2020 Vision? A case of malignant hypertension

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DESCRIPTION

A 48-year-old man with no medical history presented to the emergency department with reduced visual acuity over the preceding 4 weeks. He denied headaches, diplopia, dyspnoea or chest pain. Malignant range hypertension was noted with an initial reading of 249/165 mm Hg (mean arterial pressure (MAP) 193 mm Hg), which persisted on repeat measurements.

Cardiorespiratory and neurological examination were unremarkable except for reduced visual acuity (6/60 in the left eye and 6/60 in the right eye using Snellen chart). Subsequent funduscopy demonstrated grade IV hypertensive retinopathy which was confirmed on retinal photography, [figure 1](#). Stage IV hypertensive retinopathy is defined (Keith Wagener Barker classification) by the presence of papilloedema in addition to the features of stage III hypertensive retinopathy namely, intraretinal 'flame' and 'blot' haemorrhages, arteriolar narrowing and cotton wool spots (infarcts due to arteriolar disease). Funduscopy also found an increased light reflex (silver wiring) which likely represents concentric lamellar thickening from chronic hypertension.

An arterial line was placed, and intravenous labetalol was commenced. In keeping with European Society of Cardiology (ESC) 2018 arterial hypertension guidelines and up-to-date recommendations on hypertensive emergency, we targeted a reduction in MAP of 10%–20% in the first hour and a further 10% over the following 24 hours.¹ A controlled reduction in blood pressure (BP) was planned as there was no indication to rapidly reduce his BP (aortic dissection, intracranial haemorrhage, acute heart failure, acute coronary event, encephalopathy) and to avoid cerebral watershed infarcts. BP improved to 150–165/90–100 mm Hg on intravenous labetalol after 72 hours, and he was transitioned to oral anti-hypertensives. Ultimately, BP on discharge was 128/95 mm Hg.

Initial investigations revealed non-proteinuric moderate renal impairment (estimated glomerular filtration rate (eGFR) 57 mL/min/1.73 m²) and an ECG without evidence of left ventricular hypertrophy or ischaemia. A CT brain scan found deep and periventricular white matter microvascular disease and old infarcts in both corona radiata.

Blood testing for renin aldosterone ratio, lipid profile, HbA1C, urine for protein creatinine ratio, transthoracic echocardiogram (TTE), MRI of renal arteries and urine collection for urinary catecholamines. All were within normal limits except for moderate left ventricular hypertrophy on TTE. Visual acuity improved throughout his hospital stay, and he was discharged 12 days later with advice on lifestyle changes and an anti-hypertensive regime of

Figure 1 Grade IV hypertensive retinopathy on presentation to the emergency department.

olmesartan 40 mg, verapamil SR 360 mg, doxazosin XL 16 mg, spironolactone 50 mg and hydralazine 25 mg four times a day. A 24 hours ambulatory BP monitor found an average BP of 132/93 mm Hg 3 months after discharge.

Hypertensive retinopathy has a prevalence of 3%–14% in non-diabetic adults aged ≥40 years with focal arteriolar narrowing (7%) and arteriovenous nicking (12%) being the most common finding and cotton wool spots being uncommon (0.3%).^{2,3} The presence of hypertensive retinopathy correlates with an increased risk of ischaemic stroke (adjusted relative risk 2.58, 95% CI (1.59–4.2)) and predicts long-term risk of stroke independent of BP control.^{4,5} Moreover, an adjusted analysis found retinopathy to predict a doubling of coronary artery disease events irrespective of BP control.⁶ Similarly, retinopathy was found to be an independent

Patient's perspective

I never considered that high blood pressure could be the cause of my deteriorating vision. I also thought that one would feel unwell if they had very high blood pressure which was not the case for me.

Learning points

- ▶ Funduscopy is a fundamental part of assessing hypertensive patients for end-organ damage and offers a unique opportunity to visualise the microvasculature affected by hypertension
- ▶ The presence of hypertensive retinopathy can help risk-stratify a patient when assessing future risk of stroke, coronary artery disease and heart failure, even if hypertension is well controlled
- ▶ On admission, patients need a clearly documented plan as to how the patient's blood pressure will be managed to avoid complications due to rapid blood pressure correction.

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predictor of congestive heart failure (RR 1.96, 95% CI (1.51–2.54)).⁷ These findings in addition to the ESC recommendation of funduscopy for all patients with grade II or III hypertension (all with diabetes) support funduscopy as an essential component in assessing a patient with hypertension.

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