



A CASE OF MALARIA RETINOPATHY MIMICKING AS VIRAL RETINITIS

Mohit Kumar Bharti*

Resident, Regional Institute of Ophthalmology, Eye Hospital Sitapur, Sitapur, Uttar Pradesh-261001. *Corresponding Author

Anurag Srivastava

Resident, Regional Institute of Ophthalmology, Eye Hospital Sitapur, Sitapur, Uttar Pradesh-261001.

Anu Yadav

Resident, Regional Institute of Ophthalmology, Eye Hospital Sitapur, Sitapur, Uttar Pradesh-261001.

Y. S. Sirohi

Professor, Regional Institute of Ophthalmology, Eye Hospital Sitapur, Sitapur, Uttar Pradesh-261001.

ABSTRACT

Introduction: Malaria retinopathy is a rare but significant ocular complication of malaria, often seen in severe cases. It presents with retinal changes such as cotton wool spots, retinal hemorrhages, Roth spots, and retinal necrosis, which can mimic other conditions like viral retinitis, diabetic retinopathy, or hypertensive retinopathy. Misdiagnosis and delayed treatment can lead to permanent vision loss. This report highlights a unique case of malaria retinopathy presenting as viral retinitis, emphasizing the need for a multidisciplinary approach in diagnosis and management. **Case Report:** A 41-year-old male farmer from Sitapur, Uttar Pradesh, presented with painless diminution of vision in both eyes for 10 days. The symptoms were preceded by a febrile illness with chills and rigor, treated at a local clinic without documentation. Examination revealed uncorrected visual acuity of 4/60 in the right eye and 6/18p in the left eye, improving to 6/24p and 6/18, respectively, after initial treatment. Retinal findings included cotton wool spots, hemorrhages, Roth spots, and necrosis threatening the macula. A provisional diagnosis of post-fever viral retinitis was made, and antiviral therapy was initiated. Investigations confirmed *Plasmodium vivax* infection, revising the diagnosis to malaria retinopathy. Treatment with chloroquine and adjunctive corticosteroids led to significant clinical improvement and partial restoration of vision. **Conclusion:** This case underscores the diagnostic challenges of malaria retinopathy, particularly in endemic regions like India, where febrile illnesses are common. A multidisciplinary approach, incorporating systemic investigations and timely antimalarial therapy, is crucial to prevent vision loss. This report highlights the importance of awareness and early intervention in managing this rare condition.

KEYWORDS : Malaria, Vivax, Retinopathy, Retinal Hemorrhage, Macular Edema, Ocular Manifestations, Plasmodium vivax**INTRODUCTION**

In 2022, an estimated 249 million malaria cases and 608,000 malaria-related deaths were reported across 85 countries globally. The WHO African Region bore the majority of this burden, accounting for 94% (233 million) of malaria cases and 95% (580,000) of deaths worldwide.[1]

While the systemic complications of malaria, such as cerebral malaria and acute respiratory distress syndrome, are well-documented, ocular manifestations remain underrecognized. [2] Malaria retinopathy, a rare but severe complication, is characterized by retinal changes that often mimic other conditions like viral retinitis, diabetic retinopathy, or hypertensive retinopathy.[3] It is usually associated with severe forms of malaria, predominantly in cases caused by *Plasmodium falciparum*; however, it can also occur with *Plasmodium vivax* infections [4], as demonstrated in this case. The similarity in clinical presentation with other retinal conditions can lead to diagnostic delays and inappropriate management, risking permanent vision loss. This report discusses a unique case of malaria retinopathy presenting as viral retinitis, emphasizing the importance of a multidisciplinary approach in the diagnosis and treatment of this rare condition.

CASE REPORT

A 41-year-old male farmer from Sitapur, Uttar Pradesh, presented to our outpatient department with a chief complaint of painless diminution of vision in both eyes for 10 days. The patient reported that the symptoms began abruptly and were not preceded by any ocular trauma or systemic deterioration. He also provided a history of fever 10 days earlier, associated with chills and rigor, for which he had sought treatment at a local clinic. However, no medical records or prescriptions were available. Despite persistent visual symptoms, he delayed seeking further medical attention until his daily activities were significantly affected.

Upon examination, the patient was alert and oriented, with stable vital signs, including a blood pressure of 130/78 mmHg and a pulse rate of 86 bpm. General physical examination revealed no pallor, icterus, lymphadenopathy, or pedal edema. His ocular examination showed uncorrected visual acuity of 4/60 in the right eye and 6/18p in the left eye, which improved to 6/24p and 6/18, respectively, after the initial

treatment phase [Table-1]. Pin-hole visual acuity testing further revealed an improvement from 5/60 to 6/24p in the right eye and from 6/12 to 6/9 in the left eye, measured at a Snellen 3-meter distance [Table-2].

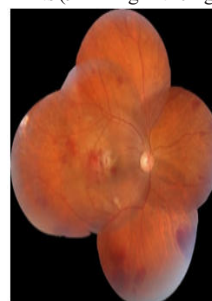
Table-1- Uncorrected Visual Acuity Progression Over Time

Uncorrected Visual Acuity		
Eye	First Visit	Last Visit
RE	4/60	6/24p
LE	6/18p	6/18
Snellen 3 meter		

Table-2- Pin Hole Visual Acuity Progression Over Time

Pin Hole Visual Acuity		
Eye	First Visit	Last Visit
RE	5/60	6/24p
LE	6/12	6/9
Snellen 3 meter		

The anterior segment of both eyes was normal, with clear cornea, normal iris patterns, and reactive pupils. Posterior segment evaluation revealed significant retinal findings, including cotton wool spots, hemorrhages, Roth spots, and areas of retinal necrosis threatening the macula [Figure-1]. The optic disc was normal, and intraocular pressure measured by Goldmann applanation tonometry was within normal limits (9 mmHg in the right eye and 10 mmHg in the left eye).



Right Eye (Pre-OP)



Left Eye (Pre-OP)

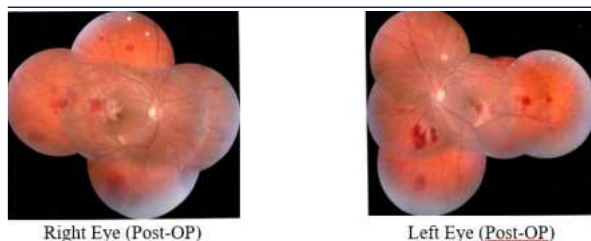


Figure: 1- Fundus Montage Images Showing Retinal Findings in Malaria Retinopathy

Based on these findings and the history of a recent febrile illness, a provisional diagnosis of post-fever retinitis, likely viral in etiology, was made. The patient was started on oral acyclovir (800 mg five times daily for 7 days) and advised follow-up with detailed investigations, including complete blood count (CBC), peripheral smear, erythrocyte sedimentation rate (ESR), random blood sugar, Mantoux test, and serology for chikungunya.

The peripheral blood smear and malaria parasite immunochromatographic test subsequently confirmed a *Plasmodium vivax* infection, prompting a revision of the diagnosis to malaria retinopathy. The treatment plan was updated to include chloroquine (1000 mg stat followed by 500 mg at 6, 24, and 48 hours) and adjunctive corticosteroids (prednisolone 60 mg daily, tapered over one week) to address retinal inflammation. Additional supportive measures included pantoprazole for gastric protection and calcium supplementation. The patient showed significant clinical improvement over the next two weeks, with reduced retinal hemorrhages and necrosis and partial restoration of vision.

DISCUSSION

Malaria retinopathy is a rare but significant ocular complication most often seen in severe malaria cases. It manifests with a characteristic set of retinal changes, including cotton wool spots, retinal hemorrhages, Roth spots, vascular whitening, and macular edema.[5] These pathological changes are thought to result from the sequestration of parasitized erythrocytes in the retinal capillaries, leading to vascular occlusion, localized hypoxia, ischemia, and subsequent retinal damage.[5] In severe cases, such as this one, retinal necrosis threatening the macula poses a grave risk of permanent vision loss if not promptly diagnosed and managed.

The diagnostic challenge of malaria retinopathy arises due to its overlapping clinical features with other retinal conditions, such as viral retinitis, diabetic retinopathy, and hypertensive retinopathy.[6] Viral retinitis, for instance, presents with similar signs, such as hemorrhages and retinal necrosis, but differs in its etiology, pathophysiology, and treatment strategies. This diagnostic overlap often leads to delays in recognizing malaria retinopathy, particularly in patients with no systemic symptoms of severe malaria, as seen in this case. However, the improvement in pinhole visual acuity during treatment served as a key indicator of effective management and reinforced the revised diagnosis of malaria retinopathy.

In the Indian subcontinent, malaria remains a significant public health concern, particularly in rural and tribal areas where access to healthcare is limited. Although the WHO African Region bears the largest share of the global malaria burden, India accounts for the highest number of malaria cases in Southeast Asia, contributing to approximately 79% of the region's cases in 2022. [1] In endemic areas like India, *Plasmodium vivax* infections are prevalent and, though typically associated with milder disease, can cause severe complications such as malaria retinopathy. [7] This underscores the need for heightened awareness among healthcare providers, particularly ophthalmologists, to include malaria as a differential diagnosis in patients presenting with unexplained retinal changes following a febrile illness.

The importance of systemic investigations, including malaria-specific diagnostic tests, cannot be overstated in such cases. Diagnostic tools such as the peripheral blood smear and rapid diagnostic tests (RDTs) play a critical role in identifying the underlying malaria infection and guiding appropriate management. In resource-limited settings prevalent in the Indian subcontinent, integrating these systemic investigations into routine ophthalmologic evaluations for febrile patients with retinal findings can significantly improve diagnostic

accuracy and outcomes.

Treatment of malaria retinopathy requires a multidisciplinary approach that combines effective antimalarial therapy with supportive care. [8] The adjunctive use of corticosteroids, as seen in this case, has shown promise in reducing retinal inflammation and preventing further ischemic damage. In regions like India, where access to specialized care may be delayed, the timely initiation of antimalarial therapy is crucial to prevent irreversible complications. This case further highlights the importance of tapering corticosteroid therapy to avoid potential side effects while ensuring adequate resolution of inflammation.

In endemic regions of the Indian subcontinent, public health initiatives should focus on increasing awareness of rare complications like malaria retinopathy among healthcare workers, improving diagnostic capabilities, and ensuring access to timely treatment. Enhanced surveillance and training programs for ophthalmologists and general practitioners could facilitate early identification and management of this rare condition, reducing the burden of vision-related morbidity in malaria-endemic areas.

To conclude, malaria retinopathy, though rare, represents a serious ocular complication with potentially devastating consequences. Its similarity to other retinal conditions necessitates a high index of suspicion, particularly in malaria-endemic regions like India. This case underscores the need for comprehensive systemic and ocular evaluations in patients with febrile illnesses and unexplained visual disturbances. The successful outcome in this case illustrates the effectiveness of a multidisciplinary approach combining antimalarial therapy, corticosteroids, and supportive care, offering a valuable framework for managing similar cases in resource-constrained settings.

CONCLUSION

This case highlights the diagnostic and therapeutic challenges associated with malaria retinopathy, a rare but sight-threatening complication of malaria. The similarity of its clinical presentation with viral retinitis underscores the importance of considering malaria in the differential diagnosis of retinal diseases in endemic regions. A timely and accurate diagnosis, supported by systemic investigations, is critical for initiating appropriate treatment and preventing permanent vision loss. The favorable outcome in this case demonstrates the efficacy of combined antimalarial therapy and corticosteroids in managing malaria retinopathy. This report adds to the growing awareness of this rare entity and emphasizes the need for a multidisciplinary approach in its diagnosis and management.

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