Chung Shan Medical Journal 2021; 32:187-190

Case Report

Bilateral Central Serous Chorioretinopathy in a Middle-Aged Woman with IgA Nephropathy

Chia-Ju Lu[1,2,3], Yu-Chien Hung[4], Chien-Chih Chou[4,5], Shang-Feng Tsai[6,7,8], Wen-Hong Ho[9,10], Amy Shih-I Pai[11,12], Min-Yen Hsu[9,10*]

[1] *Department of Otolaryngology, Tung's Taichung MetroHarbor Hospital, Taichung, Taiwan*
[2] *Dr Mainz Clinic, Taiwan*
[3] *Realbio Care Aesthetic Clinic, Taipei, Taiwan*
[4] *Department of Ophthalmology, Taichung Veterans General Hospital, Taichung, Taiwan*
[5] *Institute of Clinical Medicine, College of Medicine, National Taiwan University, Taipei, Taiwan*
[6] *Division of Nephrology, Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan*
[7] *Department of Life Science, Tunghai University, Taichung, Taiwan*
[8] *Department of Medicine, National Yang-Ming University, Taipei, Taiwan*
[9] *Department of Ophthalmology, Chung Shan Medical University Hospital*
[10] *School of Medicine, Chung Shan Medical University*
[11] *Department of Ophthalmology, Macquarie University Hospital, Australia*
[12] *Sydney University, Australia*

We report a case of bilateral central serous chorioretinopathy (CSCR) in a middle-aged woman with IgA nephropathy which resolved after hemodialysis. A 43-year-old Chinese woman with a history of IgA nephropathy was diagnosed with bilateral CSCR after sudden reduction in central visual acuity based on spectral domain optical coherence tomography (SD-OCT), fundus fluorescein angiography (FFA), indocyanine green angiography (ICG), and color fundus photographs. This patient had suffered from IgA nephropathy and end stage renal disease since September 2009. Before being diagnosed with bilateral CSCR, she had received steroid therapy with oral prednisolone 0.2 mg/kg/day for years. Bilateral CSCR was found during examination at the ophthalmology clinic due to presentation of blurred vision on Aug 22, 2017. Bilateral CSCR mildly improved after administration of eplerenone (Inspra). One month after onset of bilateral CSCR, she was hospitalized and began receiving hemodialysis due to acute uremic symptoms. Bilateral CSCR resolved after hemodialysis for 14 days. Bilateral CSCR may improve rapidly after hemodialysis, such as in this case of a middle–aged woman with end stage renal disease.

Keywords: central serous chorioretinopathy; IgA nephropathy; hemodialysis

1. Introduction

Central serous chorioretinopathy (CSCR) is typically characterized by an area of well-circumscribed and localized serous detachment at the posterior pole[1]. Risk factors for CSCR include elevated corticosteroid levels, due to endogenous or exogenous sources, type A personality, pregnancy, major operation, and uncontrolled hypertension[2]. Hydrostatic pressure,

* Corresponding Author: Min-Yen Hsu
Address: No. 110, Sec. 1, Jianguo N. Rd., Taichung City, 40201, Taiwan
Tel: +886-4-24739595 ext. 34511
E-mail: my.scott.hsu@gmail.com

which directly causes arterial filling delay, congestion of the choroidal veins, and thickening of the choroid, are significant contributors to CSCR[3]. Chronic CSCR may cause irreversible loss of vision due to prolonged photoreceptor damage. A chain reaction involving increased hypercoagulability and platelet aggregation has been postulated in association with increased plasminogen activator inhibitor 1 (PAI-1)[4]. Hemodialysis may help to resolve CSCR as it decreases serum levels of PAI-1 and regulates vascular hydrostatic pressure. However, no studies have been published on the relationship between PAI-1 and CSCR. Here, we report a case of a 43-year-old female with steroid-induced CSCR, which improved after hemodialysis.

2. Case report

A 43-year-old woman with IgA nephropathy was regularly followed up in the nephrology clinic and treated with oral prednisolone 0.2mg/kg for years. She had a history of hypertension that was moderately controlled and uterine leiomyoma with adenomyosis, which had been excised via laparoscopic vaginal hysterectomy and right ovary cyst removal in July 2017 after massive menorrha gia. She presented to the ophthalmology clinic 39 days after the operation complaining of sudden onset of blurred central vision and conjunctival redness. Laboratory results showed azotemia with blood urea nitrogen (BUN) of 63 mg/dL and serum creatinine of 4.41 mg/dL.

Her best-corrected visual acuity (BCVA) was 0.8 in the right eye and 0.6 in the left eye. Intraocular pressure was normal. Bilateral CSCR was detected on spectral domain optical coherence tomography (SD-OCT) (Figure 1A,1B). Central fovea thickness was 562 micrometers in the right eye and 265 micrometers in the left eye. CSCR was more severe in her right eye than in her left eye. Fundus photography showed retinal changes typical of CSCR (Figure 1C,1D). We treated her with oral eplerenone (Inspra) 50

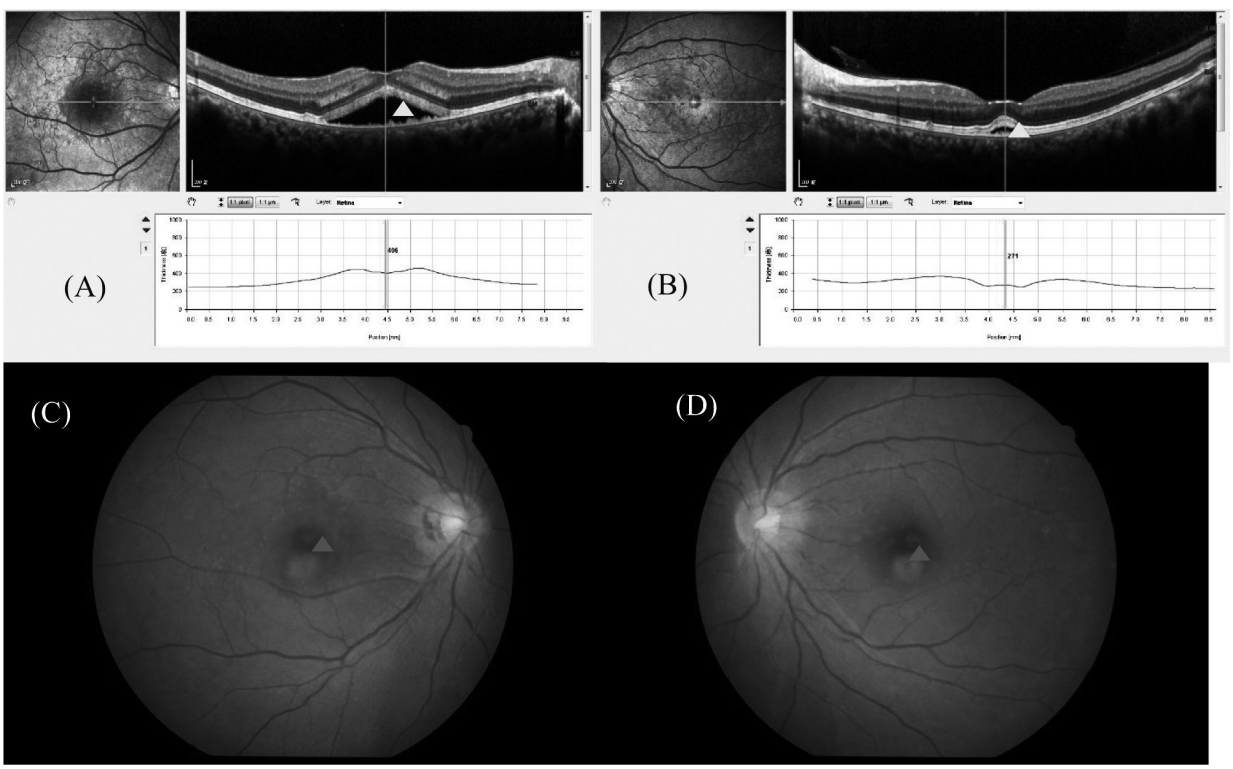

Figure. 1 (A) Initial SD-OCT of right eye shows moderate subretinal fluid accumulation (yellow arrowhead). (B) Initial SD-OCT of left eye shows mild subretinal fluid accumulation (yellow arrowhead). (C) Color fundus of right eye shows remarkable circular neurosensory detachment at the posterior pole (red arrowhead) (D) Color fundus of left eye shows mild circular neurosensory detachment at the posterior pole (red arrowhead).

mg once daily for 30 days after diagnosis. Fundus fluorescein angiography (FFA) and indocyanine green angiography (ICG) were performed and showed no leakage in the fundi or evidence of choroidal neovascularization (Figure 2A, 2B).

The patient developed acute uremic symptoms including change in consciousness, nausea, vomiting, and poor appetite 30 days after her initial ophthalmic presentation. Laboratory results showed azotemia with BUN of 171 mg/dL and serum creatinine of 12.32 mg/dL. To treat her end stage renal disease with uremic symptoms, she was admitted to the nephrology ward for hemodialysis three times per week in September 2017. CSCR initially persisted (Figure 3A, 3B). A continuous ambulatory peritoneal dialysis (CAPD) catheter was placed in October 2017. Fourteen days after commencing hemodialysis, bilateral CSCR symptoms subsided and visual acuity improved (Figure 3C, 3D). Moreover, BUN dropped to 82 mg/dL and creatinine dropped to 4.85 mg/dL. She continues to undergo regular hemodialysis three times per week.

3. Discussion

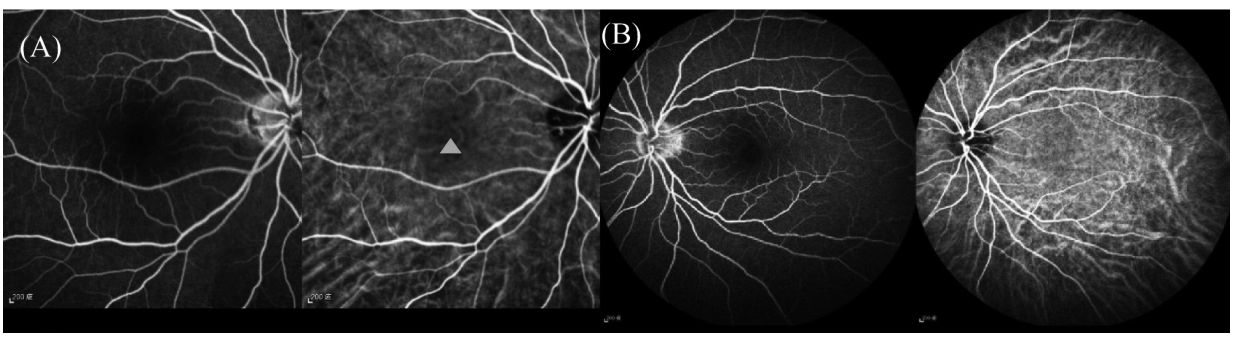

Figure. 2 (A) Initial FFA shows no obvious leakage in right eye. However, mild hyperpermeability changes were found on ICG (green arrowhead); (B) Initial FFA and ICG show no obvious leakage or abnormalities in left eye.

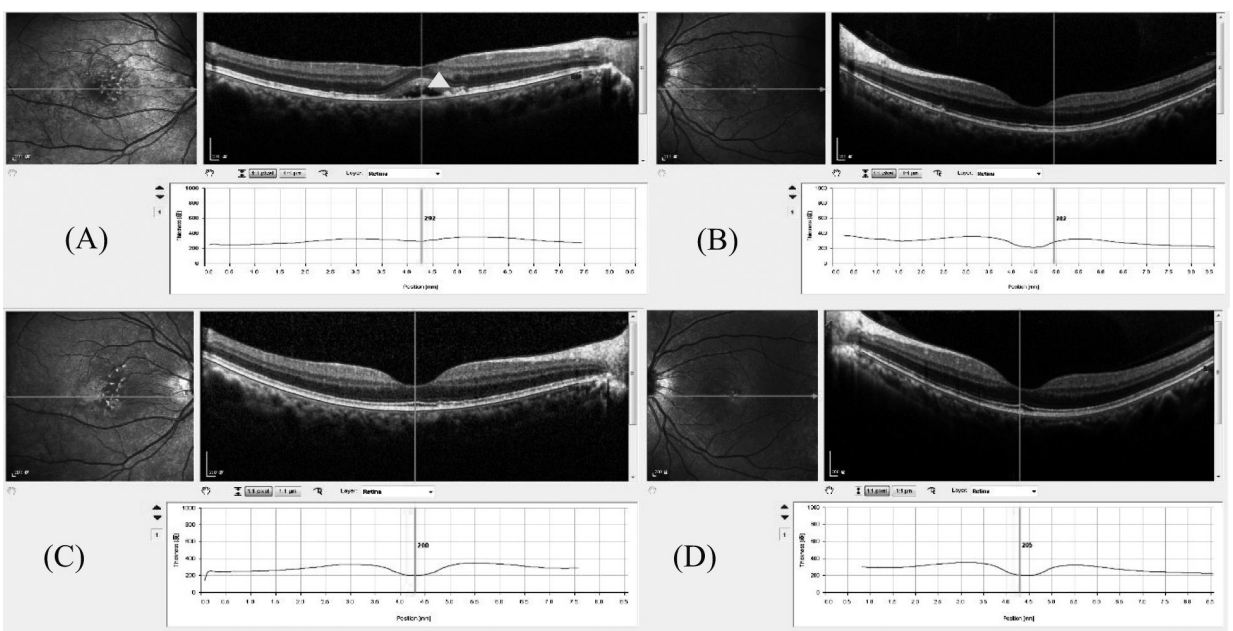

Figure. 3 (A) After first session of serial hemodialysis, OCT of right eye shows less subretinal fluid accumulation (red arrowhead). (B) After first session of serial hemodialysis, OCT of left eye shows no subretinal fluid accumulation. (C) After 6 sessions of serial hemodialysis over 14 days, OCT of right eye shows resolution of subretinal fluid accumulation. (D) After 6 sessions of serial hemodialysis over 14 days, OCT of left eye shows no subretinal fluid accumulation.

We demonstrate a case of acute bilateral CSCR, which improved with hemodialysis. CSCR was first described in soldiers and thought to be more prominent in males in their 20s to 50s. However, it can also occur in females especially when under stress or during pregnancy. Our case experienced massive bleeding from uterine leiomyoma and adenomyosis with severe anemia (Hb= 6.4 g/dL). She required major surgery, which led to added physical stress.

Steroid exposure, such as pulse therapy, is a major contributor to CSCR. Our case had undergone steroid pulse therapy for IgA nephropathy, which likely triggered her acute CSCR.

Under stressful conditions, cortisol levels and PAI-1, which is also hypothesized to trigger CSCR, are both high. Clopidogrel inactivates PAI-1 and may be used as a treatment for CSCR. Since our patient suffered from IgA nephropathy, renal clearance rate was severely reduced, which caused inflammatory factors such as PAI-1 to accumulate, leading to CSCR. Hemodialysis increases renal clearance rate and lowers PAI-1 level. In our case, hemodialysis resulted in improved CSCR.

There are no reported studies on the association between hemodialysis and bilateral CSCR. We have shown that acute CSCR in a patient with end stage IgA nephropathy improves with hemodialysis, most likely due to lowered serum PAI-1 levels. A limitation of our study is that we did not check PAI-1 levels. Further studies are needed to elucidate the relationship between PAI-1 level and disease progress.

4. Conclusion

Nephrologists should consider hemodialysis when CSCR develops in a patient with renal disease. Severe and chronic CSCR can lead to vision loss. Hemodialysis may minimize irreversible vision loss associated with chronic CSCR, especially in patients with coexisting renal disease.

References

1. Gass JDM. Idiopathic central serous chorioretinopathy. In: *Stereoscopic atlas of macular diseases: diagnosis and treatment*: 4th ed., vol. 1. St Louis: CV Mosby Inc.; 1997. p. 64-9.
2. Tsai DC, Chen SJ, Huang CC, Chou P, Chung CM, Hung PH, et al. Epidemiology of idiopathic central serous chorioretinopathy in Taiwan, 2001-2006: a population-based study. *PLoS One* 2013;8(6):e66858.
3. Imamura Y, Fujiwara T, Morgolis RON, Spaide RF. Enhanced depth imaging optical coherence tomography of the choroid in central serous chorioretinopathy. *Retina*, 29(2009), p1469-73.
4. Caccavale A, Romanazzi F, Imparato M, Negri A, Morano A, Ferentini F. Central serous chorioretinopathy: a pathogenetic model. *Clin Ophthalmol*. (5)2011, p239-43.
5. Irish AB. Metabolism. Plasminogen activator inhibitor-1 activity in chronic renal disease and dialysis. *Metabolism*. (1)1997. P36-40.
6. Shih-Yun Lee, Chia-Chen Tsai, Shih-Jen Chen. Oral clopidogrel for chronic central serous chorioretinopathy: A short-term preliminary study. *Taiwan Journal of Ophthalmology*, 3(2013), p14-19.