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Hypertensive Emergency with Sudden Subconjunctival Hemorrhage, Chronic Kidney Failure, and Hypertensive Retinopathy in Breast Cancer Survivor: A Case Report

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ABSTRACT

Introduction: Hypertensive emergency is a life-threatening condition of very high blood pressure associated with acute end-organ damage that requires appropriate therapy to treat progressive organ dysfunction.
Case presentation: 44-years-old breast cancer survivor woman with severe hypertension and sudden left eye bleeding. The blood pressure was 213/115 mmHg. The patient also had chronic kidney failure and hypertensive retinopathy as hypertension complications. The laboratory examination showed an abnormal lipid profile and the presence of proteinuria and bacteriuria from the urinalysis.
Discussion and conclusion: Subconjunctival hemorrhage (SCH) presentation can indicate any serious underlying etiology that needs prompt treatment as in this patient requiring further evaluations. Aggressive treatment was given to reduce blood pressure and further observations for SCH.

Keywords: hypertension; subconjunctival hemorrhage; chronic kidney failure; hypertensive retinopathy

INTRODUCTION

Hypertensive emergency is severe hypertension (grade 3) associated with acute organ damage, often life-threatening and requiring immediate intervention to lower blood pressure (BP)[1]. Acute Hypertension – Mediated Organ Damage (HMOD) could change the structure or functions of end organs, such as the heart, blood vessels, brain, eyes, and kidney. A previous study showed that the relative frequency of target end-organ damages (TOD) of hypertension, cardiovascular system, central nervous system, kidney, and eye were 34%, 17%, 12%, and 10%, respectively[2].

One of hypertension TOD clinical manifestation in eye is subconjunctival haemorrhage (SCH). SCH could occur in poorly-controlled arterial hypertension, and usually asymptomatic, unilateral and the diagnosis is usually made solely based on clinical examination[3]. Uncontrolled hypertension may result SCH, even in drug-controlled hypertension[4]. It could be happened because the systemic hypertension may influence the microvascular changes in conjunctival vessels[4].

Thus, the BP examination may be necessary for a patient with SCH and kidney failure. This report describes a case of sudden SCH in a severe hypertension patient with chronic kidney failure and hypertension retinopathy. Moreover, SCH presentation can indicate any serious underlying etiology that needs prompt treatment as in this patient requiring further evaluations.

CASE PRESENTATION

A 44-years-old woman came to the emergency room (ER) with the chief complaint of sudden bleeding in the left eye with full consciousness, no pain, nausea, or vomiting. She complained of foamy urine for the last three months. The patient was screened for hypertension three months ago and did not seek any hypertension treatment yet, and the patient also denied using any anticoagulant medication. She had a history of breast cancer since three years ago and received chemotherapy drugs such as paclitaxel and carboplatin. She denied any history of trauma, diabetes, the habit of smoking, drinking alcohol, and coffee. However, she has eaten salted fish every day for two months and often eats high-fat foods. In addition, the patient lives alone and works as a civil servant with a heavy workload.

On physical examination, BP was 213/115 mmHg, pulse 118 beats per minute (bpm), respiratory rate 18x/minute, SpO2 97%, body weight 63.9 kg, height 151 cm, and waist size 93 cm. Eye examination showed subconjunctival bleeding with superior and inferior palpebral hematoma in the left eye (fig. 1). Normal heart sounds were heard without murmurs or other abnormalities. Extremities were found to be warm and no edema. The electrocardiography showed sinus rhythm with a heart rate of 93 bpm without any abnormalities. The written informed consent was offered to the patient and the patient agreed being published in publication.

Figure 1. Subconjunctival hemorrhage in the left eye.

Blood tests showed a potassium level of 2.88 mmol/L. Then, the urinalysis showed dark brown and cloudy urine. The urine also contained proteinuria (+3), nitrite, leukocytes (+2), and blood. From microscopic urine examination, there were erythrocytes of >100 cells/HPF (high power field), leukocytes of 20-30 cells/HPF, squamous epithelium of 5-8 cells/HPF, transitional epithelium of 3-5 cells/HPF, round epithelium of 1-3 cells/HPF, and bacteria. The chest x-ray showed normal findings.

In the ER, the patient was given captopril 25 mg orally, followed by a syringe pump injection of nicardipine 0.5 mcg/kg BW/hour, infusion of potassium chloride 50 mEq in 8 hours, and 500 mg/8 hours of tranexamic acid. Then, blood pressure measurement was 174/107 mmHg with a pulse of 108 bpm. The patient was transferred to the Intensive Care Unit (ICU) for four days. In ICU, she was given ramipril 10 mg, bisoprolol 5 mg, nifedipine 30 mg, and ciprofloxacin 400 mg/12 hours. Meanwhile, for the left eye SCH, further observation was needed. Then, the patient was transferred to the ward. After three days inpatient treatment, the BP was 143/95 mmHg with a pulse of 97

bpm and no longer having SCH in the left eye. Then, she was allowed for outpatient treatment.

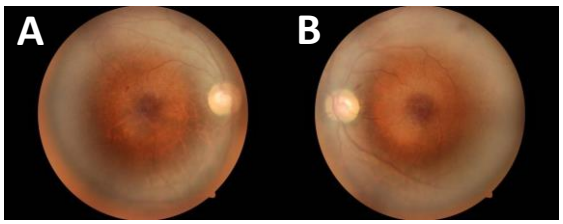

Figure 2. Funduscopy showed grade 3 hypertension with vasopasm of the arteries in both eyes (A and B) and a dot of retinal hemorrhage in the right eye (A).

A 1-month follow-up of funduscopy revealed vasospasm of arteries in the right eye (A) and left eye (B) with the ratio of the artery and vein of 1:3 and a dot of retinal hemorrhage in the right eye (fig. 2). The American Academy of Ophthalmology (AAO) criteria showed that the patient fell in grade 3 of hypertensive retinopathy. Then, she continued hypertension treatment.

DISCUSSION

This patient had a sudden SCH in the left eye due to the severe hypertension. To our knowledge, there were no any report before about patient with SCH in emergency hypertension with history of breast cancer and chemoteraphy medications. Moreover, SCH presentation can indicate any serious underlying etiology that needs prompt treatment as in this patient requiring further evaluations. SCH itself can be defined as a typical benign process characterized by acute and painless bleeding of the conjunctival or episcleral blood vessels into subconjunctival space of the ocular with inflammation in contagious areas and absence of discharge. As in hypertensive emergency, the autoregulation of vascular bed and blood flow may induce acute mechanical stress and endothelial damage in conjunctival or episcleral blood vessels where this high blood pressure can lead to spontaneous rupture of a small vessel, particularly conjunctival tissue, and cause the blood to accumulate in the subconjunctival space or causing SCH[5]. There is no specific treatment for SCH. The blood is usually reabsorbed over 1-2 weeks depending on the amount of extravasated blood[6]. In this case, patient was observed for the left SCH without giving any specific treatment. In another case from Channa et al. reported that four patients with SCH also were not given any medications[7].

In addition to SCH, hypertension complication was also found in the kidneys. The patient complained foamy urine for three months and the complete urinalysis showed positive (3+) proteinuria on the dipstick, which was semi-quantitatively, indicating the protein content presence of 300-1000 mg/dL. Moreover, the creatinine serum level was 0.81 mg/dl which was calculated for estimated glomerular filtration rate (eGFR) equaled to 91.1 ml/minute/1.73 m^2. According to Kidney Disease: Improving Global Outcomes (KDIGO) 2012, there was evidence in the chronic damage of structural or function of kidney that was marked by the presence of proteinuria for three months[8]. In addition in this case, the using of ciprofloxacin was indicated for treating the urinary tract infection (UTI) and there were no caution of any effect for nephrotoxicity due to the eGFR > 30 ml/minute/1.73 m^2 [9]. Hypertension activates autoregulation of renal arteriole vasoconstriction. Under normal conditions, increased renal arteriolar resistance can still maintain constant renal blood flow. However, kidney damage will occur when hypertension becomes severe and exceeds the threshold for autoregulation. Hypertension accelerates the ageing of the renal vasculature that is described as nephrosclerosis. A slow thickening characterizes the nephrosclerosis and sclerosis of the renal resistance vessels, and the glomerular capillaries are largely

spared. Decreasing glomerular filtration will induce a significant reduction in renal function and end-stage renal disease (ESRD)[10]. As described above, this patient's chemotherapy and radiotherapy history due to breast cancer were associated with an increased likelihood of developing hypertension. The usage of some drugs may also have a higher risk of hypertension, for example, cancer chemotherapy. Carboplatin, Cisplatin, and Oxaliplatin are examples of anti-cancer agents with marked pro-hypertensive effects. They were hypothesized to decrease nitric oxide bioavailability and induce endothelial dysfunction and renal injury[11]. Cardiovascular monitoring is necessary for cancer patients undergoing chemotherapy, including comprehensive blood pressure measurements[12].

Hypertensive emergencies, which included in hypertensive crisis, have some risk factors, such as female, older adults, and cardiac, renal, and cerebral comorbidities[13,14]. In early onset hypertension (onset at age ≤ 55 years), previous study showed that there was increased risk for cardiovascular mortality and end-organ damage compared to late-onset hypertension[15,16]. The comorbid existence of hyperlipidemia increases the risk of hypertensive emergency[13,14]. In terms of habit risk factors, high intake of salted seafood, low intake of eggs and meat, alcohol consumption, smoking, and low physical activity were associated with a greater risk factor of hypertension incident[1,17].

The type of hypertensive organ damage determines the course of treatment in patients with a hypertensive emergency. Nicardipine is one of the drug choices for hypertensive emergency. Intravenous nicardipine is initially infused at a rate of 5 mg/h. The maximum rate of infusion is 30 mg/h. In a previous study, within 30 minutes of administration, 92% of patients treated with intravenous nicardipine or labetalol for a hypertensive emergency with renal dysfunction achieved the target systolic blood pressure. The target reduction of mean arterial pressure (MAP) is 20-25% in one hour[18].

Hypertensive emergencies are life-threatening conditions of very high BP degree, which associated with acute HMOD[13]. Immediate BP reduction to limit extension or promote regression of target organ damage is important in hypertensive emergencies management[13,19]. Because of the life-threatening risk, hypertensive emergencies require appropriate prevention strategies for those who have the risk factors.

CONCLUSION

In summary, this case of a 44-years-old woman initially showed hypertensive emergency with a sudden SCH. This patient also had clinical features of chronic kidney failure and hypertensive retinopathy. This report highlighted that SCH was related to microvascular damage that led to spontaneous rupture of conjunctival or episcleral blood vessels. The treatment of hypertensive emergency depends on the TOD intending to limit further hypertensive damage via controlled blood pressure reduction.

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