Annals of Medical Research
DOI: 10.5455/annalsmedres.2018.12.304 2019;26(5):959-61

Case Report

Posterior reversible encephalopathy syndrome secondary to preeclampsia-a case report

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Abstract

In this article, we aimed to present a 29 year-old preeclampsia patient with sudden loss of vision in both eyes after cesarean section. In her ophthalmoscopic examination her visual acuity was at the level of light perception on both of eyes. The anterior segment examination of the patient was normal with normal eye movement in all directions. The fundus had a tilted disc, which was evident on the left. Emergency orbital, cranial MRI, carotid Doppler were requested with arterial blood pressure control of the patient. Close follow-up was recommended. Patient was diagnosed as posterior reversible encephalopathy syndrome with cortical visual loss due to vasogenic edema according to diffusion MRI result. Patient's visual acuity was 10/10 on the right side and 16/100 on the left side after 3 days with control of arterial blood pressure.

Keywords: Preeclampsia; Posterior Reversible Encephalopathy Syndrome; Vasogenic Edema.

INTRODUCTION

Preeclampsia is considered to be a systemic vascular disorder with endothelial dysfunction (1). Preeclampsia affects many organs and systems, including the eye and vision system. Visual symptoms are seen in 25% patients of severe preeclampsia and in 50% of eclampsia patients (2). In addition to hypertension, headache, visual disturbances, abdominal pain, oliguria can be seen in preeclampsia. In these patients, the addition of convulsions is defined as eclampsia. The pathogenesis of the disease is vasculitis, spasms-induced hypertension, endothelial dysfunction and tissue ischemia. Cerebral autoregulation disorder secondary to vasospasm and hypertension in the central nervous system constitutes the pathogenesis of neurological symptoms of preeclampsia (3).

Severe preeclampsia and eclampsia continue to be one of the leading causes of maternal and perinatal mortality and morbidity in many parts of the world. Patients may experience symptoms such as headache and visual disturbances, scotoma, sudden inability to focus, blurred vision, and vision loss in severe cases. Although visual disturbances of patients with severe preeclampsia may develop 25%, visual loss is rare (4). In the past, most cases of visual loss were attributed to retinal anomalies including edema, vascular changes, and detachment. Retinal detachment is usually bilateral and rarely causes total vision loss (5). More recent case reports emphasized the loss of cortical vision characterized by intact pupillary light reflexes and normal ophthalmoscopy findings (6).

Posterior reversible encephalopathy syndrome (PRES) which is first described in 1996, is a neuroradiological definition characterized by headache, confusion and visual symptoms. Hypertensive encephalopathy, eclampsia/preeclampsia, drugs and blood transfusion are the most common causes of PRES. PRES can be seen during pregnancy or postpartum period. For today, the theory of hyper-perfusion is more accepted in the pathophysiology of PRES. According to this theory when the blood pressure increase so as to disable the homeostatic mechanism, blood vessels become dilate and fluid and macro molecule transition to the brain parenchyma may occur (7).

CASE REPORT

A 29-year-old patient who was followed up with severe preeclampsia delivered cesarean section at 35 weeks of age. After the cesarean section, arterial blood pressure was

Received: 25.12.2018 **Accepted:** 08.03.2019 **Available online:** 01.04.2019
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kept high. The patient's neurological exam was normal. The patient did not have any sensory or motor deficit. The patient's vital findings were normal except blood pressure. Blood laboratory tests revealed no abnormalities. In spot urine sample, urinary microprotein was 640 mg/dL. The patient doesn't have any cardiological or neurological disease in her history. The patient was consulted to our department for total vision loss at 18 hours postoperatively. We learned that blurred vision began after the operation and then she completely lost her sight from the patient's medical history. She also said that she had been has amblyopia in her left eye from childhood.

In ophthalmoscopic examination her visual acuity was light perception bilaterally. Bilateral direct and indirect light reflexes were positive and eye movements were found to be free in all directions. The anterior segment was bilaterally normal. The optic disc was tilted more prominent on the left eye, macula and retina examinations were normal (Figure 1). B-mode Ultrasonography (USG) examination and optical coherence tomography (OCT) were also normal. Intraocular pressure was 14 mmHg on the right and 12 mmHg on the left. Cranial and orbital magnetic resonance imaging (MRI), carotid arterial Doppler were requested. Close follow-up with arterial hypertension control was recommended.

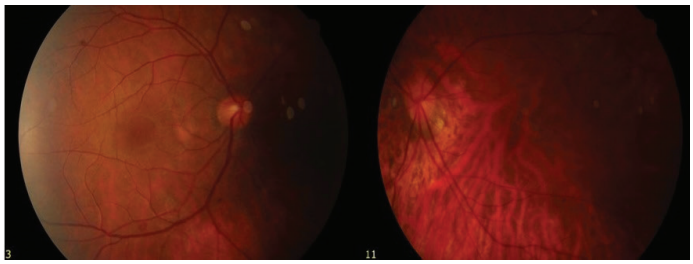

Figure 1. Right- Left Fundus Photos

The patient's carotid arterial Doppler report was normal. Patient's diffusion MRI result was; bilateral occipital cortexes and right parietal paramedian cortical-subcortical parenchymal areas were with increased edematous signals and diffusion restriction in diffusion-weighted imaging (DWI) (Figure 2). The patient was diagnosed as PRES with cortical visual loss due to vasogenic edema. The ophthalmoscopy examination on the second day (approximately 42 hours postoperatively), was as follows the autorefractometry values were -0.50 0.00X0 on the right and -5.75 -5.50X5 on the left. The best corrected visual acuity was 0.7 in the right and 0.16 in the left (refractive amblyopia). Biomicroscopic examination; bilateral normal, fundus examination; the bilateral retina and macula were normal, and optic discs were tilted. Eye pressure was taken as 15 mmHg on the right eye and 11 mmHg on the left eye. Axial lengths were 23.50 mm on the right and 26.40 mm on the left. On day 3 examination (approximately 66 hours), the visual acuity was 10/10 on the right and 16/100 on the left. The visual acuity was came to normal only with control of hypertension.

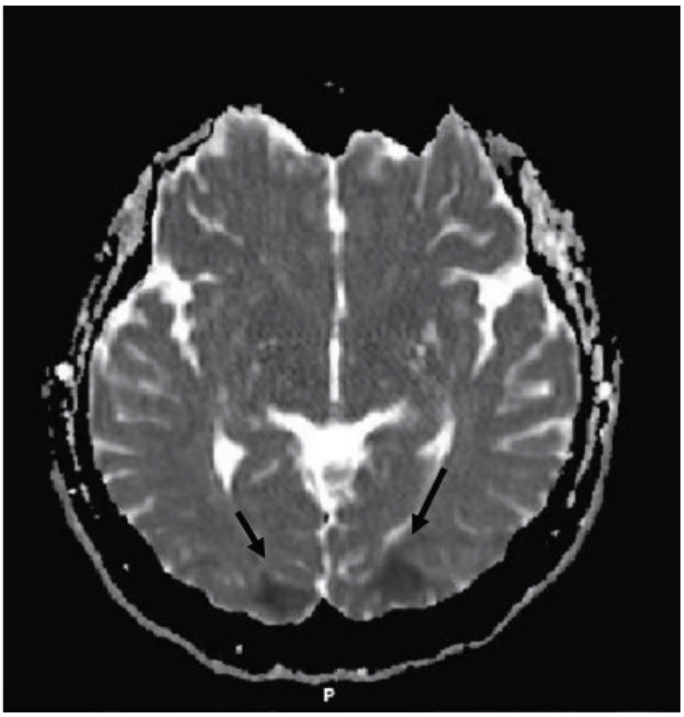

Figure 2. Diffusion Restriction in MRI (arrows)

DISCUSSION

PRES is a clinicoradiologic disease characterized by visual disturbances, headaches, seizures, severe hypertension, and altered mental status. PRES can be seen in preeclampsia, eclampsia, hypertensive encephalopathy, autoimmune diseases, infection/sepsis, and the use of cytotoxic or immunosuppressive drugs (8-11). Women with preeclampsia may have generalized seizures. If it does not identify a specific cause, it is defined as eclampsia (12).

Various ocular findings can be seen in preeclampsia/eclampsia. Blurred vision is the most common visual complaint. Also focal or diffuse retinal arteriolar constriction may ocur. Other ocular findings include photopsia, visual field defects, sudden inability to focus, and complete blindness in severe cases (13).

Symptoms and findings are not specific to the diagnosis of PRES. MRI is more helpful for the diagnosis of PRES (14). Hyperintense signal on T2-weighted MRI images and hypodense regions within the posterior white matter regions on CT scans are typical imaging findings. Vasogenic edema in the parieto-occipital regions can be seen on Diffusion- weighted MRI. PRES always affects the subcortical white matter and usually affects cortex. A bilateral but asymmetric edema is another characteristic finding of PRES. Contrast material doesn't enhance lesions (15).

The following diagnoses should be considered in the differential diagnosis: stroke, PRES, Purtscher's retinopathy, optic nerve edema, severe retinal detachment or various retinal vessel emboli (fat, amniotic fluid, air embolism) (16). CT or MRI can be used to identify PRES.

While nonspecific changes are usually seen in CT, MRI can be easily diagnosed with specific findings.

When a preeclampsia/eclampsia patient develop PRES, an emergent delivery should be considered by the obstetrician. On the other hand control of hypertension and seizure in a preeclampsia patient has some troublesome points as the contraindications of the some of the drugs used. Only a few drugs can be used for the pregnant patients with hypertension. Hydralazine can be used for hypertension control and intravenous magnesium sulfate can be used for control of seizures. (17).

Visual loss associated with preeclampsia usually resolves completely within 4 to 8 days with antihypertensive treatment. To reduce the risk of stroke in these patients, the blood pressure should be reduced in a controlled but not rapid manner. There are also studies suggesting the anti-edema treatment, steroids and administration of heparin in order to reduce the patient's coagulation. As an alternative to steroid treatment, close observation without treatment may be applied.

CONCLUSION

In this case, sudden visual loss due to PRES after the cesarean delivery was completely corrected by controlling the arterial blood pressure of the patient. As a result it is important to keep in mind the PRES diagnosis for patients with sudden vision loss and hypertension.

Competing interests: The authors declare that they have no competing interest.
Financial Disclosure: There are no financial supports

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REFERENCES

1. Thadhani R, Ecker JL, Kettyle E, et al. Pulse pressure and risk of preeclampsia: a prospective study. Obstet Gynecol 2001;97:515-20.
2. Sunness JS. The pregnant woman's eye. Surv Ophthalmol 1988;32:219-38.
3. Cunningham FG, Leveno KJ, Bloom SL, et al. Pregnancy hypertension. williams obstetrics. Mc Grawhill Companies Inc 23rd edition. 2010. p. 706-57.
4. Dieckman WJ. The toxemias of pregnancy. 2nd edition. St Louis: CV Mosby, 1952. p. 240-9.
5. Ohio et al. Hypertensive disorders in pregnancy. In: Cunnighm FG edition Williams Obstetrics. 21st edition. .McGraw Hill; New York: 2001. p. 581-2.
6. Köken G, Yaman M, Yılmazer M, ve ark. Akut görme kaybı-olgu sunumu. Tıp Araştırmaları Dergisi 2007;5:36-8.
7. Mackenzie ET, Strandgaard S, Graham DI, et al. Effects of acutely induced hypertension in cats on pial arteriolar caliber, local cerebral flow, and the blood-barrier. Circ Res 1976;39:33-41.
8. Lamy C, Oppenheim C, Méder JF, et al. Neuroimaging in posterior reversible encephalopathy syndrome. J Neuroimaging 2004;14:89-96.
9. Staykov D, Schwab S. Posterior reversible encephalopathy syndrome. Nervenarzt 2012;83:1013-20.
10. Nielsen LH, Grøn BS, Ovesen PG. Posterior reversible encephalopathy syndrome postpartum. Clin Case Rep 2015;3:266-70.
11. Richards CR, McMurray RC, Criman ET, et al. An unusual presentation of a rare disease: Posterior reversible encephalopathy syndrome following abdominal sepsis. J Surg Case Rep 2016;2016:pii:rjw184.
12. Bo QY, Zhao XH, Yang X, et al. Reversible posterior encephalopathy syndrome associated with late onset postpartum eclampsia: A case report. Exp Ther Med 2016;12:1885-8.
13. Fugate JE, Rabinstein AA. Posterior reversible encephalopathy syndrome: clinical and radiological manifestations, pathophysiology, and outstanding questions. Lancet Neurol 2015;14:914-25.
14. Lamy C, Oppenheim C, Méder JF, et al. Neuroimaging in posterior reversible encephalopathy syndrome. J Neuroimaging 2004;14:89-96.
15. Lipstein H, Lee CC, Crupi RS. A current concept of eclampsia. Am J Emerg Med 2003;21:223-6.
16. Servillo G, Striano P, Striano S, et al. Posterior reversible encephalopathy syndrome (PRES) in critically ill obstetric patients. Intensive Care Med 2003;29:2323-6.
17. Anna J, Tehmina H, Helen V, et al. Visual loss in pregnancy. survey of ophtalmology. 200;45:223-30.