



# Central Serous Retinopathy in a Post COVID-19 Asymptomatic Healthcare Worker at a Tertiary Care Hospital: A Unique Case Report

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### Authors' contributions

This work was carried out in collaboration between both authors. Authors GPA and GPT analysed, interpreted patient data. Author PAG prepared and reviewed the final manuscript. Both authors read and approved the final manuscript.

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Case Report

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## ABSTRACT

**Aim:** Early detection and management of stress-related Central Serous Retinopathy caused due to COVID-19.

**Background:** CSR has been associated with stress and is usually self-resolving. COVID-19 is known to induce psychological stress and its effects are many, one of them may be CSR. The importance of understanding the psychological impact of the disease, its consequences, and the counseling of even asymptomatic patients to ensure stress reduction needs to be understood by the treating physician.

**Case Report and Discussion:** We report the first case of CSR associated with COVID-19 related stress in an asymptomatic health care worker and the follow-up and treatment plan for this case. It has been shown that unfavourable psychic factors influence endogenous hormonal secretion which in turn increases the levels of corticosteroids and catecholamines which have been found to induce CSR.

**Conclusion:** This study highlights the importance of understanding the psychological effect of the pandemic and recognising this and early treatment will reduce the ill effects of the stress induced by COVID-19.

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## 1. INTRODUCTION

Central Serous Chorioretinopathy is characterized by the accumulation of subretinal fluid at the macular region, causing serous detachment of the neurosensory retina and/or retinal pigment epithelium. It has been associated with type-A personality, elevated endogenous cortisol, and corticosteroid therapy in various forms [1]. It typically affects individuals in the age group of 20–50 years. Male preponderance is noted with an M:F ratio of 6:1. The main symptoms range from acute loss of vision to metamorphopsia and scotomas. Diagnosis of CSR usually begins with a standard examination of the retina, which shows central shallow serous retinal detachment; this is confirmed by optical coherence tomography (OCT), fluorescein and/or indocyanine green (ICG) angiography, and optical coherence tomography angiography (OCTA) [2]. Standard initial management of acute classic CSR is careful observation with modification of various risk factors. Acute CSR has typically an excellent prognosis and self-resolving natural course with almost full visual recovery to the premorbid level. Active intervention should be considered in cases of CSR with persisting macular subretinal fluid (SRF) or reduced visual acuity [3]. The visual prognosis is good in 90–95% of cases and visual acuity returns to normal within a few months once the fluid has resolved [4].

We report the case of a young male Health care worker who developed acute CSR post COVID positive status.

## 2. PRESENTATION OF CASE

A 30- year old male health care worker (HCW) presented to the outpatient department of Ophthalmology at Ramaiah Medical College Hospital with chief complaints of sudden diminution of vision in his right eye for 3 days. He gave a history of completing 7 days of COVID ward duty for 8 hours each day followed by 7 days of quarantine at a hotel. The patient complained of irregular sleep patterns and insomnia during this period of quarantine. On the 5th day of the quarantine, he underwent RT-PCR, a gold standard test for detecting SARS-CoV-2, which was reported as positive. The patient was advised isolation for 2 weeks. He was asymptomatic and was treated with T. Vit C 500mg BD and Vitamin supplements. After the

period of isolation, the patient developed a sudden onset of diminution of vision OD. Patient was known hypertensive for the last 3 years and was on regular anti-hypertensive medication.

On a detailed ophthalmologic examination, his presenting visual acuity OD was counting fingers 3 meters (with no improvement after refraction) and OS was 6/6 (Snellen's visual acuity chart), colour vision was normal in both eyes. Anterior segment examination of both eyes was unremarkable. Fundus examination OD revealed central elevation of the macula with CSR (thickness: 759um) which was confirmed on Spectral-Domain Optical Coherence Tomography (SD-OCT) (Fig.1). Patient did not have any changes of hypertensive retinopathy. The patient was reassured and advised anti-anxiety drugs and was reviewed after 1 week. His blood investigations revealed a slightly raised Serum LDH 231U/l (Normal:135-225) , CRP was 0.855 and plasma D-Dimer was 2.87ug/ml (0.0-0.5ug/ml). Serum ferritin was 148ng/ml(30-400) and the rest of the hematological parameters were within normal limits.

On the first follow-up at 1 week, his vision had improved to 6/24 OD and SD-OCT showed a reduction in serous retinopathy with a central macular thickness of 450um (Fig. 2). Patient was advised rest and a review after 2 months at which time his VA was 6/6 in both eyes.

## 3. DISCUSSION

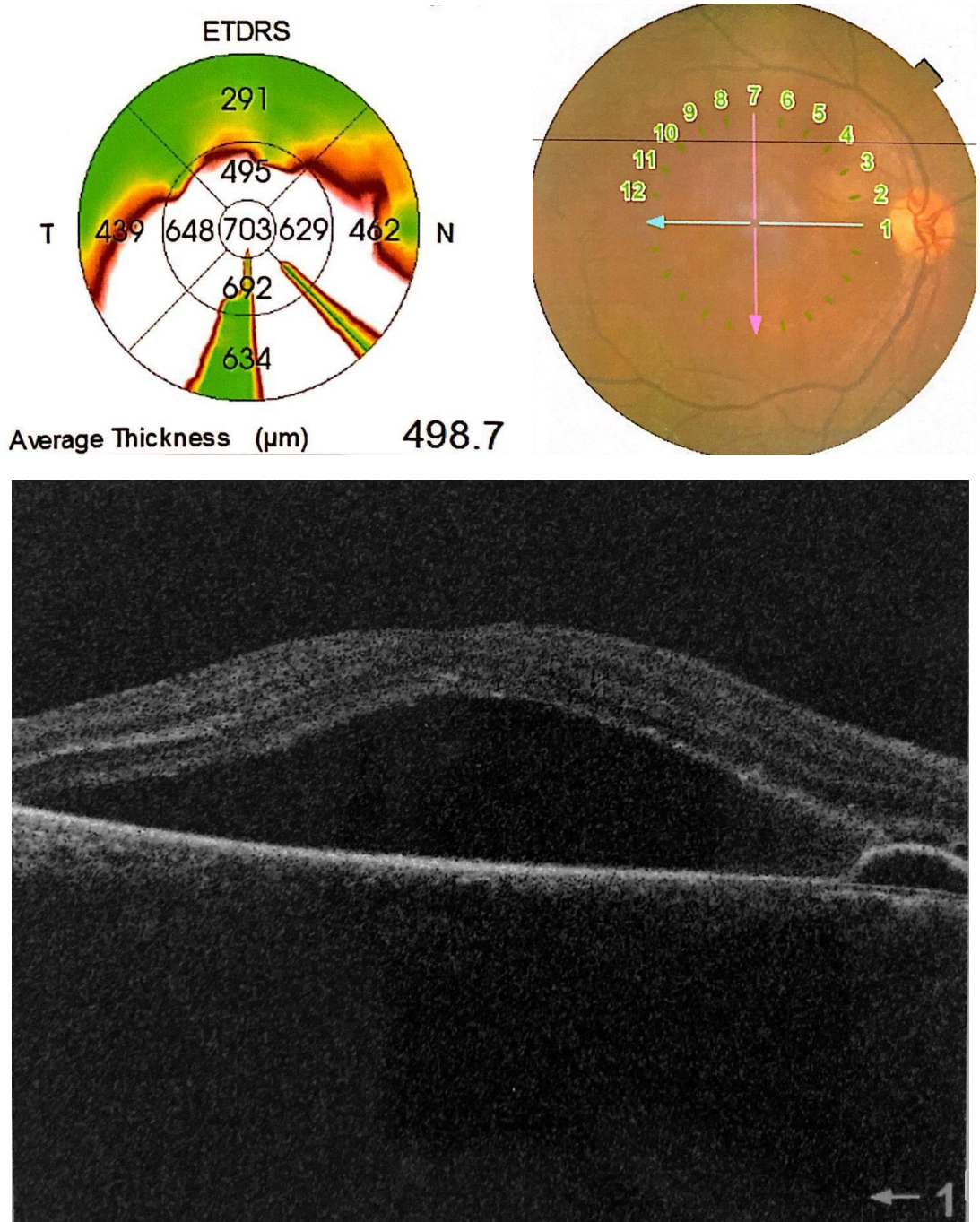
CSR is defined as serous retinal detachment with or without pigment epithelial detachment most commonly in the macular region [1]. Patients affected by CSR come with complaints of blurred vision (usually only in one eye), perceived as a dark spot or scotoma in the central visual field, associated with metamorphopsia. Other symptoms include micropsia (reduction of the apparent size of objects), mild dyschromatopsia (abnormal color perception), and reduced contrast sensitivity [2].

Standard initial management of acute classic CSR is careful observation with modification of various risk factors. Acute CSR has an excellent prognosis (90-95%) and self-resolving

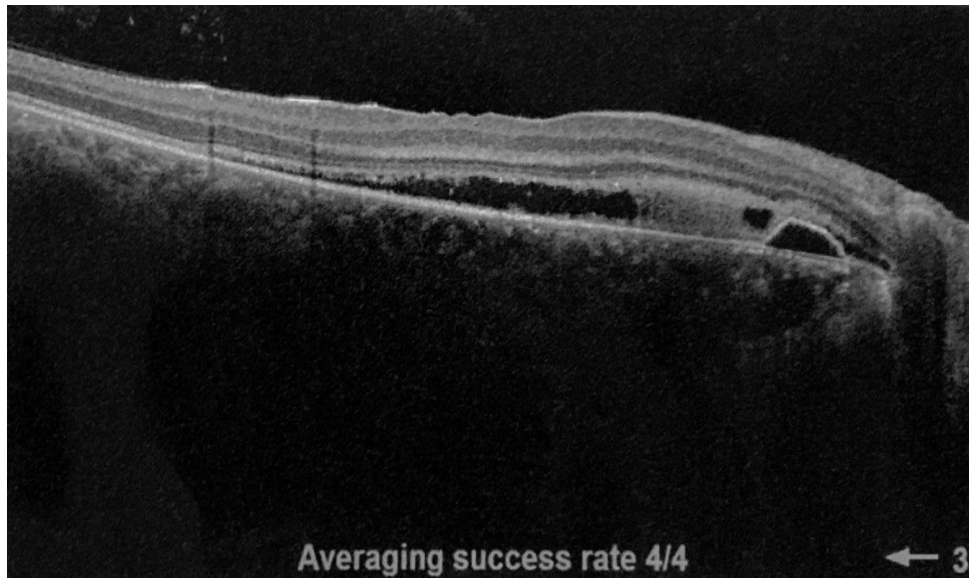
natural course with almost full visual recovery to the premorbid level. Active intervention should be considered in cases of CSR with persisting macular subretinal fluid (SRF) or reduced visual acuity [2].

CSR has been linked to many possible etiologies such as corticosteroid use, Cushing syndrome, obstructive sleep apnoea and type 'A' personality [3]. An association with hypertension and psychopharmacological drugs has been shown

to be linked to stress, adaptation to stress and emotional stress undergone by these individuals as a potential risk factor for developing CSR as shown in a study by Tittl et al [4-6].



**Fig. 1. SD-OCT image of the macula on first presentation, The sensory retina is elevated at the macular region with accumulation of subretinal fluid; On the right (towards optic disc), pigment epithelial detachment is noted**



**Fig. 2. SD-OCT image of the macula on first review after a week; There is significant reduction in the subretinal fluid**

The evidence for psychopathologic effect on CSR has been indirect. It has been shown that unfavourable psychic factors influence endogenous hormonal secretion which in turn increases the levels of corticosteroids and catecholamines which have been found to induce CSR [5,6].

In this report, though the patient was not a known case of type 'A' personality and had no hypertensive retinopathy, he developed CSR solely based on the stress he was subjected to during the COVID rotation and following it when he turned positive for COVID-19. This supports the above points.

Ocular manifestations in the COVID-19 pandemic have been reported to be membranous conjunctivitis, hemorrhagic conjunctivitis and excessive tearing [6]. Savastano et al showed a mild decrease in radial peripapillary capillary plexus perfusion density in patients with post COVID suggesting a possible retinal microvascular impairment [7]. We did not find any report of central serous retinopathy in a COVID -19 patient, which makes this case report unique.

COVID-19 pandemic has been reported to have a huge psychological impact. A survey done in China reported a 53.8% prevalence of moderate to severe psychological impact out of which 28.8% reported severe anxiety symptoms while 16.5% reported moderate to severe depressive symptoms [8]. Various studies have reported

psychological stress varying from 11 to 73.4% in HCW. Specific and uncontrolled fears related to infection, pervasive anxiety related to social isolation and frustration, boredom due to quarantine and disabling loneliness have all been identified as psychological effects of COVID-19 [9]. This would be even more true in Type 'A' personality individuals [10]. The psychological effect of this pandemic is silently affecting the mental health of patients.

#### **4. CONCLUSION**

In our case report an asymptomatic health care worker developed stress-induced CSR in his post-COVID recovery phase. Though CSR is a self-limiting disorder and vision usually improves with no consequences, this study highlights the importance of understanding the psychological effect of the pandemic, recognising this coupled with early treatment will reduce the ill effects of the stress induced by COVID-19.

#### **CONSENT**

Informed consent was taken from the patient for performing this case study and the study was conducted in accordance with the Declaration of Helsinki.

#### **ETHICAL APPROVAL**

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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