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Original Research Article

Clinical Profile of Patients of Retinal Vasculitis Attending Ophthalmology OPD of DMCH, Laheriasarai, Bihar

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Abstract:

Background: Retinal vasculitis is an inflammatory condition of retinal vessels that can lead to vision loss. Its etiology varies regionally, and data from Bihar are limited.

Aim: To characterize the clinical presentation, underlying causes, treatment modalities, and visual outcomes of retinal vasculitis at a tertiary centre in Bihar.

Methods: In this retrospective case series, 75 patients (112 eyes) with fundus-proven retinal vasculitis were identified from Jan 2021 to Dec 2021. Data on demographics, laterality, etiologic workup (infectious vs. noninfectious), presenting symptoms, ocular findings (vascular sheathing, hemorrhages, macular edema), treatment (corticosteroids, immunosuppressants, antivirals), and best-corrected visual acuity (BCVA) at presentation and 6-month follow-up were collected and analyzed.

Results: Mean age was 34.6 ± 12.4 years; 60% were male. Bilateral involvement occurred in 49% of cases. Etiology was noninfectious in 68% (idiopathic 42%, systemic autoimmune 26%) and infectious in 32% (tuberculosis 18%, syphilis 8%, viral 6%). Common signs included perivascular sheathing (85%), retinal hemorrhages (62%), and macular edema (54%). Initial BCVA ≤ 20/60 was noted in 58% of eyes. Treatment with systemic corticosteroids alone (45%) or combined with immunosuppressants (23%) led to stabilization or improvement (≥2 lines) in 72% of eyes at 6 months; 38% required adjunctive antitubercular or antiviral therapy. Final BCVA ≥ 20/40 was achieved in 64% of eyes.

Conclusion: At our centre, retinal vasculitis primarily affected young adults, with idiopathic and tubercular etiologies predominating. Early diagnosis and tailored therapy resulted in favorable visual outcomes in most patients.

Keywords: Retinal Vasculitis; Perivascular Sheathing; Ocular Inflammation; Tuberculosis; Visual Outcome; Darbhanga.

Introduction

Retinal vasculitis encompasses a heterogeneous group of inflammatory disorders targeting the retinal arterioles and venules, often leading to vision-threatening complications such as macular edema, ischemia, neovascularization, and vitreous hemorrhage. Worldwide, its incidence varies, reflecting differences in underlying etiologies, from systemic autoimmune diseases such as Behçet's disease, sarcoidosis, and systemic lupus erythematosus to infections including tuberculosis, syphilis, and viral retinitis [1,2]. In India, tuberculosis remains a leading infectious cause, while idiopathic and autoimmune cases also contribute significantly. Despite its potential for severe visual morbidity, data on regional clinical profiles are limited, particularly in Bihar, where resource constraints and delayed presentations may influence both etiology and outcomes [3,4].

The inflammatory process in retinal vasculitis is characterized by perivascular sheathing, vessel wall infiltration by inflammatory cells, and secondary vascular occlusion. These changes manifest clinically with floaters, photopsia, scotomas, and decreased visual acuity [5]. Diagnosis relies on multimodal imaging wide-field fundus photography, fluorescein angiography to reveal areas of capillary nonperfusion and leakage, and optical coherence tomography to quantify macular edema. A thorough systemic workup, including chest imaging, Mantoux testing, serologies (e.g., VDRL, HIV), and autoimmune panels (e.g., ANA, ANCA), is essential to identify treatable causes [6,7].

Therapeutically, high-dose systemic corticosteroids form the cornerstone of initial management to control acute inflammation. In noninfectious cases, steroid-sparing immunosuppressants (e.g., azathioprine, methotrexate) are added for long-term disease control [8]. For tubercular vasculitis, antitubercular therapy combined with corticosteroids is indicated, whereas viral etiologies necessitate antiviral agents and cautious immunosuppression. Despite these options, treatment response and visual recovery vary widely. Early intervention correlates with better outcomes, yet many patients in tertiary centers present late, with established ischemia or macular involvement [9,10].

This retrospective case series examines the clinical spectrum of retinal vasculitis at a tertiary eye care center in Darbhanga, Bihar, over one year (March 2019–February 2020). By analyzing demographics, laterality, etiology, imaging findings, treatment regimens, and six-month visual outcomes in 75 patients (112 eyes), we aim to elucidate region-specific patterns and inform contextually appropriate diagnostic and management strategies. Understanding these local nuances is critical for optimizing care pathways, guiding resource allocation, and ultimately preserving vision in affected populations.

Aim and Objectives

Aim: To describe the clinical profile, etiologic spectrum, management strategies, and visual outcomes of patients with retinal vasculitis presenting to a tertiary eye care centre in Bihar.

Primary Objective

- To determine the distribution of underlying etiologies (infectious vs. noninfectious) in retinal vasculitis.

Secondary Objectives

1. To characterize presenting clinical features including laterality, symptoms, and fundus findings (perivascular sheathing, hemorrhages, macular edema).
2. To evaluate treatment modalities used (corticosteroids, immunosuppressants, antimicrobials) and their effectiveness.
3. To assess best-corrected visual acuity (BCVA) at presentation and at six-month follow-up.
4. To analyze the association between etiology and visual outcomes.

Materials and Methods

Study Design and Setting: This retrospective study was conducted at Department of Ophthalmology, Darbhanga Medical College & Hospital (DMCH), Laheriasarai, Darbhanga, Bihar, India from Jan 2021 to Dec 2021

Inclusion and Exclusion Criteria

- **Inclusion:** All patients diagnosed clinically and angiographically with retinal vasculitis during the study period.
- **Exclusion:** Patients with incomplete records, follow-up less than six months, or vasculitis secondary to ocular trauma or surgery.

Data Collection

Medical records were examined for:

- **Demographics:** Age, gender.
- **Clinical Presentation:** Laterality; symptoms (floaters, photopsia, vision loss); duration of symptoms.
- **Etiologic Workup:** Chest X-ray, Mantoux test, Quantiferon-TB Gold, VDRL, HIV serology, ANA, ANCA, ACE levels, and other relevant investigations.
- **Fundus and Imaging Findings:**
    - **Color Fundus Photography:** Documentation of perivascular sheathing, hemorrhages, vascular occlusions.
    - **Fluorescein Angiography (FFA):** Presence of vessel wall staining, leakage, areas of capillary nonperfusion.
    - **Optical Coherence Tomography (OCT):** Macular thickness and presence of cystoid macular edema.
- **Treatment Details:** Type and duration of systemic corticosteroids, use of immunosuppressants (azathioprine, methotrexate), antitubercular therapy (ATT), or antivirals.
- **Visual Acuity:** Best-corrected visual acuity (BCVA) measured on Snellen chart at presentation and at six-month follow-up, converted to LogMAR for analysis.

Definitions

- **Infectious Vasculitis:** Etiology confirmed by positive specific tests (e.g., Mantoux ≥ 15 mm or Quantiferon positivity for tuberculosis; VDRL positivity for syphilis; viral serologies).
- **Noninfectious (Idiopathic/Autoimmune) Vasculitis:** Negative infectious workup with or without positive autoimmune markers (e.g., ANA, ANCA).
- **Improvement in BCVA:** Gain of ≥2 lines on Snellen chart.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using SPSS v25.0. Continuous variables (age, BCVA) are reported as mean ± SD. Categorical variables (etiology, clinical signs) are presented as frequencies and percentages.

- **Comparisons:** Chi-square test for categorical data; paired t-test for BCVA change.

Significance: p-value < 0.05 considered statistically significant.

Results

An overview of key findings is provided below, followed by detailed tables. Seventy-five patients (112 eyes) with retinal vasculitis were included (mean age 34.6 ± 12.4 years; 60% male). Bilateral involvement occurred in 49% of cases. Etiology was noninfectious in 68% (idiopathic 42%, autoimmune 26%) and infectious in 32% (tuberculosis 18%, syphilis 8%, viral 6%). Common clinical features included floaters (72%), blurred vision (64%), and photopsia (40%). Fundus examination revealed perivascular sheathing (85%), retinal hemorrhages (62%), and macular edema (54%). Fluorescein angiography showed vascular leakage in 88% and capillary nonperfusion in 45%. Treatment regimens comprised systemic corticosteroids alone (45%), corticosteroids plus immunosuppressants (23%), and pathogen-directed therapy (32%). At six months, BCVA improved by ≥2 lines in 72% of eyes; 64% achieved BCVA ≥20/40.

Table 1: Demographic Characteristics

Characteristic	Value
Age, years (mean ± SD)	34.6 ± 12.4
Male, n (%)	45 (60%)
Female, n (%)	30 (40%)

Table 2: Laterality of Involvement

Laterality	Eyes Involved	n (%) Eyes
Unilateral	37	37 (49%)
Bilateral	38	75 (51%)

Table 3: Presenting Symptoms

Symptom	n (%) Patients
Floaters	54 (72%)
Blurred vision	48 (64%)
Photopsia	30 (40%)
Field defect	22 (29%)
Pain	10 (13%)

Table 4: Etiologic Spectrum

Etiology	n (%)
Idiopathic noninfectious	32 (42%)
Autoimmune noninfectious	19 (26%)
Tuberculosis	14 (18%)
Syphilis	6 (8%)
Viral	4 (6%)

Table 5: Fundus Findings

Finding	n (%) Eyes
Perivascular sheathing	95 (85%)
Retinal hemorrhages	70 (62%)
Macular edema	60 (54%)
Cotton-wool spots	28 (25%)
Neovascularization	10 (9%)

Table 6: Fluorescein Angiography Features

Feature	n (%) Eyes
Vascular leakage	99 (88%)
Capillary nonperfusion	50 (45%)
Late staining of vessels	88 (79%)
Macular ischemia	42 (38%)

Table 7: OCT Findings

Edema Grade	n (%) Eyes
None	52 (46%)
Mild	28 (25%)
Moderate	20 (18%)
Severe	12 (11%)

Table 8: Treatment Modalities

Treatment	n (%) Patients
Corticosteroids alone	34 (45%)
Steroids + immunosuppressants	17 (23%)
Antitubercular or antiviral + steroids	24 (32%)

Table 9: Visual Acuity Outcomes

BCVA Category	Presentation Eyes n (%)	6-Month Eyes n (%)
≥20/40	46 (41%)	72 (64%)
20/60–20/200	42 (38%)	28 (25%)
<20/200	24 (21%)	12 (11%)

Table 10: BCVA Improvement

Improvement	Eyes n (%)
≥2 lines	81 (72%)
<2 lines	31 (28%)

Table 1: Mean patient age was 34.6 years with a 60% male predominance. Table 2: Disease was bilateral in 51% of eyes. Table 3: Floaters and blurred vision were the most common symptoms (72% and 64%). Table 4: Idiopathic noninfectious vasculitis accounted for 42%, followed by autoimmune (26%) and tubercular (18%) causes. Table 5: Perivascular sheathing (85%) and hemorrhages (62%) were the predominant fundus signs. Table 6: Fluorescein angiography revealed vascular leakage in 88% and nonperfusion in 45% of eyes. Table 7: OCT showed macular edema in 54% of eyes, with 11% severe. Table 8: Corticosteroids alone were used in 45% of patients; pathogen-directed therapy in 32%. Table 9: BCVA ≥20/40 improved from 41% at presentation to 64% at six months. Table 10: 72% of eyes gained two or more Snellen lines.

Discussion

Retinal vasculitis in our cohort predominantly affected young adults (mean age 34.6 years) with a slight male predominance and nearly half presenting bilaterally, underscoring the potentially aggressive nature of this disease in our region [11]. The predominance of idiopathic cases (42%) followed by autoimmune (26%) and tubercular etiologies (18%) highlights both the diagnostic challenges and the regional burden of tuberculosis. Perivascular sheathing and vascular leakage on angiography were almost universal, reflecting active inflammation, while macular edema in over half of eyes emphasized the risk to central vision [12].

The favorable visual outcomes 72% of eyes gaining two or more Snellen lines and 64% achieving 20/40 or better attest to the effectiveness of a tailored treatment approach combining high-dose corticosteroids, immunosuppressants where indicated, and pathogen-directed therapy in infectious cases [13]. Tubercular vasculitis responded well to combined antitubercular regimens and steroids, mirroring published series that report improved outcomes when both infection and inflammation are addressed concurrently. In idiopathic and autoimmune cases, early initiation of steroid-sparing agents alongside steroids appeared to limit recurrent inflammation and preserve vision, supporting a proactive immunomodulatory strategy [14].

Compared to larger series from tertiary centers in South India and other endemic regions, our data show a comparable distribution of causes but a higher proportion of idiopathic cases, possibly reflecting gaps in access to comprehensive laboratory diagnostics [15,16]. The relatively lower rate of viral and syphilitic vasculitis suggests regional epidemiologic patterns, though underdiagnosis cannot be excluded. The high prevalence of macular edema and capillary nonperfusion on OCT and angiography confirms the importance of multimodal imaging not only for diagnosis but also for monitoring therapeutic response and guiding adjunctive treatments such as focal laser or anti-VEGF therapy [17,18].

This study's strengths include a sizable consecutive patient series, standardized imaging protocols, and uniform six-month follow-up. However, its retrospective design limits causal inference, and reliance on chart review may underestimate

subclinical or transient findings [19]. The single-center setting may not capture the full spectrum of retinal vasculitis in Bihar, and the absence of standardized patient-reported outcome measures leaves quality-of-life impacts unexplored. Furthermore, immunologic workup was limited by resource availability, potentially classifying some autoimmune or infectious cases as idiopathic [20].

Future prospective studies should incorporate standardized diagnostic algorithms, including polymerase-chain-reaction assays for infectious agents and expanded autoantibody panels, to refine etiologic classification. Longitudinal follow-up beyond six months would clarify the risks of recurrence and long-term visual prognosis. Trials comparing early use of biologic agents or intravitreal therapies in refractory cases could further improve outcomes. By tailoring diagnostic and therapeutic pathways to regional disease patterns, we can optimize vision preservation and quality of life for patients with retinal vasculitis in Bihar and similar settings.

Conclusion

In this tertiary care centre from Bihar, retinal vasculitis predominantly affected young adults and often presented bilaterally, with idiopathic and tubercular etiologies most common. Early, etiology-guided therapy combining systemic corticosteroids, immunosuppressants, and pathogen-directed agents led to significant visual improvements in the majority of eyes, with 72% gaining two or more Snellen lines and 64% achieving 20/40 or better at six months. Multimodal imaging was invaluable for diagnosis and treatment monitoring. These findings underscore the importance of prompt, tailored interventions and highlight the need for expanded diagnostic workups and prospective studies to further refine management strategies and improve outcomes in retinal vasculitis.

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