



## Case report

# Transient myopic shift due to ciliary body detachment as the sole ocular manifestation of hypertensive emergency – A case report



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## ABSTRACT

**Purpose:** Hypertensive emergency usually presents to ophthalmologists in the form of hypertensive retinopathy. We present a case of hypertensive emergency that presented as bilateral transient myopic shift due to ciliary body detachment in the absence of any retinal pathology. The purpose of this paper is to showcase another ocular manifestation of hypertensive emergency.

**Observations:** A 35 year-old female with a blood pressure of 192/114 mmHg presented to the emergency department with headache and acute onset blurry vision. Computed Tomography (CT) of the head, and lumbar puncture were within normal limits. Visual acuity was counting fingers in the right eye and 6/90 in the left eye, both of which improved to 6/9 with  $-5.00$  diopters spherical correction in the right eye, and  $-4.75$  diopters correction in the left eye. Intraocular pressures were normal. Anterior chambers were shallow, and there were no retinal changes on dilated fundus examination. Enhanced-depth optical coherence tomography (EDI-OCT) showed bilateral increased choroidal thickness and ultrasound biomicroscopy (UBM) showed  $360^\circ$  ciliary body detachment with angle closure. With improved blood pressure control, her ciliary body detachment resolved and her refractive error returned to baseline.

**Conclusions: & Importance:** Hypertensive emergency may present with choroidal thickening with anterior ciliary body rotation and detachment. A review of medications is important, as this presentation has also been reported as a rare side effect of sulphonamide drugs. In the absence of retinopathy, UBM and EDI-OCT imaging should be considered in the acutely hypertensive patient presenting with myopic shift.

## 1. Introduction

Hypertensive emergency is a severe elevation of systemic blood pressure resulting in target end organ damage; a similar rise in blood pressure without end organ damage is termed hypertensive urgency.<sup>1</sup> Ocular manifestations of hypertensive emergency classically include hypertensive retinopathy and optic disc edema. We present a case of transient bilateral myopic shift secondary to ciliary body detachment in the setting of hypertensive emergency without retinopathy or other end organ damage.

## 2. Case report

A 35 year old female was referred to the ophthalmology department for urgent assessment of acute change in visual acuity in the setting of hypertensive emergency (blood pressure 192/114). Her uncorrected

visual acuity was count fingers in the right eye and 6/90 in the left eye. Both eyes improved to 6/9 with  $-5.00$  diopters spherical correction in the right eye, and  $-4.75$  diopters in the left eye. Her baseline refractive error was  $-1.50$  diopters bilaterally. Intraocular pressures were 15 mmHg in the right eye, and 16 mmHg in the left eye. Visual fields to confrontation and ocular motility were normal. Slit lamp examination revealed shallow but quiet anterior chambers bilaterally. Dilated fundus examination showed no evidence of acute hypertensive changes; specifically, there was no optic disc edema, cotton wool spots, intraretinal haemorrhages, dilatation or tortuosity of the retinal vasculature, or subretinal fluid (Fig. 1). Enhanced depth imaging optical coherence tomography (EDI-OCT) showed bilateral increased choroidal thickness (Fig. 2). Ultrasound biomicroscopy showed  $360^\circ$  of bilateral ciliary body detachment and angle closure (Fig. 3). Both her symptoms and the ciliary detachment resolved spontaneously four days after onset without ophthalmic intervention; she was treated acutely with

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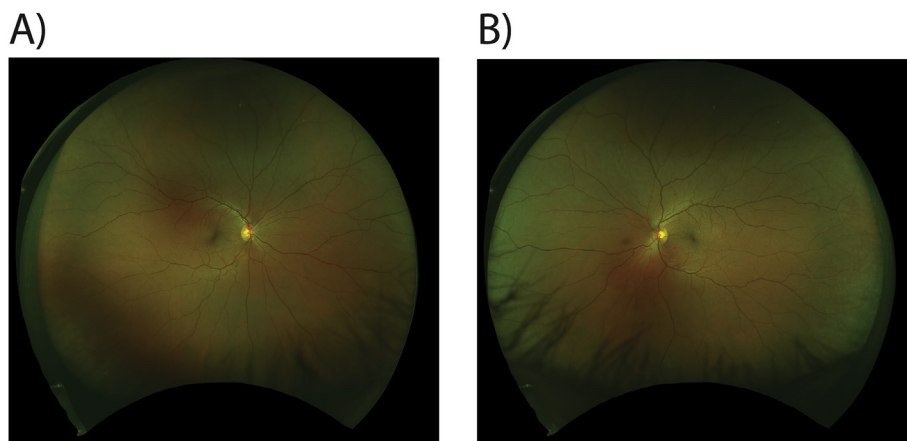


Fig. 1. Pseudocolour Optos images of the right (A) and left (B) retinas demonstrating normal discs, maculae, and vessels. There is no evidence of acute hypertensive retinopathy in either eye.

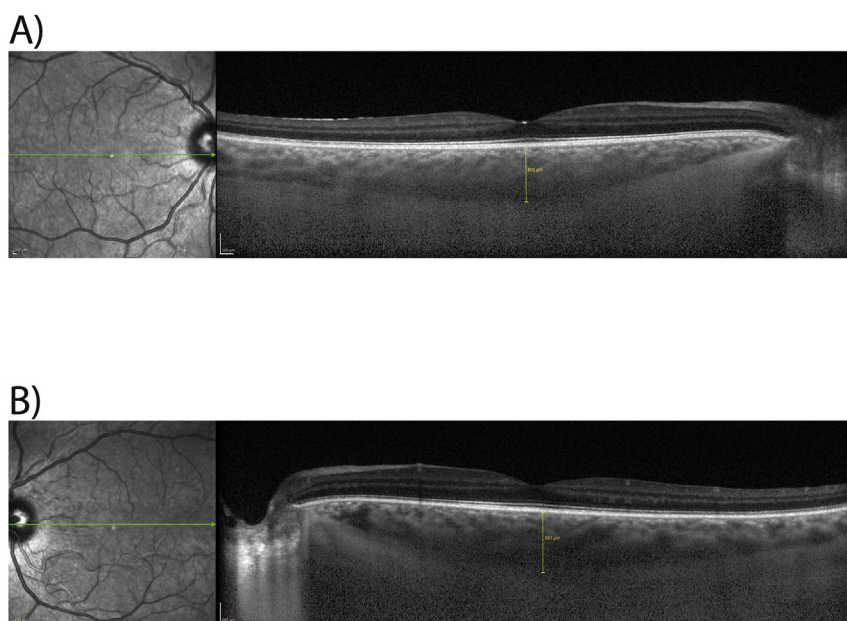


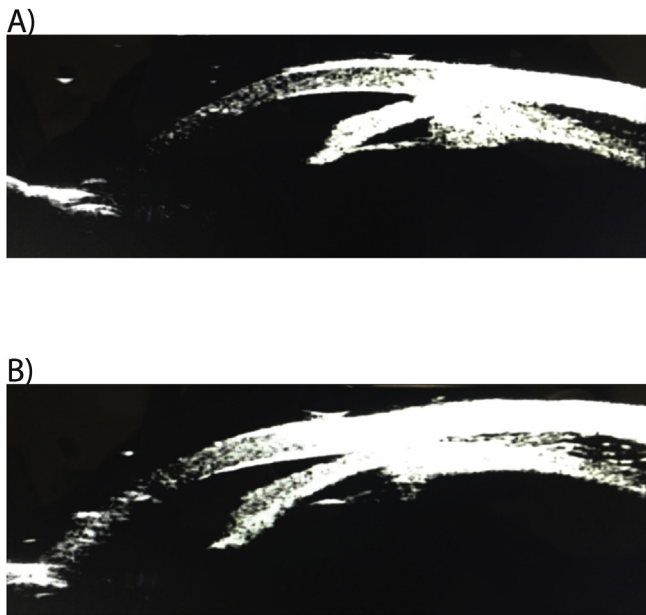
Fig. 2. Enhanced depth imaging optic coherence tomography (EDI-OCT) of the right (A) and left (B) eyes demonstrating a thickened choroid.

intravenous labetalol in the emergency department and instructed to continue her perindopril/indapamide (Coversyl Plus), which normalized her blood pressure to 134/92. Her refraction also returned to baseline.

Two weeks prior to presentation, she had presented to the emergency department for knee pain and incidentally had a blood pressure of 210/130. Basic bloodwork was within normal limits and she was started on Coversyl Plus. Over the course of the following week, she returned frequently to the emergency department for ongoing headache and nausea. CT head and lumbar puncture were within normal limits. She was admitted briefly to the neurology service for intracranial hypotension secondary to lumbar puncture. A blood patch and occipital nerve block relieved her headache symptoms. Investigations showed negative urine metanephrines and normal levels of renin and aldosterone. She completed an outpatient 24-h blood pressure monitoring test after discharge. In a follow-up appointment with her primary care physician, she was found to have a blood pressure of 189/158. Her visual symptoms started two days after this appointment.

### 3. Discussion

We report an interesting case of transient myopic shift secondary to ciliary body detachment. This was our patient's only ocular presentation of her hypertension as she did not have retinopathy. Transient myopia has been previously reported as a rare side effect of sulphonamide drugs.<sup>2–5</sup> Our patient was taking Coversyl Plus for her hypertension, which contains both perindopril and indapamide. Indapamide is a sulphonamide-derived, thiazide-like diuretic which has been indicated in the treatment of hypertension. There have been case reports of indapamide causing transient induced myopia, supraciliary effusion, and narrowing of the iridocorneal angle.<sup>4</sup> Similar ocular effects have been reported in many different sulpha-containing medications, and are best studied in topiramate.<sup>5</sup> While dramatic changes are rare, recent studies suggest that topiramate may have a small effect on therefractive error, anterior chamber depth, and choroidal thickness when measured by OCT<sup>6–8</sup>. The pathophysiology of these effects are still subject to debate, and current theories include prostaglandin-mediated response and carbonic anhydrase inhibition<sup>5,8</sup>. However, her medication use does not fully explain her presentation as she continued to use Coversyl Plus for hypertension control during her ocular symptoms, and



**Fig. 3.** Ultrasound biomicroscopy (UBM) of the right (A) and left (B) angle demonstrating anterior ciliary body rotation and detachment. The angle is closed but our patient's intraocular pressure remained within normal limits.

after they resolved, without recurrence of her myopic shift.

Acute angle closure glaucoma has been previously described as an initial presentation of hypertensive emergency<sup>9</sup> and is thought to be secondary to endothelial injury allowing leakage of fluid from the choroidal vessels. This leakage can result in a myopic shift from choroidal effusion and anterior rotation of the ciliary body, as well as sub-retinal fluid accumulation. This mechanism may help explain the thickened choroid seen on EDI-OCT of our patient and the ciliary body detachment. In contrast with the case reported in the literature, our patient did not have any sign of hypertensive retinopathy. Her unique presentation is likely a result of a combination of both indapamide use and choroidal leakage.

#### 4. Conclusions

We present an interesting case of transient choroidal thickening with anterior ciliary body rotation and detachment as the only end organ presentation of hypertensive emergency. This is an ocular

presentation of hypertensive emergency that may occur in the absence of acute hypertensive retinopathy. A review of medications is important as this may occur as a rare side effect of sulphonamide drugs. Enhanced depth imaging OCT and UBM should also be considered in the evaluation of a patient with myopic shift and acute hypertension.

#### 5. Patient consent

The patient verbally consented to the publication of this case. This report does not contain any information that could lead to the identification of the patient.

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#### Conflicts of interest

The authors have no financial disclosures.

#### Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

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