**Case Report**

**Spotted fever rickettsiosis presenting with bilateral anterior uveitis and retinitis: A case report**

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**Abstract**

Spotted fever is a common rickettsial disease in India. It is caused by *Rickettsia conorii*, which demonstrates vascular tropism and causes endothelial injury. Ocular manifestations include multifocal retinitis and disc edema. Anterior uveitis as a presenting feature of spotted fever is uncommon. We present a 32-year-old man with spotted fever and bilateral anterior uveitis.

**Keywords:** Eye manifestations of spotted fever, spotted fever with retinitis, spotted fever with uveitis

**Introduction**

Rickettsial infections in India include spotted fever and scrub typhus.²⁻⁴ Spotted fever accounts for 16% of acute undifferentiated febrile illness in South India.⁴ It is caused by *Rickettsia conorii*, an obligate intracellular bacterium, which demonstrates vascular tropism and causes endothelial injury.⁵⁻⁶ Multifocal retinitis and disc edema are frequent ocular manifestations of spotted fever.²⁻⁶ Bilateral anterior uveitis as a presenting feature of spotted fever is uncommon.⁸

We describe a patient with spotted fever with bilateral anterior uveitis and retinitis during the febrile episode.

**Case History**

A 32-year-old man presented with high-grade fever, headache, myalgia and arthralgia involving both knees and ankles for 1 week. On day 4 of illness, he developed redness and pain in both eyes. There was no history of blurring of vision, diplopia, vomiting and seizures. He denied a history of recent travel, consumption of unpasteurized milk and similar illness in family/neighbourhood. He had a pet dog at home.

On examination, he was febrile (temperature 102°F) and tachycardiac (pulse rate 112/minute). Discrete, non-tender axillary lymph nodes were palpable bilaterally. Purpuric rash was present over trunk, bilateral upper and lower distal extremities including palms and soles [Figure 1]. Slit-lamp examination showed bilateral non-granulomatous anterior uveitis. Fundus examination showed multiple hemorrhages, cotton wool spots, Roth's spots and disc edema bilaterally [Figures 2 and 3]. There was no cardiac murmur, eschar or neck stiffness. Differential diagnoses that we considered in this patient included rickettsial diseases (scrub typhus and spotted fever), dengue fever and chikungunya.

Blood investigations revealed thrombocytopenia and elevated transaminases [Table 1]. Workup for infective endocarditis (multiple blood cultures, transthoracic and transesophageal echocardiogram) was negative. Malarial parasite smears, dengue, scrub typhus and leptospira serology and HIV Elisa were negative. Weil-Felix test was positive for OX-19 and OX-2, consistent with spotted fever. Spotted fever IgM ELISA was also positive. This patient was started on intravenous doxycycline 100 mg twice daily and intensive topical steroids for his anterior uveitis and retinitis.

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Common clinical features of spotted fever include fever, headache, myalgia, rash, eschar and lymphadenopathy. Vasculitis leads to development of skin rash, and it can lead to lifethreatening complications such as interstitial pneumonitis, noncardiogenic pulmonary edema and multiorgan dysfunction syndrome.[9‑11]

Adnexal and anterior chamber involvement in spotted fever includes eyelid edema, conjunctival hyperaemia, chemosis and non-granulomatous anterior uveitis.[12,13]

Agahan et al. looked at seven patients with rickettsial uveitis recruited from an Ophthalmology Clinic in Spain. Loss/blurring of vision and floaters were present in six (86%) and three (43%) patients, respectively.[13]

Rickettsial infection is usually diagnosed, retrospectively, during an etiologic workup for anterior uveitis. Madsen et al. looked at 48 Swedish patients with anterior uveitis, of which seven (14.6%) had seroconversion consistent with active rickettsial infection. However, none of the patients in this study had clinical features/rash/eschar consistent with spotted fever.[14]

Another case report from Portugal describes a 10-year-old boy with bilateral progressive loss of vision for 2 months. He had bilateral anterior uveitis and serous retinal detachment in the right eye. Though he did not have a history of fever, IgG and IgM antibodies to *R. conorii* were sent as a part of a workup for

Table 1: Relevant laboratory investigations

| Test                  | Result | Normal Range       |
|-----------------------|--------|--------------------|
| Complete Blood Count  |        |                    |
| White Blood Cells     | 4200/µL| 4400-11,000/µL     |
| Neutrophils           | 63%    | 40%-70%            |
| Lymphocytes           | 33%    | 20%-40%            |
| Monocytes             | 4%     | 2%-6%              |
| Haemoglobin           | 13.6 g/dL | 12-15 g/dL    |
| Platelets             | 6.6 × 10¹³/µL | 150 × 450-5 × 10¹³/µL |
| Biochemistry          |        |                    |
| Urea (mg/dL)          | 18     | 10-40              |
| Creatinine (mg/dL)    | 0.9    | 0.7-1.4            |
| Total Bilirubin (mg/dL)| 1.5   | 0.1-1.2            |
| Direct Bilirubin (mg/dL)| 0.9 | < 0.4              |
| Total Protein (g/dL)  | 6.2    | 6-8.1              |
| Albumin (g/dL)        | 3.2    | 3.5-5.0            |
| Alkaline Phosphatase (IU/L) | 161 | 55-120            |
| AST (IU/L)            | 267    | 10-40              |
| ALT (IU/L)            | 316    | 12-55              |
| ESR (mm/h)            | 44     | 0-20               |
| CRP (mg/L)            | 84     | <3                 |

uveitis. He was afebrile after 2 days of initiating treatment, following which he was given oral doxycycline to complete 1 week of antibiotic therapy. His cutaneous manifestations improved with regress in a rash. Anterior uveitis symptoms had improved at discharge.

Discussion

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Figure 1: Rash on the sole

Figure 2: Left eye – Superficial hemorrhage (arrow) and multiple cotton wool spots

Figure 3: Right eye – Central white clearing with a surrounding hemorrhage (Roth’s spot) (arrow)
infectious diseases, and they were positive. He was treated with erythromycin and corticosteroids, with the resolution of ocular lesions and recovery of vision.[13]

Anterior uveitis during febrile episodes in spotted fever is rare. Pradeep et al. reported a 52-year-old man with spotted fever with bilateral anterior uveitis and vitreous inflammation. This patient had developed eye symptoms 1 day after the onset of fever. Despite treatment with systemic corticosteroids and doxycycline, this patient had poor visual recovery.[9]

Retinal lesions in spotted fever rickettsiosis include haemorrhages, white lesions, retinal detachment, cystoid macular edema and optic disc edema.[7,14] In a study by Kalal et al., retinitis was seen in 10% of children with rickettsial infections.[11] However, up to 70% of the patients with spotted fever retinitis may be asymptomatic. In the absence of ocular complaints, retinitis in spotted fever maybe overlooked.[7,17] Pathogenetic mechanisms in rickettsial retinitis include tissue hypoperfusion and immune-complex deposition.[18]

In a study by Balasundaram et al. from India, 75% (9/12) patients with rickettsial eye manifestations had bilateral involvement. Multifocal retinitis and macular hard exudates were seen in all patients in this study. The vision was impaired in all patients (100%, 12/12) at presentation. After treatment with doxycycline and systemic corticosteroids, only 25% (4/12) had impaired visual acuity.[14]

Doxycycline is the drug of choice and given at a dose of 100 mg twice daily for 7 days.[19] Topical steroids are required for the patients with anterior uveitis. Oral prednisolone has been used for cases with severe retinitis.[14]

Spotted fever should be considered as a differential diagnosis in the patients with anterior uveitis and concurrent/preceding febrile episode. Primary care physicians should be aware of ocular manifestations of spotted fever. Spotted fever associated anterior uveitis and retinitis have sight-threatening complications that necessitate prompt initiation of therapy. A dilated fundoscopic examination should be done by the treating doctor at the primary care level for all patients with spotted fever rickettsiosis. Referral to an ophthalmologist for detailed evaluation and follow-up is prudent. Recognition of uveitis and retinal involvement in spotted fever is crucial, as early detection and prompt initiation of therapy can lead to a complete resolution.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/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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Conflicts of interest

There are no conflicts of interest.

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