

Malignant hypertensive retinopathy in a postnatal patient with pregnancy induced hypertension: Case report

Zungu TL^{1,2}, Mdala S^{1,2}, Gandiwa M^{1,2}, Mhango P^{1,2}, Kayange PC^{1,2}

¹Department of Ophthalmology, College of Medicine, University of Malawi, Blantyre, Malawi

²Lions Sight First Eye Unit, Queen Elizabeth Central Hospital, Blantyre, Malawi

Corresponding author: Dr Thokozani Zungu. Email: thokzungu@gmail.com

ABSTRACT

Pregnancy Induced Hypertension (PIH) is one of the leading causes of maternal and perinatal mortality, especially in developing countries. Hypertensive retinopathy is a common condition in patients with PIH. Patients mostly present with mild hypertensive retinopathy changes such as arteriolar narrowing and arteriovenous nicking. Malignant hypertensive retinopathy is a rare finding in PIH patients.

We present a case of a 32 year old postnatal woman with PIH who developed malignant hypertensive retinopathy in both eyes during post-partum period.

Key words: Pregnancy Induced Hypertension, Pre-eclampsia, Hypertensive retinopathy, Malignant hypertensive retinopathy

INTRODUCTION

Pregnancy Induced Hypertension (PIH) is a significant contributor to maternal and perinatal mortality, especially in developing countries. Pregnancy Induced Hypertension (PIH) is classified into mild PIH, pre-eclampsia, and eclampsia. "Mild PIH is defined as blood pressure of 140/90 mmHg which returns to normal by 12 weeks postpartum. Pre-eclampsia is the presence of hypertension (BP>140/90mmHg) on two occasions with spacing of four hours and significant proteinuria (>300 mg per 24 hrs) and/or oedema. Eclampsia is the occurrence of convulsions or coma unrelated to other cerebral conditions, with signs and symptoms of pre-eclampsia. Our patient had blood pressure of 160/113mmHg which is severe hypertension"¹.

Hypertensive retinopathy occurs in approximately 60% of patients with PIH and patients mostly presents with mild hypertensive retinopathy². Severe forms of PIH such as pre-eclampsia and eclampsia are associated with high prevalence of hypertensive retinopathy.

Malignant hypertensive retinopathy or grade 4 hypertensive retinopathy is the most severe type of hypertensive retinopathy. Malignant hypertensive retinopathy is a rare finding in patients with PIH³.

We present a case of postnatal woman with PHI who developed bilateral malignant hypertensive retinopathy.

CASE REPORT

A 32 year old woman presented to Lions Sight First Eye Hospital in Blantyre, Malawi in February 2018 two weeks after spontaneous vaginal delivery. She complained of blurred vision in both eyes and headache.

The symptoms began a few days after delivery. She also presented with lower limb swelling of approximately 3 month duration. There was no history of convulsions or systemic hypertension during the pregnancy.

Her blood pressure was elevated (163/113 mmHg) when she presented to us at Lions Sight First Eye Hospital. The best corrected visual acuity was 6/18 in both eyes. Anterior segment examination was normal in both eyes. On fundoscopy, there was blurred disc margin, per-papillary hard exudates, multiple cotton wool spots, star-shaped macular hard exudates and reduced retinal transparency around the fovea in both eyes (Figures 1 and 2). In addition, there were two per-papillary flame shaped haemorrhages in the right eye.



Figure 1: Retinal image of right eye during first visit showing blurred disc margin, two per-papillary flame haemorrhages, per-papillary hard exudates, multiple cotton wool spots, macular star and reduced retinal transparency around the fovea



Figure 2: Retinal image of left eye during first visit showing blurred disc margin, per-papillary hard exudates, multiple cotton wool spots, macular star and reduced retinal transparency around the fovea.

Macular OCT scan (Nidek RS330) which was done during the first eye hospital visit showed subretinal fluid collection and highly reflective round lesions in outer retina (Figure 3). The reflective lesion corresponded to hard exudates on the retinal photograph.

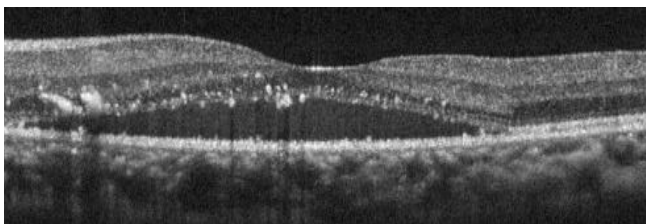


Figure 3: OCT horizontal image of the left eye on first visit showing subretinal fluid collection and hard exudates (multiple round and oval hyper-reflective lesions) in outer retina. OCT scan image of the right eye (not shown) has similar findings.

The diagnosis was malignant hypertensive retinopathy in post-partum woman with PIH. The patient was immediately referred to the internal medicine department for further management of her condition. The blood pressure was still elevated (168/103mm Hg) on second measurement at hypertensive clinic and she was commenced on anti-hypertensive medicine.

The patient reported for follow up review at our clinic at Lions Sight First Eye Hospital four weeks after her first visit. There was a great improvement in symptoms and signs. The visual acuity was 6/6 in both eyes (Figure 4). Fundoscopic signs were resolving in both eyes. There was no longer sub-retinal fluid collection

on OCT in both eyes. Small intra-retinal cystic fluid collection and remnant reflective hard exudate were seen on OCT in both eyes (Figure 5).

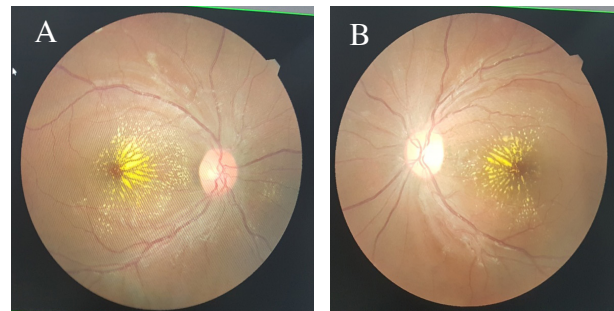


Figure 4: Retinal images of the right eye (A) and left eye (B) on second visit showing marked resolution of signs. There are still hard exudates in both eyes and cotton wool spot in the right eye

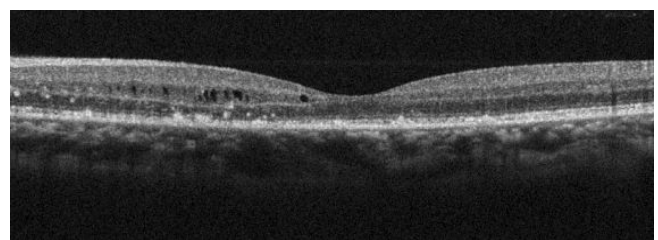


Figure 5: OCT horizontal scan image of the left eye on second visit showing complete resolution of the subretinal fluid collection and reduction of the hard exudates. There is small multiple intra-retinal cystic fluid collections. OCT scan of the right eye (not shown) has similar findings.

DISCUSSION

Our patient presented with PIH in the post-partum period. She had elevated blood pressure and lower limb oedema. She may have developed pre-eclampsia. However, it is not possible to confirm pre-eclampsia as laboratory test for assessing proteinuria was not done.

The patient in this report presented with blurred vision with reduced best corrected visual acuity of 6/18 in both eyes. The reduced vision could be attributed to bilateral subretinal fluid. Other visual complaints reported in literature include photopsias, visual field defects, diplopia and in severe cases blindness⁴. These symptoms were not reported by our patient.

According to Keith, Wagener and Barker classification, there are four grades of hypertensive retinopathy. Grade 1 is a mild disease, with generalized arteriolar narrowing. Grade 2 shows moderate retinopathy with focal definite arteriolar narrowing with arteriovenous nicking. Grade 3 shows more advanced retinopathy, with retinal haemorrhages, exudates, cotton wool spots. In Grade 4, patients present with papilloedema in addition to Grade 3 signs⁵⁻⁸. Grade 1 hypertensive retinopathy is more common with a prevalence of

14.7% and Grade 4 (malignant retinopathy) is the least common (0.3%) while Grades 2 and 3 have a prevalence of 8.6% and 5.8% respectively⁹.

Our patient had Grade 4 (malignant) hypertensive retinopathy with flame shaped haemorrhages, cotton wool spots, exudates on the macula and mild disc swelling. Studies have shown that retinal changes correlate with severity of the hypertension. However, high grades of hypertensive retinopathy such as Grade 3 and 4 are rarely seen in PIH³.

Hypertensive retinopathy Grades 3 and 4 are markers of acute end organ damage. Factors associated with acute end organ damage are poorly known. One study found that young age was a risk factor for developing Grade II/IV hypertensive retinopathy independent of age⁵. Our patient was relatively young, with 32 years of age.

Our patient developed symptoms one week in the post-partum period. Past literature indicated that pregnancy induced hypertension usually improves after delivery. However, PIH can still occur upto 12 weeks post-partum, and if poorly managed, it can lead to vision threatening ocular complications such as serous retinal detachment³.

The retinal circulation undergoes a series of pathophysiological changes in response to elevated blood pressure patients with hypertensive retinopathy¹⁰. Initially, there is a vasoconstrictive stage. During this stage, there is vasospasm and increased tone in retinal arteriolar tone due to autoregulatory mechanisms. This stage is seen clinically as a generalized narrowing of the retinal arterioles. Persistently elevated blood pressure leads to intimal thickening, hyperplasia of the media wall and hyaline degeneration in the subsequent, sclerotic, stage. This stage corresponds to more severe generalized and focal areas of arteriolar narrowing, changes in the arteriolar and venular junctions (arteriovenous nipping) and alterations in the arteriolar light reflex ("copper wiring")¹¹.

The vasoconstrictive stage is followed by an exudative stage. During exudative stage, there is disruption of the blood-retina barrier, necrosis of the blood vessel smooth muscles and endothelial cells, exudation of blood and lipids, and retinal ischemia. These changes are manifested in the retina as microaneurysms, haemorrhages, hard exudates, and cotton-wool spots. Swelling of the optic disc may occur at this time and usually indicates severely elevated blood pressure¹¹. The stages of hypertensive retinopathy described here, however, may not be sequential¹⁰.

Pregnancy induced hypertension has several other ophthalmic complications. Cortical blindness is a reported complication which presents as acute loss of vision in a patient with severe pregnancy induced hypertension which can occur antenatally

or postnatally². It is suggested that it likely occurs secondary to cerebral oedema⁴. Vision almost always returns to normal within 4 to 8 hours¹². Imaging may show cortical occipital lesions. Visual loss is reversible. Other complications reported include hypertensive optic neuropathy (papilloedema), optic atrophy following retinal detachment, choroidal atrophy and retinal pigment epitheliopathy.

Cases of mild hypertensive retinopathy do not require investigation. Ocular investigations such as Optical Coherence Tomography (OCT) and Fundus Fluorescein Angiography (FFA) may be indicated in some cases with advanced retinopathy⁶. Brain imaging such as Magnetic Resonance Imaging (MRI) may be warranted in cases suspected of cortical blindness.

Management mainly involves control of the raised blood pressure. Our patient was managed on antihypertensive drugs only as she developed symptoms post-natally. Literature has shown improvement in vision in a few weeks but however the clearing of exudates takes even years³. Papilloedema and surrounding retinal oedema resolve, leaving an optic disc of near normal appearance within a few weeks; depending on severity of disc oedema before employing the treatment¹³. Our patient's vision was restored to normal 6/6/ in both eyes within 4 weeks with resolution of subretinal fluid collection. However, hard exudates take many months and sometimes years to completely resolve¹⁴. Hypertensive retinopathy is an end organ damage and therefore the patient requires a multi disciplinary assessment including cardiovascular morbidity¹³. Our patient did not have other hypertension associated morbidities on assessment by internal medicine team.

CONCLUSION

Malignant hypertensive retinopathy is a rare finding in PIH patients. It is a marker of end organ damage. Timely diagnosis and correct management is essential in order to prevent cardiovascular morbidity and mortality.

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