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Bilateral simultaneous central serous chorioretinopathy in a teenage girl with systemic arterial hypertension

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Abstract

Purpose—We present a case of bilateral simultaneous central serous chorioretinopathy (CSCR) in a teenage girl with a history of systemic arterial hypertension.

Methods—A 19 year old Caucasian female, with a history of systemic arterial hypertension, presented with gradual decrease in her central vision for 1 month. She was diagnosed with bilateral simultaneous CSCR, based on the findings of spectral domain optical coherence tomography (SD-OCT), indocyanine green angiography (ICG), fundus auto-fluorescence, fluorescein angiography and color fundus photographs, which are described.

Results: Blood pressure was 134/95 mmHg at presentation—Systemic evaluation failed to reveal a cause for the high blood pressure, and included a panel of blood tests, which were all normal. Her best-corrected visual acuity was 20/30 OD and 20/25 OS. Dilated fundus examination showed normal optic discs and retinal vasculature, with no evidence of hypertensive retinopathy. However, shallow retinal fluid associated with pigmentary changes was noted in the center of both maculae. OCT and ICG findings were consistent with the diagnosis of bilateral CSCR.

Conclusion—CSCR can manifest in patients with demographics outside the range of those previously reported. This is the first report of CSCR occurring in a teenage girl, with a history of systemic arterial hypertension. It is important to consider this disease in any patient who has a clinically compatible presentation.

Keywords

Bilateral central serous chorioretinopathy; retinal pigment epithelium (RPE); optical coherence tomography (OCT); indocyanine green angiography (ICG); hypertension

Introduction

Central serous chorioretinopathy (CSCR) is characterized by accumulation of fluid in the subretinal space resulting in a detachment of the neurosensory retina or the retinal pigment epithelium (RPE).

CSCR is usually a benign self-limiting disease, but may take on a more chronic and recurrent form with permanent detrimental effect on vision [1]. Men are 6 times more likely than women to be afflicted with CSCR. The mean age at presentation is 41 years [2–4]. The youngest case of CSCR has been reported by Fine et al in a 7 year old girl [5]. The disease is usually unilateral; bilateral involvement can occur in up to 40%, although it is less

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Conflict of Interest

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commonly the case at presentation [2, 6]. The etiology of the disease remains unclear, but an association exists in people who are under stress, prior use of corticosteroids and type-A personalities [7]. Prior studies have shown that patients with CSCR have elevated levels of both circulating adrenaline and cortisol [7–9]. This is consistent with the association with high stress levels, anxiety, and increased incidence of high blood pressure.

Case report

A 19 year old Caucasian female presented with a gradual decrease in her central vision in both eyes for 1 month. Her medical history included high blood pressure, which was treated previously with propranolol. A systemic evaluation failed to reveal a cause for the high blood pressure. The propranolol was discontinued 4 months prior to her current presentation, since the blood pressure was controlled with an exercise regimen.

At presentation, patient's blood pressure was 134/95 mmHg. Her best-corrected visual acuity (BCVA) was 20/30 OD and 20/25 OS. Intraocular pressures were 15 mmHg and 17 mmHg in OD and OS respectively. Dilated fundus examination showed normal optic discs without optic pits and the retinal vasculature looked normal, without any evidence of hypertensive retinopathy. In the center of both maculae however, there was shallow retinal fluid associated with pigmentary changes (Figure 1). The retinal periphery was also normal. A fluorescein angiogram (FA) was performed, which did not reveal the typical RPE "leaks" characteristically seen in CSCR. However, pinpoint areas of leakage were seen in both maculae (Figure 2). Indocyanine green angiography (ICG) showed multiple bright areas, suggesting hyper-permeability in the posterior pole of both eyes (Figure 3). Macular OCT scan was performed using the Cirrus SD-OCT system (Carl Zeiss Meditec, Dublin, CA), which includes a high definition one line scan, which consists of 4096 A-scans. The enhanced depth imaging (EDI) feature was not available at the time the patient was seen. The OCT images revealed elevation of the neurosensory retina in both eyes, and hyper-reflective collections in the outer retina corresponding to shed photoreceptor outer segments. The choroid appeared thickened in both eyes, which was consistent with CSCR (Figure 4). Fundus auto-fluorescence revealed no significant abnormalities other than minor hyper auto-fluorescent flecks in the central area of the subretinal fluid, which was consistent with the shed outer segments of photoreceptors, while there was absence of the normal hypo autofluorescence seen normally in the macular region, due the subretinal fluid accumulation (figure 5). Systemic work up including a panel of blood tests including metabolic panel (sodium, potassium, calcium, chloride, bicarbonate, glucose, blood urea nitrogen, and creatinine), complete blood count, and serum protein electrophoresis were within the normal range, while the pregnancy test was negative.

Discussion

We have reported a case of bilateral simultaneous CSCR, occurring in a teenage girl with previous history of systemic arterial hypertension. Dilated fundus examination, OCT, and ICG features were consistent with the diagnosis of CSCR, as described above. Although an acute hypertensive crisis can result in a serous retinal detachment, however, this would usually be associated with features of hypertensive retinopathy, which were absent in our patient. In addition, her blood pressure was not in the high range generally known to induce serous retinal detachment.

It is interesting that the patient was previously treated for her high blood pressure with propranolol, as recent studies have reported propranolol to be beneficial in patients with CSCR [10]. As patients with CSCR have high levels circulating catecholamines, propranolol may be effective through its action on beta-blockers. Our patient had discontinued

propranolol 4 months prior to her current presentation, which may have led to an increase in the action of circulating catecholamines on beta-receptors leading to CSCR. However, a definitive comment cannot be made in this regard, as the occurrence of CSCR in a teenage girl with a history of systemic arterial hypertension, can be purely coincidental.

Conclusion

CSCR can manifest in patients with demographics outside the range of those previously reported. It is important to consider this disease in any patient who has a clinically compatible presentation.. Further studies in patients with CSCR may help to determine the association of CSCR and the use of systemic medications, as well as with high circulating catecholamine levels.

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Fig 1. Color Fundus Photographs

Color fundus photographs from both eyes showing shallow retinal fluid and pigmentary changes in both maculae (black arrows). The retinal periphery looks normal. Notice the absence of changes associated with hypertensive retinopathy.

Fig 2. Fluorescein Angiography Images

Late fluorescein angiography images from both eyes revealing pinpoint areas of hyperfluorescence in both maculae (black arrows). Notice the absence of typical signs of fluorescein leakage, normally seen in central serous chorioretinopathy.

Fig 3. Indocyanine Green Angiography Images

Late indocyanine green (ICG) angiography images from both eyes, revealing multiple areas of hyper-fluorescence (black arrows), suggestive of hyper-permeability.

Fig 4. Optical Coherence Tomography Images

Macular optical coherence tomography (OCT) scans from both eyes showing an elevation of the neurosensory retina in both eyes (asterisk). Notice the accumulation of the shed outer segments of the photoreceptors, visible as hyper-reflective deposits in the rim of the elevated retina (white arrows).

Fig 5. Fundus Auto-fluorescence Images

Fundus auto-fluorescence images from both eyes showing hyper auto-fluorescent flecks in both eyes reflecting shed photoreceptors outer segments (black arrows). Notice the absence of the normal hypo auto-fluorescence in macular region due the subretinal fluid accumulation.