

Content available at: <https://www.ipinnovative.com/open-access-journals>

Indian Journal of Clinical and Experimental Ophthalmology

Journal homepage: www.ijceo.org

Case Report

Multiple and simultaneous manifestation of ocular inflammation in neurological disease

Rejo Varkey Cyriac¹, Radha Annamalai^{1*}, R. Lakshmi Narasimhan²

¹Dept. of Ophthalmology, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamil Nadu, India

²Dept. of Neurology, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamil Nadu, India



ARTICLE INFO

Article history:

Received 19-02-2024

Accepted 31-05-2024

Available online 30-12-2024

Keywords:

Ocular

Herpetic

Encephalitis

Pulmonary aspergillosis

Acute retinal necrosis (ARN)

ABSTRACT

We report a rare manifestation of herpetic viral retinitis and encephalitis in a patient with reactivation of pulmonary aspergillosis eventually progressing to involve the eye causing choroidal infiltration. Ocular features can have widespread involvement and can affect vision. An 89-year-old male patient presented with fever, defective vision, difficulty in walking with involuntary movements in the right side of his body and history of treatment for pulmonary aspergillosis. Computed tomography Scanogram showed a bronchiectatic cavity with extensive fibrosis, few parenchymal calcific specks and adjacent pleural thickening.

Ophthalmic examination showed pseudophakia in both eyes with nasal pterygium in the right eye. Fundus evaluation in both eyes showed pale optic disc, circumferential retinal infiltrates at the posterior pole and periphery, vitritis and patchy sheathing along arteries. A provisional diagnosis of herpetic retinitis was made and he was advised to continue intravenous acyclovir. On review after 24 hours, fundus showed creamy choroidal patches suggestive of aspergillus endophthalmitis and a combined aetiology for the retinitis was considered. On the third review the vitritis appeared to be settling with better definition of retinitis but his systemic status continued to deteriorate. A clinical suspicion and holistic approach in such patients will improve both ocular and systemic status.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

Infection with herpes virus may cause widespread or localised systemic illness. Ocular involvement may occur as primary infection or a reactivation of latent disease resulting in a spectrum of ophthalmic inflammation.¹ Herpes Simplex Virus (HSV) 1 and 2 are known to cause ophthalmic involvement. The interaction between viral activity and the immune response of the host determines the extent of disease.²

2. Case Report

An 89-year-old male patient presented to the emergency department with complaints of fever for 2 days associated with chills and rigors, defective vision, history of multiple episodes of fall due to difficulty in walking, with involuntary movements in the right side of his body. He also had complaints of hiccups for 2 days associated with aphasia for 1 day. He was a known case of systemic hypertension for 2 years with history of treatment for pulmonary aspergillosis, bronchial asthma and mood disorder and was newly diagnosed with type 2 diabetes mellitus.

He was admitted in the intensive care unit for management and observation. Blood investigations revealed hyponatremia, hypokalaemia and anaemia (haemoglobin

* Corresponding author.

E-mail address: rejoocyriac@gmail.com (R. Annamalai).

of 8.8g/dl). Total white blood cell counts were 3780 per mm³ with platelets of 1 lakh per mm³. Magnetic resonance imaging of the brain showed T2/Flair hyperintensity and gyral oedema with diffusion restriction in the left temporal lobe, hippocampus, extending into the left insular cortex, left external capsule and mild effacement of the temporal horn of left lateral ventricle all findings raising the possibility of herpes simplex encephalitis. Patient was started on intravenous antimicrobial injections of 1gram meropenam twice daily and polymyxin E 2 million international units. For his convulsions, intravenous injection brivaracetam 100mg twice daily and sodium valproate 500mg IV thrice daily was given. Injection acyclovir 500mg thrice daily and tablet voriconazole 400mg twice daily was initiated as antiviral antifungal treatment respectively. Nebulisation with budesonide twice daily and ipratropium bromide 2cc per nasal thrice daily was also given. His Glasgow Coma Scale was monitored. Patient was intubated in view of respiratory distress and underwent tracheostomy due to worsening of his systemic condition. Computed tomography scanogram was done (Figure 2). The apical segment of right upper lobe shows a bronchiectatic cavity with an attached curvilinear soft tissue density lesion with crenated margins. Surrounding the cavity, there is extensive fibrosis with bronchiectasis and few parenchymal calcific specks and adjacent pleural thickening – possibility of cavity with fungal component within (chronic pulmonary aspergillosis).

Ophthalmic examination was performed prior to lumbar puncture to rule out disc oedema. The patient was drowsy and intubated during examination and hence the bedside vision, colour vision and extra ocular movements were not reliable. Anterior segment showed pseudophakia in both eyes with nasal pterygium in the right eye. Pupils were round, briskly reactive, no relative afferent pupillary defect was present and digital intraocular pressure was normal in both eyes. Fundus evaluation in both eyes showed pale optic disc, circumferential retinal infiltrates at the periphery, vitritis and patchy sheathing along arteries (Figure 1). A provisional diagnosis of herpetic retinitis was made and he was advised to continue intravenous acyclovir.

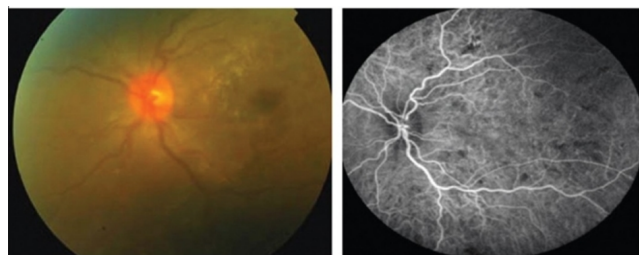


Figure 1: Active retinal infiltrates with vasculitis and vitritis with corresponding fundus fluorescein angiography



Figure 2: Computed tomography scanogram showing cavity in upper lobes suggestive of chronic pulmonary aspergillosis

On review after 24 hours, fundus showed creamy choroidal patches suggestive of aspergillus endophthalmitis and a combined aetiology for the retinitis was considered. On the third review the vitritis appeared to be settling with better definition of retinitis but his systemic status continued to deteriorate.

3. Discussion

Acute retinal necrosis (ARN) occurs commonly due to herpes simplex virus and varicella zoster virus. The viral inflammation is characterised by arteritis, vitritis and peripheral retinal necrosis.³

A presentation of herpetic encephalitis and retinal necrosis due to herpes simplex type 2 is rare. Encephalitis can occur either due to a retrograde spread of the virus from the eye to the brain or a reactivation in the brain. ARN has a poor prognosis unless treated early and aggressively to prevent involvement of the other eye. The presence of severe vitritis and opacification in association with central and peripheral retinal lesions posed a challenge and a diagnosis of superadded aspergillosis endophthalmitis was made based on the possibility of systemic dissemination of pulmonary aspergillosis. This we thought was due to the immunocompromised state of the patient. The violent reaction is probably also due to release of inflammatory mediators by the immune system due to viral invasion. Acute retinitis with arteritis can result in retinal detachment.⁴ Poor vision is due to complications such as extensive ischemia, optic atrophy or retinal detachment.⁵ The patient was started on systemic intravenous infusion of

antivirals along with co-trimoxazole and local therapy with steroid and cycloplegic eye drops. The unique feature in this case was the simultaneous multiple organismal culture. Optic disc oedema is not a typical feature of acute retinal necrosis. The criteria provided in the classification includes peripheral retinal necrosis, positive polymerase chain reaction (PCR) assay of intraocular fluid, retinal sheathing and vitritis. This clinical classification is useful for both clinical and research purposes.⁶ The association between neurological herpetic infections and ARN has been reported in immunocompromised and rarely in immunocompetent patients.⁷ Toxoplasma retinochoroiditis mimicking retinal necrosis has been reported.⁸ However, a co-existence of infection with fungal invasion causing Aspergillus endophthalmitis has never been reported. Vitrectomy and surgical management may be challenging because of the systemic status.

4. Conclusion

This case highlights the importance of clinical suspicion of simultaneous multiple retinal inflammatory diseases due to diverse organisms. The risk of neurological involvement increases even in immunocompetent patients and worsens both ocular with visual and systemic prognosis. Early systemic medical intervention is key in the management.

5. Source of Funding

None.

6. Conflict of Interest

None.

References

1. Bonfili AA, Eller AW. Acute retinal necrosis. *Semin Ophthalmol*. 2005;20(3):155–60.
2. Ganatra JB, Chandler D, Santos C, Kuppermann B, Margolis TP. Viral causes of the acute retinal necrosis syndrome. *Am J Ophthalmol*. 2000;129(2):166–72.
3. Lau CH, Missotten T, Salzmann J, Lightman SL. Acute retinal necrosis features, management, and outcomes. *Ophthalmology*. 2007;114(4):756–62.
4. Kanoff J, Sobrin L. New diagnosis and treatment paradigms in acute retinal necrosis. *Int Ophthalmol Clin*. 2011;51(4):25–31.
5. Biousse V, Newman N. Retinal and Optic Nerve Ischemia. *Continuum (Minneapolis Minn)*. 2014;20(4):838–56.
6. Classification Criteria for Acute Retinal Necrosis Syndrome. *Am J Ophthalmol*. 2021;228:237–44.
7. Vandercam T, Hintzen RQ, DeBoer JH, Lelij AVD. Herpetic encephalitis is a risk factor for acute retinal necrosis. *Neurology*. 2008;71(16):1268–74.
8. Moshfeghi DM, Dodds EM, Couto CA, Santos CI, Nicholson DH, Lowder CY, et al. Diagnostic approaches to severe, atypical toxoplasmosis mimicking acute retinal necrosis. *Ophthalmology*. 2004;111(4):716–25.

Author's biography

Rejo Varkey Cyriac, Junior Resident  <https://orcid.org/0009-0001-5530-6096>

Radha Annamalai, Professor  <https://orcid.org/0000-0001-7297-2376>

R. Lakshmi Narasimhan, Professor  <https://orcid.org/0000-0002-5004-4226>

Cite this article: Cyriac RV, Annamalai R, Narasimhan RL. Multiple and simultaneous manifestation of ocular inflammation in neurological disease. *Indian J Clin Exp Ophthalmol* 2024;10(4):813–815.