

**CASE REPORT**

## **Urgency or Emergency – A Report on Hypertensive Crisis with Severe Retinopathy**

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### **ABSTRACT**

Hypertensive crisis is a common condition encountered in primary care clinics. It may result from uncontrolled hypertension or a known cardiovascular risk disease but may also be the first occurrence of undiagnosed secondary hypertension. However, there is confusion on the classification of whether certain atypical presentations, particularly in young patients without acute symptoms and exact duration of symptoms, are to be considered as hypertensive urgency or emergency. Some abnormal signs, such as proteinuria or retinopathy, could be signs of an existing progression of underlying chronic disease rather than a manifestation of acute hypertensive crisis. Nonetheless, in any situation where the findings have occurred recently without prior follow-up, they should be treated as if they are signs of an acute hypertensive crisis. Bedside clues, such as concomitant anaemia and proteinuria, are valid evidence for the presence of end-stage renal disease (ESRD) causing the hypertensive crisis, even without the features of fluid overload or failure symptoms. We report the case of a young man presented with an acute hypertensive crisis with an isolated one-month history of blurred vision. Despite the initial dilemma, the case was treated as a hypertensive emergency due to the presence of retinopathy and overt proteinuria. The renal profile later confirmed that the patient had ESRD. This case proves that ESRD is still

possible even in a young patient without a long medical history or other supporting signs. Making the right decision on the first visit saved the patient's life.

## **INTRODUCTION**

Hypertensive crisis is one of the most important acute conditions commonly encountered in primary care (Kotruchin et al., 2022; Taylor, 2015). Its diagnosis is indeed simple and easy to make. However, clinical division into emergency or urgency is sometimes arbitrary and requires individual assessment by the clinician. One of the limitations of primary care is that not all centres can provide all urgent tests or assessment results as soon as possible (Waked et al., 2019). Although the usual bedside investigations sometimes support the diagnosis, they are contrary to the deciding factor for treatment. It becomes more challenging when symptoms are isolated and chronic, but the clinical features are suggestive of an acute condition.

In primary care, the issues of referral indication and shared tertiary care are among the important measures that must be decided at a patient's first visit (Benenson & Bradshaw, 2021). Both hypertensive urgency and emergency are manifested by an acute rise in blood pressure levels exceeding a systolic blood pressure of 180 mmHg or a diastolic blood pressure of 110 mmHg or both (Ministry of Health Malaysia, 2018). Both would share similar symptoms, such as headache, neck pain, blurring of vision, or lethargy. However, the main distinguishing features between the two are the absence of overt symptoms and the signs of acute target organ damage or complication (Nijskens et al., 2020). However, these overt symptoms are still ambiguous, and some patients may present a mixture of mild and overt symptoms (Kotruchin et al., 2022). One example is the changes in visual function detected by fundus examination that reveals hypertensive retinopathy. Although the guideline states that grade IV retinal changes favour emergency, such features can also

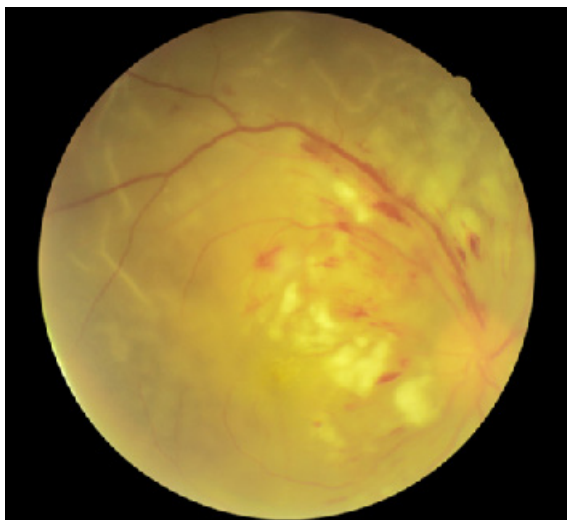
occur in chronic uncontrolled hypertension, where the decision of whether to admit the patient urgently or not is difficult (Ministry of Health Malaysia, 2018; Taylor, 2015).

Therefore, from the primary care perspective, a holistic rapid assessment is indeed important to obtain more information about the severity of the presentation and its causes (Benenson & Bradshaw, 2021; Waked et al., 2019). This includes the presence of other risk factors, comorbidities, compliance issues, previous readings, and the level of support system at home. However, it becomes more difficult for patients who have no prior follow-up or an underlying medical condition. It became even more unpredictable when detected in the young age group, which falls into the low-risk group. We report a challenging treatment decision in a 28-year-old man who presented with a hypertensive crisis and retinal changes with no other obvious symptoms or known medical problems.

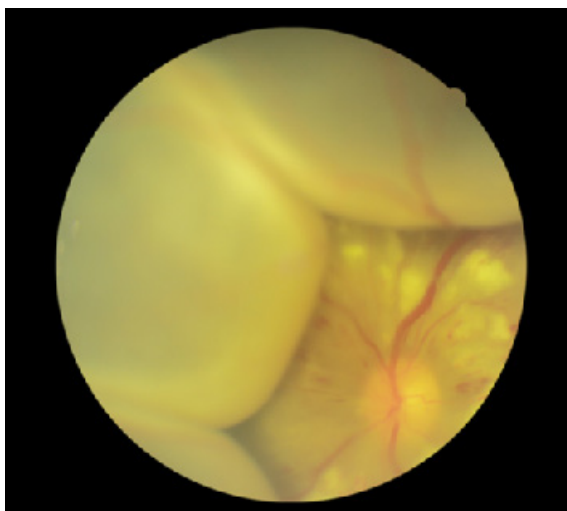
## **CASE PRESENTATION**

A 28-year-old man with no known medical illness presented with a progressive, painless blurring of vision in both eyes for a month. He had no other symptoms suggestive of target organ damage, such as headache, nausea, vomiting, neck pain, chest pain, shortness of breath, reduced effort tolerance, limb weakness, or numbness. There was also no history of a fall, trauma, or fever. He was still able to function as usual despite his condition. He had no similar medical history and no history of hospitalization. There was no significant family history of hypertension or renal disease, nor did family members die at a young age. He is a non-smoker with no history of taking illegal drugs or high-risk behaviour. On examination upon arrival, he was noted to be pale. His BMI is 22kg/m<sup>2</sup>. His blood pressure was 200/120 mmHg and remained so even after rest. Repeated readings before referral to a tertiary centre were also similar. His visual acuity in the right eye was only up to hand movement, and in the left eye was the

perception of light. His fundus findings of the right eye show papilledema with soft exudates and central retinal vein occlusion (Figure 1a) and the left eye shows a retinal detachment with papilledema, soft exudates, and central retinal vein occlusion (Figure 1b). Other system examinations were unremarkable.



**Figure 1a:** Fundus photograph of the patient's right eye showing papilledema with soft exudates and central retinal vein occlusion.



**Figure 1b:** Fundus photograph of the patient's left eye showing a retinal detachment with papilledema, soft exudates, and central retinal vein occlusion.

His bedside investigations at the clinic revealed normochromic normocytic anaemia (Hb 8.01 g/dL) concomitant to thrombocytopenia.

He also had proteinuria (urine protein 3+) and hematuria (urine haemoglobin 1+). His electrocardiography revealed no abnormal findings. However, bedside renal ultrasound managed to show shrunken bilateral kidneys. This case was then referred immediately to the emergency department as a hypertensive emergency and was administered with IV labetalol (20 mg), followed by another 20mg dose for blood pressure stabilization while in transport to the emergency department. Upon arrival at the tertiary, his blood pressure was already stabilized at 180/100 mmHg, and no other anti-hypertensive medication was administered to maintain the blood pressure within that range for the first few hours. He was then warded to the medical ward and noted to have an underlying end-stage renal disease with an eGFR of 2.3 mL/min/1.73 m<sup>2</sup>. He was then under nephrology follow-up until now.

## DISCUSSION

Hypertensive crises are common in primary care (Benenson & Bradshaw, 2021; Waked et al., 2019). They are classified as either hypertensive urgency or emergency, and they require appropriate further management that starts in the primary care clinic. However, the approach of management for the first group may involve the role of observation and initial management in primary care, whereas the other group requires urgent admission and intravenous administration of antihypertensive agents (Ministry of Health Malaysia, 2018; Taylor, 2015).

In this report, the dilemma is to determine the category of the case and the underlying causes. A hypertensive crisis is usually associated with patients having underlying uncontrolled comorbidities (Nijskens et al., 2020). However, the patient in this case has no known underlying medical illness. Although it is clearly stated that the presence of target organ damage is an indicator of a hypertensive emergency, the patient was presented with

only subacute symptoms of blurred vision for one month and no acute symptoms indicating sudden complications, such as acute renal failure, pulmonary oedema, acute coronary syndrome, or encephalopathy (Alley & Schick, 2020). Several studies and guidelines agree that hypertensive retinopathy is equivalent to a hypertensive emergency. Nevertheless, some doubt the relevance of this phenomenon, as it can also occur with non-acutely elevated blood pressure and can be an incidental finding in asymptomatic patients (Nijskens et al., 2020; Pranav Modi & Tasneem Arsiwalla, 2019). Although there were no other alarming signs apart from the fundoscopic retinal changes, this case was treated as an emergency as a precaution. Moreover, the fundoscopic changes were numerous and severe. The patient also had no previous record, as this was the first time, he had sought medical attention. A hypertensive crisis can be the first presentation of secondary hypertension (Siddiqi et al., 2023). Given the patient's young age, non-smoking status, and lack of an unhealthy lifestyle, we are convinced that this patient may have underlying secondary causes of hypertension rather than essential hypertension. The initial bedside tests, especially the urine analysis, suggest underlying renal disorders. At this stage, we are not sure whether the patient has acute renal injury or chronic kidney disease, as he has never been investigated before. However, the concomitant findings of anaemia provide a hidden clue to an underlying chronic kidney disease that may not have been previously recognized.

Studies have shown that renal disease can cause hypertension and vice versa (Sica, 2008). However, which issue comes first in this case is uncertain. Although screening for CKD begins with urine analysis for protein, the patient had no history suggestive of chronic disease progression. It is important to note that kidney disease can also initially present as a hypertensive crisis without any prior symptoms or signs (Alley & Schick,

2020). These mechanisms are often involved in nephrosclerosis, the most common progressive kidney disease leading to end-stage kidney disease (Alley & Schick, 2020; Sun et al., 2019).

The treatment of hypertensive retinopathy in primary care is always referral. The question arises as to whether an urgent or early appointment is required in non-diabetic patients when they come to the clinic. Clinical guidelines recommend emergency referral when a patient is present with sudden severe visual loss or symptoms or signs of acute retinal detachment (Modi & Arsiwalla, 2019; Chillo et al., 2019). The patient, in this case, had severe visual loss (vision up to eye movement) and severe retinal changes. However, we are unsure whether it was sudden, acute, or chronic. Nonetheless, from the primary care perspective, it is appropriate for hospital admission as soon as possible when they are present with severe conditions or alarming signs, regardless of the time of initial presentation. Hypertensive retinopathy is an indicator of the risk of an acute cardiovascular event, such as hemorrhagic stroke (Ramani et al., 2021).

## **CONCLUSION**

Hypertension crisis management aims to reduce blood pressure appropriately within a reasonable time. Regardless of whether it is a hypertensive urgency or emergency, the initiation of hypertensive crisis management should not be delayed. If confusion persists, referral for admission is a good decision by the primary care team, which is vital in saving the patient's life. Continuous education for the public should be implemented to increase their awareness of the early symptoms of hypertension. They should be advised to seek medical attention immediately whenever they feel any abnormal symptoms, whether they are mild or severe. Furthermore, the primary care clinic implementation of the no-wrong-door policy is indeed helpful in accepting any

level of cases at the community level at the earliest possible time.

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