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Malignant Hypertension and Acute Loss of Vision In A Patient With History of Pre-eclampsia

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Abstract—Pre-eclampsia may have an impact on women's health beyond their pregnancies and has been associated with increased risks for future hypertension and cardiovascular disease. We report a case of a patient with history of pre-eclampsia and emergency caesarean section at 31 weeks of gestation due to impending eclampsia who defaulted follow up and presented with malignant hypertension and acute loss of vision 10 years later. A 34-year-old Malay female, presented with generalized painless reduced vision of 5 days duration which was preceded by an intermittent headache for 1 months duration. She had a history of pre-eclampsia during her last childbirth 10 years ago and was not started on any antihypertensive medication as her blood pressure normalized 2 weeks post-delivery. Subsequently, she defaulted on her follow up. Visual acuity was counting finger at 1 meter in both eyes with no relative afferent pupillary defect. Funduscopy revealed bilateral grade IV hypertensive retinopathy with the presence of optic disc swelling and macular star. Optical coherence tomography showed bilateral sub-retinal fluid at the macula. Her blood pressure was 255/168 mmHg with other systemic examinations being normal. Ultrasonography of the kidneys showed the presence of bilateral renal parenchymal disease with elevation of serum urea and creatinine levels. Her blood pressure was controlled with triple oral antihypertensive agents. Her vision improved to 6/36 and 6/6 with a pinhole in both eyes and resolution of papilloedema and sub-retinal fluid at three months follow-up. Patients with a history of pre-eclampsia must be closely monitored during the postpartum period. Even though her blood pressure was normalized, careful monitoring and long-term medical follow up plan must be clearly explained to the patient as she might develop chronic or essential hypertension afterward. Our patient most likely had essential hypertension superimposed with pre-eclampsia during her last pregnancy and currently presented with malignant hypertension due to undiagnosed chronic hypertension as she defaulted her medical follow up.

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1 INTRODUCTION

Pre-eclampsia is a pregnancy related complication characterized by hypertension and proteinuria after 20 weeks of gestation. It has been estimated about 2% to 8% of all pregnancies globally are affected by pre-eclampsia [1,2]. The impact on women's health is beyond their pregnancies and has been associated with increased risks for future hypertension and cardiovascular disease [3]. We report a case of a patient with a history of pre-eclampsia and an emergency caesarean section at 31 weeks of gestation due to impending eclampsia who defaulted follow up and presented with malignant hypertension and acute loss of vision 10 years later.

2 CASE REPORT

A 34-year-old Malay female presented with generalized painless reduce vision in both eyes of 5 days' duration. The condition was preceded by intermittent headache for 1-month duration which was relieved by paracetamol and rest. There was no history of loss of consciousness, seizure or limbs weakness. She had a history of pre-eclampsia and underwent emergency caesarean section at 31 week of gestation due to impending eclampsia 10 years previously during her last childbirth. Following her delivery, she claimed that her blood pressure was normalized 2 weeks post-delivery thus she was not started on any medication. Subsequently, she defaulted on her follow-up. She was on implanon as her contraceptive method since her last delivery and

she changed the device at the 3-year interval at a private clinic.

Ophthalmic evaluation revealed a visual acuity of counting finger at 1 meter in both eyes with no relative afferent pupillary defect. Anterior segment of both eyes was unremarkable. Fundoscopy showed bilateral grade IV hypertensive retinopathy with the presence of swelling discs, partial macular star, splinter haemorrhages and multiple cotton wool spot at the posterior pole. The vessels were attenuated with the presence of arteriovenous nipping (Figure 1). Optical coherence tomography (OCT) of the eyes showed the presence of sub-retinal fluid at the macular area in both eyes (Figure 2).

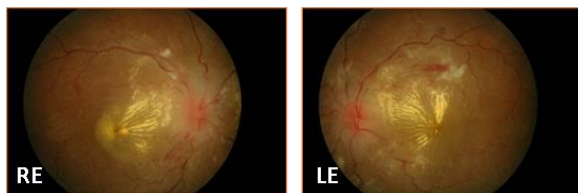


Figure 1: Fundus photos demonstrating bilateral grade IV hypertensive retinopathy with the presence of papilloedema, partial macular star, multiple cotton wool spot and splinter haemorrhages at the posterior pole at presentation.

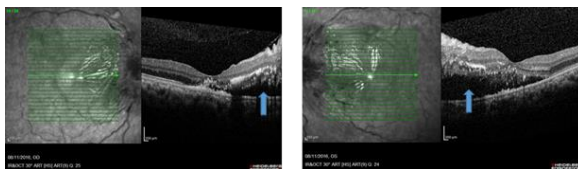


Figure 2: Optical coherence tomography images showing the presence of subretinal fluid (blue arrow) in both eyes at presentation

In casualty unit, her pulse was 78 beats per minute, blood pressure was 255/168 mmHg, neurological, cardiovascular and other systemic examinations were unremarkable. Investigations showed elevated serum urea and creatinine level of 9.8 mmol/L and 189 mmol/L respectively. An ultrasonography of the kidneys showed bilateral renal parenchymal disease with the normal retinal artery. She was diagnosed with chronic kidney disease (CKD) stage IV based on her renal profile and renal ultrasound findings. Brain CT Scan showed multiple lacuna infarcts at right corona radiata, left head of the nucleus and left basal ganglia with no space-occupying lesion.

A diagnosis of malignant hypertension with bilateral hypertensive retinopathy was made. She was given oral captopril 25 mg stat and her blood

pressure came down to 177/114 mmHg. She was referred to a physician and was admitted for further management of hypertensive crisis.

Her hospital course was uncomplicated and blood pressure was controlled to 125/75 mmHg by the third day of admission with triple oral antihypertensive agents (Tablet Felodipine 10 mg daily, Metoprolol 100 mg daily and Hydrochlorothiazide 25 mg 12 hourly). Evaluation of secondary causes of hypertension was done and unremarkable (Table I).

Table I: Summary of investigations result during current admission

Investigations	Result
Full blood count	
Haemoglobin	10.7 g/dl
White blood count	8.70 x 10 ⁹ /l
Platelet count	162 x 10 ⁹ /l
Fasting lipid profile	
Triglyceride	
Total cholesterol	1.33 mmol/L
Low density Lipoprotein	5.0 mmol/L
High density lipoprotein	1.2 mmol/L
	1.7 mmol/L
Fasting blood sugar	5.2 mmol/L
Thyroid function test	
Free T4	14.43pmol/L
TSH	2.67 mIU/L
Erythrocyte sedimentation rate	35 mm/60min
C- reactive protein	Negative
Serum Aldosterone	90 pmol/L
Plasma renin activity	6.87 ng/ml/hr
Serum cortisol	126.2 nmol/L
Anti-nuclear antibody (ANA)	Negative
C3	1.29 g/L
C4	0.32 g/L
TORCHES	Negative

She was discharged with triple oral antihypertensive agents. Upon discharge, her vision improved to 6/120. At three months' follow-up, her vision was 6/36 and 6/6 with a pinhole in both eyes. While her blood pressure was 120/70 mmHg. Funduscopy showed resolution of papilledema with a residual macular star (Figure 3). OCT examination showed resolution of sub-retinal fluid with normal foveal depression (Figure 4).

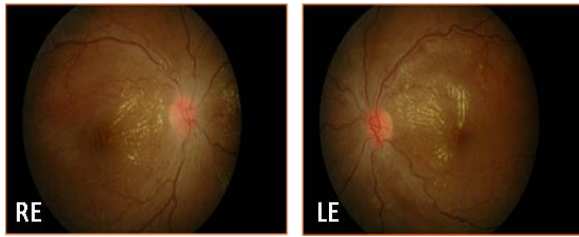


Figure 3: Fundus photo showed resolution of papilloedema with residual macular star in both eyes at 3-month follow-up

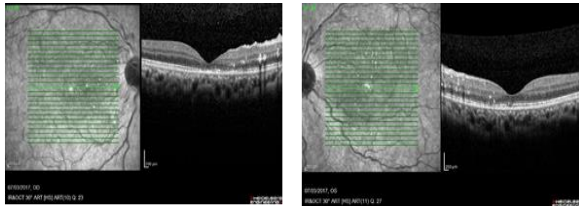


Figure 4: Optical coherence tomography showed resolution of subretinal fluid with normal foveal depression in both eyes at 3-month follow-up

3 DISCUSSION

Pre-eclampsia is a hypertensive disorder of pregnancy with multisystem involvement which complicates 3-8% of pregnancies in the Western world [5]. It is defined by the presence of proteinuria ($>0.3\text{g}$ during 24-hour or at least 2+ of protein on dipstick testing) after the 20th gestation week [5]. Metabolic abnormalities (such as insulin resistance, dyslipidaemia, and obesity), inflammation, oxidative stress, and hypercoagulability are among the risk factors that associates pre-eclampsia and future development of hypertension. The interaction between these factors will lead to the formation of endothelial cell dysfunction which will increase the risk of pre-eclampsia, hypertension and cardiovascular disease [6,7].

A study found that 64 (34%) out of the 188 women analyzed had persistent hypertension three months after delivery [8]. Our patient had a history of preeclampsia during her last childbirth and presented with malignant hypertension and acute symptoms of end-organ damage 10 years after her last childbirth. Her blood pressure was normalized 2 weeks post- delivery thus she was not started on any medication. However, she defaulted on her subsequent medical follow up. She might have undiagnosed chronic hypertension which develops due to vascular and metabolic changes that occur since the previous pre-eclampsia episode. Unfortunately, this event

was unrecognized since she defaulted her medical follow up. A study concluded that up to one-third of women with hypertensive disorder of pregnancy may develop hypertension within a decade of an affected pregnancy [9]. Therefore, any woman with a history of pre-eclampsia needs to be on long-term regular follow up after her delivery so that early diagnosis and management of chronic hypertension can be made to avoid long-term morbidity and mortality.

Investigations for a secondary cause of hypertension was done for this patient in view of her young age. However, the results were normal. Thus, she was diagnosed with essential hypertension.

Malignant hypertension is a hypertensive urgency characterized by grade III/IV hypertensive retinopathy and widespread endothelial damage. It occurs in 1% of the hypertensive population [10]. The patient may present with sudden acute loss of vision due to hypertensive retinopathy, choroidopathy, or optic neuropathy, or because of cortical disease [11]. Our patient had bilateral acute loss of vision due to hypertensive retinopathy as well as optic neuropathy as evidenced by the presence of bilateral papilloedema, macular star, splinter haemorrhages and cotton wool spot.

The visual outcome of a patient with malignant hypertension is usually good provided early diagnosis is made and followed by proper hypertensive control measures [12]. In our patient, her vision improved during her follow up visit with resolution of the swelling disc.

4 CONCLUSION

Pre-eclampsia has an important implication for future maternal health particularly development of chronic hypertension. This patient most likely had essential hypertension superimposed with pre-eclampsia during her last pregnancy. Currently, she presented with malignant hypertension due to undiagnosed chronic hypertension. Thus, educational awareness, careful monitoring of blood pressure and follow-up are valuable so that early intervention can be done to prevent end-organ damage.

CONFLICTS OF INTEREST

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REFERENCES

- [1] Jeyabalan A. Epidemiology of preeclampsia: Impact of obesity. *Nutr Rev.* 2013;71(01):10.1111/nure.12055. doi:10.1111/nure.12055.
- [2] Ananth CV, Keyes KM, Wapner RJ. Pre-eclampsia rates in the United States, 1980-2010: age-period-cohort analysis. *Br Med J* 2013;347: f6564.
- [3] Garovic VD, August P. Preeclampsia and the future risk of hypertension: The pregnant evidence. *Curr Hypertens Resp* 2013;15(2):10.1007/s11906-013-0329-4. doi:10.1007/s11906-013-0329-4.
- [4] Carty DM, Delles C, Dominiczak AF. Preeclampsia and future maternal health. *J Hypertens.* 2010;28:1349–1355
- [5] Tranquilli AL. Introduction to ISSHP new classification of preeclampsia. *Pregnancy Hypertens.* 2013;3(2):58-9. doi: 10.1016/j.preghy.2013.04.006.
- [6] Mounier-Vehier C, Madika AL, Boudghène-Stambouli F, et al. Hypertension in pregnancy and future maternal health. *Presse Med.* 2016: 45(7-8 Pt 1):659-66. doi:10.1016/j.lpm.2016.05.017.
- [7] Nakimuli A, Elliott AM, Kaleebu P, et al. Hypertension persisting after pre-eclampsia: A prospective cohort study at Mulago Hospital, Uganda. *PLoS ONE* 2013;8(12):e85273. doi:10.1371/journal.pone.0085273.
- [8] Uzan J, Carbonnel M, Piconne O, Asmar R, Ayoubi J-M. Pre-eclampsia: pathophysiology, diagnosis, and management. *Vasc Health Risk Manag.* 2011;7:467-474. doi:10.2147/VHRM.S20181.
- [9] Behrens I, Basit S, Melbye M, Lykke JA, et al. Risk of post-pregnancy hypertension in women with a history of hypertensive disorders of pregnancy: nationwide cohort study. *Br Med J.* 2017;12:358;j3078. doi: 10.1136/bmj.j3078.
- [10] Al-Bannay R, Husain AA. Hypertensive crisis. Clinical presentation, comorbidities, and target organ involvement. *Saudi Med J* 2010; **30**: 916–920.
- [11] Ahn SJ, Woo SJ, Park KH. Retinal and choroidal changes with severe hypertension and their association with visual outcome. *Invest Ophthalmol Vis Sci.* 2014;55(12):7775-85. doi: 10.1167/iovs.14-14915.
- [12] Browning AC, Mengher LS, Gregson RM, et al. Visual outcome of malignant hypertension in young people. *Arch Dis Child* 2001 Nov;85(5):401-403.