

A Study of Ocular Manifestations in Pregnancy Induced Hypertension in a Tertiary Healthcare Centre

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ABSTRACT

Pregnancy Induced Hypertension (PIH) is a perplexing taint in the obstetrics field. Visual symptoms occur in up to 25% of these patients. Ocular manifestations include blurring of vision, sudden inability to focus, photopsia, etc. **Aim:** To determine the ocular manifestations of PIH, create awareness and promote the need of ophthalmic consult for early diagnosis and optimum fetomaternal care in these patients. **Settings and Design:** A cross-sectional study was done by recruiting PIH patients admitted in Obstetrics and Gynaecology department as the subjects, after obtaining ethical approval from the institute and informed consent from the patients. **Methods:** 100 PIH patients aged 18-35 years who were admitted in Obstetrics and Gynaecology department over a period of 3 months were included in this study. Detailed ophthalmic examination was done and findings recorded. Statistical Package for Social Sciences (SPSS V 26.0, IBM) was used for statistical analysis. P value <0.05 was considered significant. **Results:** Twenty six(26%) patients had previous history of PIH. Chloasma was seen in eight(8%) patients. 32(32%) patients experienced blurring of vision. Anaemic retinopathy was seen in six patients(6%), grade I hypertensive retinopathy changes were seen in nine patients(9%), grade II hypertensive retinopathy changes were seen in four patients(4%), early papilloedema was seen in one patient(1%) and early Vogt-Koyanagi-Harada disease was seen in one patient(1%). **Conclusion:** Patient counselling and regular ophthalmic consults are necessary for allaying fears and providing optimum visual care to these patients.

Key-words: PIH, Hypertensive retinopathy, transient blurring

INTRODUCTION

Pregnancy Induced Hypertension (PIH) is a perplexing taint in the obstetrics field and contributes to maternal and perinatal mortality extensively.^[1] The global incidence of preeclampsia is 4.6 %. ^[2]As per WHO, the incidence of preeclampsia is seven times greater in developing countries as compared to developed countries.^[3] The prevalence of preeclampsia ranges between 1.8% and 16.7% in developing countries.^[4] Multiple systems are affected which include cardiovascular changes, hepatic changes, renal impairment, hematologic abnormalities, neurologic and ocular manifestations.^[5]

The pathological changes of this disease seem to be related to vascular endothelial dysfunction, generalized vasospasm and capillary leak. Visual symptoms occur in up to 25% of these patients. Ocular manifestations include blurring of vision, sudden inability to focus, photopsia, focal or generalized arteriolar narrowing, visual field defects and complete blindness.^[6] The severity of retinal arteriolar changes is closely related to the degree of underlying vasospasm. PIH related retinopathy generally resolves soon after delivery and no specific treatment is required. ^[7,8,9]

Thorough understanding of association of ocular manifestations with PIH is necessary for meticulous fetomaternal care. This study was conducted to determine the ocular manifestations of PIH, create awareness and promote the need of ophthalmic consult for early diagnosis and optimum fetomaternal care in these patients.

AIM

The aim of the study is to determine the ocular manifestations of PIH, create awareness and promote the need of ophthalmic consult for early diagnosis and optimum fetomaternal care in these patients.

OBJECTIVES

- 1.To study the ocular changes that occur in PIH.
- 2.To create awareness regarding the ocular changes that occur in pregnancy.

SUBJECT AND METHODS

Over a period of three months, a cross sectional study was conducted after attaining ethical approval from the institutional review board. Informed consent was obtained from all patients. All PIH patients admitted under Obstetrics and Gynaecology department were evaluated. Pregnant women with PIH aged 18-35 years were included in this study. Those with pre-existing ocular pathology, hypertension before pregnancy and not able to follow study instructions were excluded from this study. A detailed ocular, systemic and obstetric history was taken. Ophthalmic examination included visual acuity test for distant and near vision with Snellen's chart, colour vision test with Ishihara's plates, Amsler's grid test, anterior segment examination under torchlight, intraocular pressure with Perkin's tonometer and posterior segment examination with Appasamy Indirect ophthalmoscope with 20D Volk lenses after dilatation. Fundus photograph was taken using MI RetCam. All findings were recorded. Statistical Package for Social Sciences (SPSS V 26.0, IBM) was used for statistical analysis. P value <0.05 was considered significant.

RESULTS

In this study, 200 eyes of 100 PIH patients were examined of varying age from 18 years upto 35years. Ten patients belonged to age group <20 years(10%), 45 patients between 20 to 25 years(45%), 32 patients between 26 to 30 years(32%) and 13 patients between 30 to 35 years(13%)(Figure 1). Fifty-six patients were primi-gravida and 44 were multigravida. All patients were in third trimester of pregnancy.

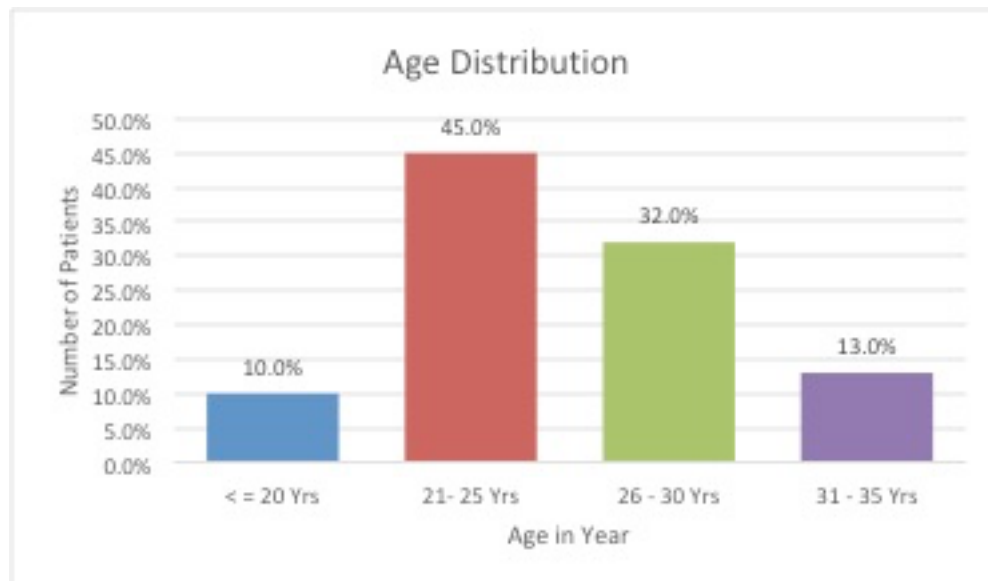


Figure 1- Distribution of study population

Twenty six(26%)patients had previous history of PIH. Chloasma was seen in eight(8%) patients. 32(32%) patients experienced blurring of vision and one(1%)patient experienced sudden loss of vision during their hospital stay. On discharge, visual complaints of 30 patients had resolved while that of four patients persisted. 67 (67%) patients had no ocular complaints. There was a statistically significant difference between the proportion of patients with ocular complaints and asymptomatics. ($p<0.01$)

Distant visual acuity of both eyes was recorded as 6/6 in 96 patients, 6/9 in two patients, 6/18 in 1 patient and finger counting at 2m in one patient using Snellen's chart. Near visual acuity of both eyes was recorded as N.6 in 98 patients and N.12 in two patients. Colour vision was recorded as 17/17plates in 99 patients and 3/17 plates in one patient. Amsler's grid test was normal in 99 patients and distorted in one patient.

Intraocular pressure was recorded as 12mmHg in 34 patients, 14mm Hg in 40 patients and 16mmHg in 34 patients using Perkins tonometer.

Posterior segment examination revealed fundus changes in 21 patients. Anaemic retinopathy was seen in six patients(6%), grade I hypertensive retinopathy changes were seen in nine patients(9%), grade II hypertensive retinopathy changes were seen in four patients(4%), early papilloedema was seen in one patient(1%) and early Vogt-Koyanagi-Harada disease was seen in one patient(1%). No retinopathy changes were seen in 79 patients. (Figure 2,3) There was a

statistically significant difference noted between the patients with normal posterior segment and with fundus abnormalities.($p = <0.01\%$)

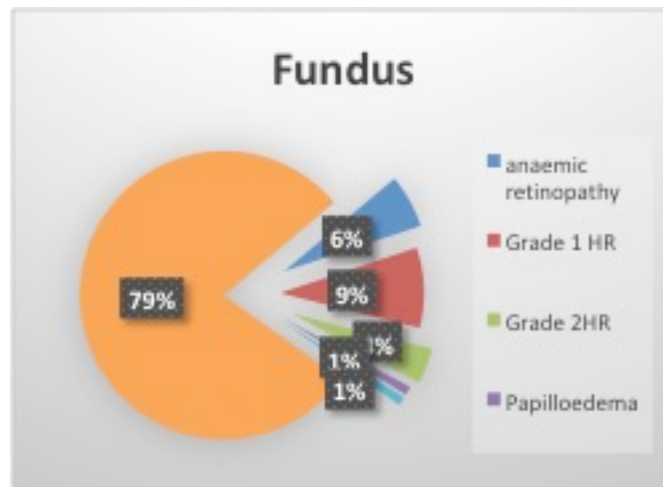


Figure 2-Distribution of study population according to fundus abnormalities



Figure 3-Hypertensive retinopathy changes seen on fundus examination.

DISCUSSION

Fresh onset of hypertension and proteinuria in the second half of pregnancy is defined as pre-eclampsia.^[6] It causes both physiological and pathological ocular changes. Eyelids, conjunctiva, cornea, lens, optic nerve, retina and orbit are affected during pregnancy.^[10] While most of these are physiological changes and require no active management, some changes may remain permanent.

The endothelium acts as the target of the disease due to hypertension and proteinuria and hence PIH is reflected as a systemic vascular disorder. There is loss of refractoriness to vasoactive agents, loss of vasoconstriction, imbalance between proangiogenic and antiangiogenic factors and reduction of nitric oxide.^[11,12] Ocular symptoms of PIH include transient blurring vision, frontal headache, flashes of light and increased pigmentation around the eyes (chloasma) caused due to rise in the progesterone, estrogen, and melanocyte-stimulating hormone levels during pregnancy.^[13] Transient blurring of vision, photopsia, visual field defects, abrupt incapability to focus comprise the commonly seen ocular symptoms with complete blindness being rare. The most commonly seen ocular sign is focal or generalized arteriolar narrowing.

Alteration in the curvature of crystalline lens causes transient loss of accommodation which is frequently seen during pregnancy and lactation.^[14] Refractive power is affected due to myopic shift as a result of fluid retention. Pigmentation of skin occurs due to hormonal variation in pregnancy. There is an increase in melanin content as a result of increased melanogenesis and melanocytosis.

PIH is depicted by reduced arterial compliance and peripheral vasoconstriction.^[11,15] Jaffe and Schatz, suggested retinal vasospasm and resistance to blood flow as the cause of visual symptoms. A significant relationship was seen between preeclampsia and reduced arteriole to vein ratio.^[6] In approximately 50% of normal pregnancies, functional retinal arteriolar narrowing can be seen with physiological rise in blood pressure which disappears with the termination of pregnancy. The degree of narrowing ranges from 10% to 40%.^[7,9] The severity of retinal arteriolar changes is closely related to the degree of underlying vasospasm. Placental insufficiency and fetal birth weight can be indirectly indicated by the retinal changes in preeclampsia.^[7,8,9,16]

Macular edema has been reported previously, which may worsen during pregnancy and resolve postpartum or persist and cause long-term visual loss.^[17] The risk of developing central serous chorioretinopathy increases nine fold remarkably in the third trimester of pregnancy.^[18] Hormonal changes during pregnancy especially from the second trimester, have been reported to have a role in causing autoimmune diseases such as non-infectious uveitis.^[19]

Bakhda RN stated in his review that blurring of vision, photopsias, scotomas, and diplopia were the most common ocular symptoms in PIH. Other ocular manifestations comprise conjunctival vascular anomalies, exudative retinal detachment, ischemic optic neuropathy, vitreous and pre-retinal haemorrhages, and hypertensive retinopathy or choroidopathy. He also stated that a correlation exists between the ocular vascular changes and the severity of hypertension. Ophthalmic examination is beneficial for early assessment, diagnosis and prompt management to prevent complications.^[20]

Visual symptoms unease up to 25% patients with severe preeclampsia and blindness in preeclampsia can occur as a result of involvement of the retina, optic nerve or occipital cortex as stated by Abu Samra K.^[5]

Ghavidel et al, conducted a literature search using MEDLINE, EMBASE, and cochrane library and found that retinal involvement was most common in PIH and retinal vasculature changes was the most common finding which was similar to our study.^[21]

Onwudiegwu et al conducted a study amongst 71 preeclampsia patients and 72 parity-matched normotensive pregnant patients and observed that Doppler velocimetry and impedance parameters were lesser and intraocular pressure was higher among preeclampsia patients in comparison to normotensive patients.^[22]

In our study, we found that all patients were in third trimester and experienced transient blurring of vision which was found to improve significantly after the delivery. Hypertensive changes especially grade I and grade II retinopathy were the common retinal findings in our study population.

PIH being the challenging stigma in obstetric field, demands comprehensive approach for fetomaternal care. Presentation of ocular symptoms is common in PIH and hence, patient counselling and regular ophthalmic consults are necessary for allaying fears and providing optimum visual care to these patients.

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