	1	1.95

RESULT

Max out of total 52 cases 23(44.23%) were less than 20 years and 22(42.30%) were less than 25 years 3 (5.76%) were less than 30 years and 4 (7.69) % were more than 30 years.

48(92.30%) cases were less than 30 years of age. 43 (82.69%) cases were primigravida and para 1. 9 (17.30%) cases were para2 and above 35(67.32%) were totally unbooked without single antenatal visit, 15(28.84%) had 1-2 visits and 2 (3.84%) had regular antenatal visits 41(78.85%) were illiterate 8 (15.39%) were less than 10 standard and 3(5.76%) were more than 10 standard 38(73.08%) were very low socioeconomic status, 10(19.24%) were of low 2(3.84%) were middle and 2 (3.84%) were from high status 48(92.30 %) had severe pregnancy induced hypertension 3(5.76%) had eclampsia and 2 (3.84%) had abruptio placentae 38 (73.07%) showed narrowing of arteriols and arterio venous nicking.

32(61.53%) showed bilateral soft exudates and flame shaped haemorrhages 23(44.23 %) showed optic nerve edema and papilloedema. 1(1.95%) had optic atrophy exudative retinal detachment and showed features of blurring of vision and blindness.

DISCUSSION

The positive and negative predictive values for the association between hypertensive retinopathy and blood pressure were low 47% to 72% and 32% to 67%, respectively.(12) as per various authors. Associations between retinal microvascular changes and cardiovascular risk were inconsistent, except for retinopathy and stroke. The increased risk of stroke, however, was also present in normotensive with retinopathy. These studies did not adjust for other indicators of hypertensive organ damage. Six studies had data on interobserver agreement for hypertensive retinopathy using retinal photographs. We found no such data for direct funduscopy(13). The most extensive study on hypertensive retinopathy was the atherosclerosis risk in communities study in which three readers graded a random sample of 206 retinal photographs. focal arteriolar narrowing and arteriovenous nicking .Agreement was excellent for haemorrhages and exudates. A computerised grading method was more reliable(14) the association between hypertensive retinopathy and blood pressure has been established.(15) Hypertension was defined as the use of antihypertensive drugs, or history of hypertension or blood pressure \geq 140/90 mm Hg in the cardiovascular health study and atherosclerosis risk in communities study or \geq 160/95 mm Hg in the Beaver Dam eye study and Blue Mountains eye study. The sensitivity for hypertensive retinopathy ranged from 3% to 21%, indicating a low prevalence of retinal abnormalities in hypertensive patients.(16) In contrast, specificity ranged from 88% to 98%, and therefore retinopathy was rarely observed in normotensive patients.

The positive predictive value, or the chance of hypertension given the presence of hypertensive retinopathy, ranged from 47% to 70% for haemorrhages and exudates, 53% to 66% for arteriovenous nicking, and 49% to 72% for focal arteriolar narrowing (17) dilatation of venules are common at arterio-venous crossings, but they may occur elsewhere, particularly in small dilated collateral veins or in terminal venous twigs. Micro aneurysms: Microaneurysms may occur as a part of hypertensive retinopathy, particularly around cotton-wool spots.(18) As the retinal arterioles become more constricted there are seen signs of retinal ischemia such as edema of retina, haemorrhages and exudates, etc. Edema of retina is usually the first sign of involvement of the retina and it generally makes its appearance at the upper and lower poles of the disc and progresses away from the disc along the course of retinal vessels, which is like the general course of the nerve fibres of retina The haemorrhages are usually in the posterior one third of fundus, and as a rule appear flame shaped indicating that they are in the superficial nerve fibre layer.(19) **Papilloedema (hypertensive optic neuropathy)**In case of severely increasing blood pressure and persistent angiospasm, papilloedema occurs.(20) **Retinal detachment** Retinal detachment is one of the most dramatic and potentially serious ocular complications of PIH(20) In accelerated hypertension arteries and arterioles of choroid undergo fibrinoid necrosis, a process that also occurs in other parts of the body.(21) **Extra Retinal Changes in PIH** Visual disturbances ranging from slight blurring of vision to blindness frequently accompany pre-eclampsia Fundus changes were found in 16.6% patients of PIH. (22) in the present study study 1200 cases of severe pregnancy induced hypertension cases were studied and 52 cases (4.33 %) were detected to have visual manifestations.

In a Turkish study 47 patients with preeclampsia, 3 patients exhibited exudative retinal detachment; two of the cases resolved spontaneously following birth, while one required postpartum systemic steroid treatment due to very low visual acuity. (23) Vascular Occlusive group of conditions include retinal artery occlusions, retinal vein occlusions, disseminated intravascular coagulopathy (DIC), thrombotic thrombocytopenic purpura (TTP), antiphospholipid antibody syndrome (APS), amniotic fluid embolism, and cerebral venous thrombosis (24) thrombosis in the choriocapillaris disrupting the retinal pigment epithelium may cause serous retinal detachment.(25) Ocular symptoms improve with DIC treatment, though mild pigmentary changes may persist. HELLP syndrome is a condition characterized by hemolysis, elevated liver enzymes and lowered thrombocyte count; it is typically seen in preeclamptic patients and generally appears with DIC. (26) ocular changes are observed in 10% of preeclampsia patients. In the present study 4.3% had severe hypertension and 73% of these had ocular manifestations

CONCLUSION

oculo vascular changes are present in 72.07 % cases and are indicative of severity of hypertension. All patents with pregnancy induced hypertension should be subjected to funduscopy to determine progress and prognosis of patients

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