

## FUNDUS CHANGES IN PREGNANCY INDUCED HYPERTENSION

Karky P<sup>1</sup>, Basnet PS<sup>2</sup>, Basnet A<sup>2</sup>, Sijapati MJ<sup>3</sup>, Manish KC<sup>4</sup>, Pokharel K<sup>4</sup>

### ABSTRACT

#### BACKGROUND:

Ocular involvement in Pregnancy Induced Hypertension (PIH) is common. Hypertensive disorders have a propensity to involve the vascular tissue, which makes the ocular vessels particularly susceptible. Widespread changes in the conjunctiva, retina, vessels, choroid, optic nerve, and occipital cortex have been documented in these patients; some of them leading to decreased vision too. Various studies have correlated the fundus changes with maternal and foetal outcomes and documented the progression of retinal vascular changes a sign of increasing severity of PIH. So this study was carried out to find out fundus changes in PIH

#### MATERIALS & METHODS:

Study design was retrospective descriptive type. Records of 96 patients admitted in the Obstetrics ward, KIST Medical College Teaching Hospital, Imadol, Lalitpur, Nepal, with the diagnosis of PIH were reviewed and duration of study was 3 years (October 2010 – October 2013). Patients were evaluated for hypertensive fundus changes.

#### RESULTS:

Fundus changes were found in 16.6% patients of PIH. Fundus findings comprised of vascular changes, extravascular retinal changes, optic neuropathy and choroidopathy. Vitreous hemorrhage, serous retinal detachment and macular star were not found in this study.

#### CONCLUSION:

Fundus evaluation in patients with PIH is an important part of their management as there are various fundus changes found in these patients which may lead to decrease in vision.

**KEYWORDS:** Choroidopathy; optic neuropathy; pregnancy induced hypertension; retinopathy.

1. Dr. Poojyashree Karki, Associate Professor, Department of Ophthalmology, KIST Medical College Teaching Hospital, Imadol, Lalitpur, Nepal.
2. Dr. Pragya Singh Basnet, Dr. Anjila Basnet, Lecturers, Department of Ophthalmology, KIST Medical College Teaching Hospital, Imadol, Lalitpur, Nepal.
3. Dr. Milesh Jung Sijapati, Assoc. Professor, Department of Internal Medicine, KIST Medical College Teaching Hospital, Imadol, Lalitpur, Nepal.
4. Manish K.C, Kamal Pokharel, Interns, KIST Medical College Teaching Hospital, Imadol, Lalitpur, Nepal.

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#### For correspondence:

Dr. Poojyashree Karki,  
Associate Professor,  
Department of Ophthalmology,  
KISTMCTH,  
Imadol, Lalitpur, Nepal.  
Email address: poojyashree@hotmail.com

**BACKGROUND:**

Pregnancy induced hypertension (PIH) is reported to occur in around 16-25% of first pregnancies and 12-15% of subsequent pregnancies.<sup>1</sup> Ocular involvement in PIH is common occurring in as many as 30 to 100% of these patients.<sup>2-9</sup>

Ocular involvement reported in these patients includes conjunctival vascular anomalies, hypertensive retinopathy, exudative retinal detachment, vitreous and preretinal hemorrhage, ischaemic optic neuropathy and hypertensive choriodopathy.<sup>10</sup>

Reversible cortical blindness and extraocular muscle palsy, though rare, have been well documented in the eclamptic patients.<sup>10</sup>

The hallmark of ocular complications noted in these patients is "vascular spasm" which is reported in as many as 70% of these patients.<sup>15</sup> The early finding is focal retinal arteriolar spasm followed by generalized narrowing with the increasing severity of hypertension.<sup>5,15</sup>

The ocular vascular changes have been reported to correlate with the severity of hypertension<sup>2,5,7,11,12,13</sup> and has been used as an indicator for termination of pregnancy.<sup>14</sup> With this background, this study was carried out to find out the fundus changes in PIH.

**MATERIALS & METHODS:**

Study design was retrospective descriptive, with sample size of 96 patients. Review of records of all the patients admitted in the Obstetrics ward, KIST Medical College Teaching Hospital, (KISTMCTH ) Imadol, Lalitpur, Nepal, with the diagnosis of PIH referred to the Ophthalmology OPD by obstetricians, or seen in the obstetric ward and labor room were included and duration of study was 3years (October 2010 – October 2013).

Records of baseline data, detail history, general physical examination and systemic examination were noted.

Records of ocular evaluation were then reviewed and noted. These included visual acuity (VA) with Snellen's chart and best corrected visual acuity (BCVA) (whenever refraction records were found), ocular alignment and motility, pupillary examination and detailed slit lamp examination. Records of fundus evaluation under mydriasis (plain tropicamide) were noted.

Fundus changes were grouped as: no changes, vascular changes, extra vascular retinal changes (hemorrhages, cotton wool spots, hard exudates), optic nerve head changes and choroidal changes.

Statistics: All statistical analysis was performed using a statistical software package (SPSS for windows). Descriptive

analysis consisted of mean for various maternal parameters. Ethical issue: The study proposal was approved by the research committee and institutional review board (IRB) of KISTMCTH vide their letter IRB No.0014/2013/14 dated 25<sup>th</sup> Dec.2013.

**RESULTS:**

A total of 96 patients of PIH were seen, out of whom 16 patients (16.6%) had fundus changes. The mean age of the subjects was 26.65 years. The means of systolic and diastolic BP of the subjects were 155.99 mmHg and 104.94 mmHg respectively (Table1).

**TABLE 1: Mean Values of different maternal variables**

Variable	Mean values
Age	26.65 years
Gravida	1.70+/- 1.19
Parity	0.58+/- 1.11
Systolic BP	155.99 mmHg
Diastolic BP	104.94 mmHg

Various fundus changes found were vascular changes, retinal changes, optic nerve changes and choroidal changes (Table 2)

**Table 2: Various fundus changes**

FUNDUS CHANGES	No. of subjects (N=16)	Percent (%)
1. GENERALIZED VASCULAR CHANGES (GR I HR)	2	12.5
2. FOCAL VASCULAR CHANGES (GR II HR)	5	31
3. RETINAL CHANGES (GR III HR)	4	25
4. OPTIC NERVE CHANGES (GR IV HR)	2	12.5
5. CHOROIDAL CHANGES	3	19

**DISCUSSION:**

A total of 96 patients of PIH were included in this study. The prevalence of hypertensive fundus changes was found to be 16.6 % This is a little less as reported by other studies. Prevalence of ocular changes in PIH patients as described in literature varies from 30 to 100%<sup>2-9</sup> The reason for the slightly low prevalence rate as compared to other studies could be due to racial or geographical factors, as there are very few studies done in this subject in Nepal.

Visual symptoms are generally not very frequent in patients of PIH. Out of the visual symptoms blurred vision is most common followed by photopsia, scotomata and diplopia<sup>10</sup>

In our study, we didn't find any patients with significant visual

disturbances. Most of the patients in our study had visual acuity between 6/6 and 6/9.

Mild arteriolar spasm involving the bulbar conjunctival vessels has been observed in normal pregnancy, but in PIH, as reported in literature, the vasospasm can be severe and result in local ischemia.<sup>15</sup> In our study, we found 9% patients having diffuse, mild conjunctival congestion in right eye and 8% in left eye. Other anterior segment examinations including extraocular movements and pupillary responses were normal in all our patients.

Though reported in literature, vitreous hemorrhage, serous retinal detachment, Purtscher's like retinopathy were not encountered in our study, neither did we find any case of cortical blindness.

### CONCLUSION:

Hypertensive fundus changes in patients with PIH was found in 16.6% which, though not sight threatening in our cases, could have been a cause of decreased vision. So, fundus evaluation can be recommended as a routine screening procedure for all patients with pregnancy-induced hypertension, considering the presence of the changes to be a need for further observation to prevent any vision loss.

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