

*Case Report*

# Serous detachment of macula associated with chickenpox: A novel finding

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A young adult male presented with a diminution of vision in his left eye 10 days after chickenpox infection. His best corrected visual acuity was 6/6 in his right eye and finger counting at close to face in his left eye. Fundus examination revealed serous macular detachment in the left eye, which was confirmed on spectral-domain optical coherence tomography (SD-OCT). Fundus fluorescein angiography of the left eye revealed a hot disc with no leakage or pooling of dye. The patient was monitored on a 1-month follow-up. His vision showed significant improvement over time. At the three-month follow-up, his visual acuity of the left eye improved to 6/6 with fluid resolution, as confirmed by SD-OCT. Acute retinal necrosis (ARN) has been reported with uncomplicated chickenpox infections. Our patient presented with a milder form of inflammation resulting in serous detachment of the macula. We hereby present this case in view of chickenpox.

**Key words:** Chickenpox, Macula, Spectral-domain optical coherence tomography, Serous detachment**INTRODUCTION**

Varicella zoster virus (VZV) is associated with a broad spectrum of ocular pathologies, encompassing conjunctivitis, keratitis, anterior uveitis, scleritis, retinal vasculitis, chorioretinitis, acute retinal necrosis (ARN), optic neuritis, neuroretinitis, and both internal and external ophthalmoplegia.<sup>1,2</sup> These manifestations may occur unilaterally or bilaterally.<sup>3</sup> However, isolated involvement of the macula has not been previously reported in the literature.

**CASE REPORT**

A male patient in his early twenties presented with unilateral diminished vision in his left eye, manifesting 10 days following a systemic VZV infection (chickenpox). The systemic illness was characterized by febrile episodes and a vesicular rash distributed over the face, trunk, and upper extremities, for which he received evaluation by an internist. Polymerase chain reaction testing confirmed VZV deoxyribonucleic acid positivity. He was managed with oral Acyclovir 800 mg five times daily for 5 days, along with Paracetamol as required. Clinical records described a classical varicelliform eruption progressing from macules to papules, vesicles, pustules, and

eventual central umbilication with crusting over 12-14 hours. Cutaneous crusts were still evident upon ocular inspection.

In the right eye, best-corrected visual acuity (BCVA) was 6/6, whereas the left eye could only perceive finger counting close to the face. Anterior segment examination of both eyes was unremarkable. Fundoscopic evaluation revealed a serous macular detachment in the left eye, with no pathological findings in the right eye [Figure 1].

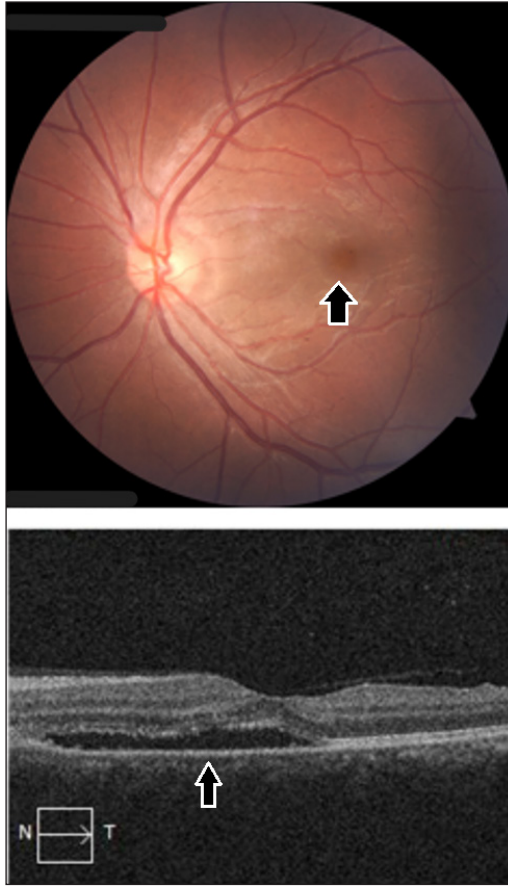
Serological evaluation using enzyme-linked immunosorbent assay confirmed the presence of VZV-specific IgM antibodies, indicating a recent infection. Spectral-domain optical coherence tomography (SD-OCT) corroborated the clinical findings, demonstrating sub-foveal fluid in the left eye [Figure 1, bottom], with central subfield thickness (CST) measuring 256  $\mu\text{m}$  in the right eye and 355  $\mu\text{m}$  in the left. Fluorescein angiography demonstrated optic disc hyperfluorescence in the left eye without leakage or pooling [Figure 2].

The initial antiviral regimen was maintained. Given the patient's immunocompetent status, conservative management with close clinical monitoring was adopted. The patient was advised to report any exacerbation of symptoms.

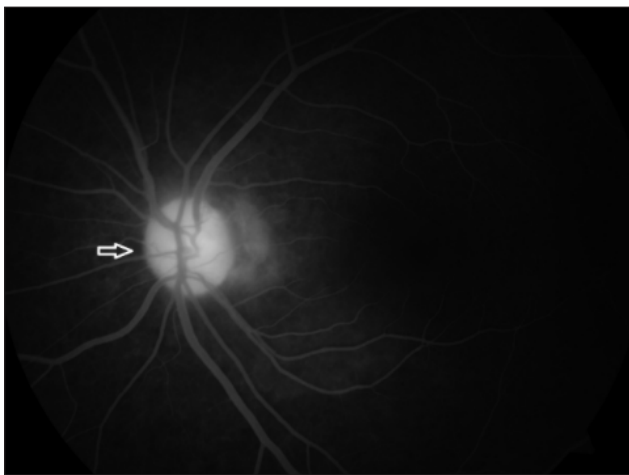
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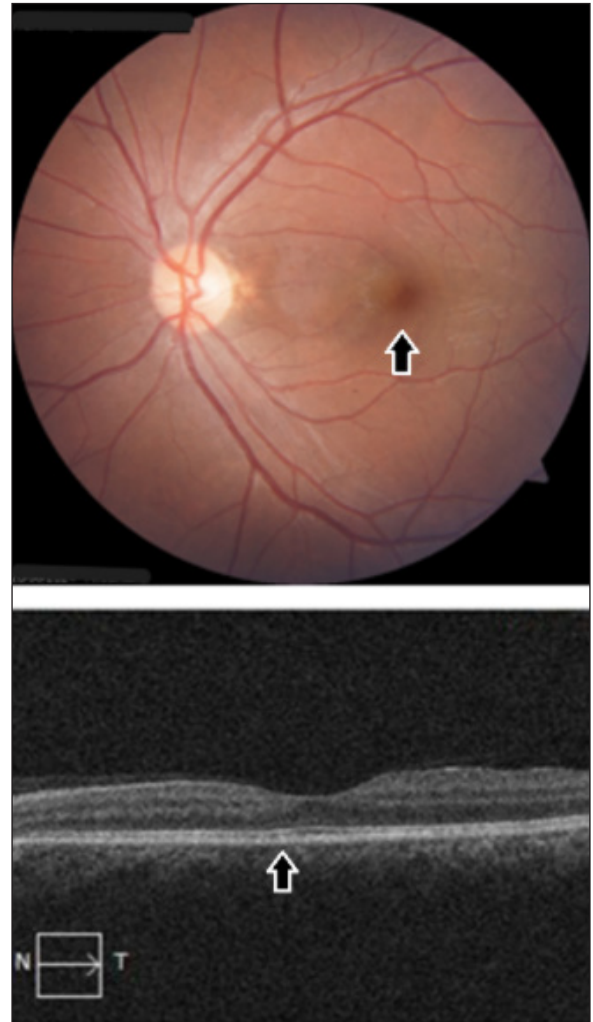
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**Figure 1:** Colour fundus photograph at presentation, arrow shows serous detachment of the macula in the left eye (Top). SD-OCT (horizontal scan) Arrow shows sub-retinal fluid accumulation. (Bottom). SD-OCT: Spectral-domain optical coherence tomography. N -> T: Nasal to Temporal retina.



**Figure 2:** Late-phase fluorescein angiogram shows optic disc hyperfluorescence without evidence of leakage (black arrow).



**Figure 3:** Coloured fundus photograph at 3 months follow-up, arrow shows resolution of serous detachment of the macula (Top). SD-OCT (horizontal scan) arrow shows normal foveal contour with the resolution of the subretinal fluid (Bottom). SD-OCT: Spectral-domain optical coherence tomography. N -> T: Nasal to Temporal retina

Subsequent follow-up assessments were conducted monthly. Progressive visual recovery was observed, culminating in a BCVA of 6/6 in the affected eye by the third month. Fundoscopic imaging showed resolution of the macular detachment [Figure 3, top], and SD-OCT demonstrated restoration of normal foveal architecture with CST reduced to 232  $\mu\text{m}$  [Figure 3, bottom].

## DISCUSSION

Retinal sequelae following primary VZV infection have been previously documented. Post-varicella ARN typically presents with attenuated severity relative to classical ARN, showing a more indolent progression of peripheral retinitis, moderate intraocular inflammation, favorable visual prognosis, and

reduced incidence of retinal detachment.<sup>3</sup> These entities may affect both immunocompetent and immunocompromised individuals.

Culbertson *et al.*<sup>3</sup> (1991) described a mild ARN phenotype in four immunocompetent individuals, with clinical features including anterior uveitis, mild vitritis, focal retinitis, and optic disc oedema. Three patients had unilateral involvement, and systemic antiviral therapy with or without corticosteroids was effective in most cases.<sup>3</sup>

Matsuo *et al.*<sup>4</sup> (1990) reported three cases with anterior segment inflammation and mild retinitis post-varicella. Disease was unilateral in two patients and bilateral in one; all responded favorably to combined antiviral and corticosteroid therapy, achieving complete resolution within 3 weeks.<sup>4</sup>

Conversely, Lee *et al.*<sup>5</sup> (2000) described a severe presentation in a pediatric patient with extensive peripheral necrotizing retinitis, retinal detachment, and optic atrophy following chickenpox. Despite surgical intervention and aggressive medical therapy, the visual outcome was poor.<sup>5</sup> Smith and Chee underscored the necessity of prompt ophthalmologic assessment in varicella patients with visual complaints.<sup>6</sup>

In the present case, the patient exhibited an unusual presentation of isolated macular detachment without peripheral retinal involvement, following a primary VZV infection. The macular pathology was likely due to inflammatory fluid exudation. VZV is known to spread hematogenously to various organs, and studies using SCID-hu mouse models have shown that infected T lymphocytes can disseminate the virus. Evidence of viral replication in capillary endothelial cells suggests that vasculitis may occur as the virus exits the vascular system.<sup>7</sup> Early lesions in such infections often reveal small vessel vasculitis. Another proposed pathophysiological mechanism is dysfunction of the retinal pigment epithelium (RPE), which leads to disrupted metabolic processes and subsequent accumulation of fluid between the neurosensory retina and the RPE. Histopathological studies have demonstrated that VZV can replicate within the RPE. This viral activity may compromise the integrity and function of the pigment epithelium. A robust host immune response likely limits the extent of ocular involvement, possibly explaining the localized macular findings in this patient.<sup>6</sup>

## CONCLUSION

Serous detachment of the macula may be associated with chicken pox, leading to reversible diminution of vision.

**Authors' contributions:** SS, SA, PS, SC: Contributed towards patient care, literature search, data acquisition, data analysis, manuscript preparation, manuscript editing and manuscript review.

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**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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