

# Neuroretinitis as an Unusual Manifestation of Leptospirosis: A Case Report

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## Abstract

Leptospirosis is a zoonotic infection caused by spirochetes leptospira. It presents with both ocular and systemic manifestations. Neuroretinitis has been reported in the few cases of leptospirosis. We present a case of leptospirosis with unilateral neuroretinitis presenting with sudden loss of vision, optic disc edema and macular star. Leptospirosis was confirmed by serological test and the disease responded optimally to specific therapy.

**Keywords:** Leptospirosis; Neuroretinitis; Macular star

## Introduction

Leptospirosis is a zoonotic infection of worldwide distribution caused by spirochetes of genus leptospira [1]. The disease has high incidence and prevalence in both developed and developing countries [2]. Rodents, domestic animals serve as reservoirs and contact with infected urine, tissues and water from the route of transmission in leptospirosis [3,4]. Systemic features are common in the acute bacteremic phase of the disease, whereas ocular features are common, in the immunological phase [5]. To the best of our knowledge, only few articles are available in the literature on leptospira neuroretinitis [5,7,10,11]. Here, we present a case of unilateral neuroretinitis caused by leptospirosis with optimal response to specific treatment.

## Case Report

A 25-year-old male presented with painless blurring of vision in right eye of 10 days duration along with mild fever. There was no other significant history. General and systemic examinations were normal. Ocular examination revealed best corrected visual acuity (BCVA) to be 20/80, N8 in right eye (OD) and 20/20, N6 in left eye (OS). Slit-lamp examination of both eyes (OU) revealed no abnormality in the anterior segment. Intraocular pressure in OU by Goldman applanation tonometry was 12mm of Hg. OD showed relative afferent pupillary defect and defective color vision. Ophthalmoscopy of OD revealed optic disc edema, with macular star, OS was normal (Figure 1). Fluorescein angiography of OD was characterized by leakage from disc margin and peripapillary vessels, OS revealed no abnormality. Visual field analysis of OD revealed small centrocecal scotoma, VEP of OD showed increased latency and decreased amplitude. A diagnosis of neuroretinitis of OD was made. Hematological investigations revealed mild leucocytosis and high ESR. Mantoux test, chest X-ray PA view, CT scan of brain and orbits



Figure 1: Fundus picture of optic disc edema and macular star.

were unremarkable. Patient was further advised for serological tests to rule out syphilis, hepatitis B, HIV, herpes simplex virus, toxoplasma, borrelia, bartonella, leptospira and cysticercus infection. Waiting for reports, patient was started on intravenous methyl prednisolone 1000mg for 3 days, followed by oral prednisolone 50gm/day for next 11 days. Reports of serological investigations were within normal range except high leptospira IgG and IgM titre. So, the patient was started on definitive therapy of leptospirosis with intramuscular ampicillin 250 mg 6 hourly along with oral doxycycline 200 mg daily for 7 days. After 4 weeks follow up, BCVA in OD was 20/40, N8. Fundus photography of OD revealed mild resolution of disc edema and macular star. On follow up after 12 weeks, BCVA in OD was 20/20, N6 with almost total resolution of disc edema and macular star (Figure 2).

## Discussion

Neuroretinitis is a type of optic neuropathy classically characterized by the presence of optic disc edema accompanied by serous retinal detachment extending to the macular area with formation of a partial or complete macular star [6]. Infections like syphilis, tuberculosis, cat-scratch disease, lyme disease, hepatitis B, mumps,



Figure 2: Fundus picture showing resolution of disc edema and macular star.

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measles, toxoplasmosis and cysticercosis may cause neuroretinitis. Leptospirosis is also included in the list [7,8]. Leptospirosis presents with both systemic and ocular manifestations. Conjunctival chemosis, subconjunctival hemorrhage, keratitis, scleral icterus, uveitis, hypopyon, cataract and vitritis are some of the common ocular features. [1,5,7,9]. Neuroretinitis is an uncommon manifestation of the disease. Dreyer RF et al [10] first reported a case of neuroretinitis in leptospirosis. Later, Martins MG et al. [11], Ray S et al. [7] and Rathinam SR et al. [5], described similar cases.

Our case is a right sided neuroretinitis with elevated leptospira IgG and IgM titre. Route of entry was probably contaminated river water used by the patient daily. The common ocular manifestations were not present in our case. Though steroids have no proven role on visual outcome [10], we preferred steroids to reduce the inflammatory response and to treat the underlying immune mediated cause. There are reports which show the administration of steroids in acute phase [8], or when optic disc is involved [12]. On completion of treatment, the visual response of our case was satisfactory due to prompt etiological diagnosis and definitive therapy.

To conclude, leptospirosis should be ruled out in every case of neuroretinitis. All patients of leptospirosis, should be referred for detailed ophthalmological evaluation, including the posterior segment, to detect the full spectrum of ocular disease.

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