

## CASE REPORT

## BILATERAL POST TYPHOID RETINITIS: A CASE REPORT AND LITERATURE REVIEW

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**ABSTRACT**

*Retinitis following typhoid fever is an immune-mediated reaction that is rarely reported in literature. We present a case of a 20-year-old pregnant female who presented with progressive loss of vision in both eyes for three weeks. She had completed treatment for enteric fever 4 weeks before. Presenting vision was 6/36 in right eye and 3/60 in left eye. Fundus examination showed retinitis with retinal haemorrhages and macular star in both eyes. After approval from gynaecologist, oral steroid was given. Vision improved significantly to 6/6 in right eye and 6/12P in left eye after 1.5 months of treatment. There was resolution of haemorrhages, exudates and stellate maculopathy. Hence, post-typhoid immune-mediated retinitis is rare sequelae of typhoid fever which can be treated with good visual outcome using oral steroids.*

**Keywords:** immune-mediated; retinitis; maculopathy; steroids

**INTRODUCTION**

Enteric fever or typhoid is a systemic disease with predominantly enteric manifestations. Caused by *Salmonella typhi* and related paratyphi A and B species and transmitted through contaminated food or water, poor sanitation and lack of access to clean drinking water attribute to its endemicity in developing countries.<sup>1</sup> Ocular manifestations of typhoid fever are rare and include lid edema or abscess, dacryoadenitis, conjunctival petechiae or chemosis, corneal ulceration, uveitis, vitreous haemorrhage, retinal haemorrhage and detachment, stellate maculopathy, pigmentary retinopathy, optic neuritis, internal or external ophthalmoplegia, orbital haemorrhage or abscess and even late onset endogenous endophthalmitis.<sup>2,3</sup> These complications are caused either by direct invasion of the organisms into the ocular tissue, or by hypersensitivity reaction such as vitreous haemorrhage after typhoid immunisation.<sup>4</sup> Here, we present a case of typhoid sequelae as bilateral retinitis

with macular star.

**CASE REPORT**

A 20-year-old female, 27 weeks pregnant, attended OPD with 3 week history of painless diminution of vision in both eyes. She had typhoid fever 4 weeks prior to presentation and 1 week before the onset of the eye symptoms. Previous WIDAL test showed significant titres for 'O' antigen (>1:160) and 'H' antigen (>1:160). She was treated with oral Ofloxacin 400 mg twice daily for 2 weeks.

Systemic and pregnancy related history were insignificant. She denied having rashes, joint pains, flu-like illness or ulcerating lesions in any part of the body. BCVA was 6/36 in RE and 3/60 in LE. Anterior segment was normal in both eyes. Goldmann applanation IOP was 12mm Hg bilaterally. Anterior vitreous face (AVF) was quiet, vitreous was clear in both eyes. Fundus of RE had multiple

superficial white fluffy lesions each less than 0.5DD along the superior and inferior temporal vascular arcades with surrounding retinal opacification. View of major retinal vessels was obscured near disc due to retinal edema and localized exudation. Serous macular detachment and hard exudates in macula in stellate pattern was seen with superficial hemorrhages around the macula. LE fundus had small (<0.5DD), numerous white fluffy lesions nearer the superior than inferior vascular arcade and irregularly in the posterior pole. Minimal retinal edema was seen surrounding the disc and visibility of major retinal blood vessels was good. Multiple flame shaped hemorrhages were seen near the superotemporal retinal lesions and between the macula and optic disc. Hard exudates occurred in macular star pattern with fibrotic looking changes at center of the macula in LE. (Figure 1 A, B).

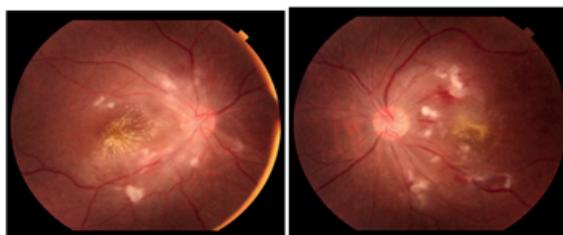


Fig 1 (A) Fundus photo RE on Day 1

Fig 1 (B) Fundus photo LE on Day 1

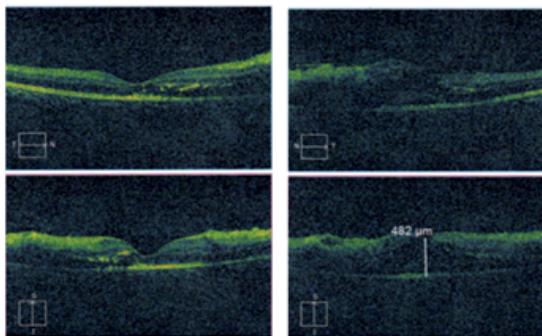
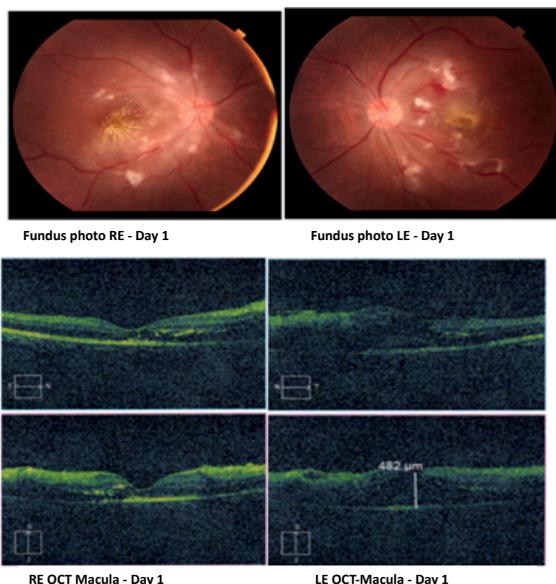


Fig 1 (C) OCT-Macula RE on Day 1

Fig 1 (D) OCT-Macula LE on Day 1

Figure 1 A



RE OCT Macula - Day 1

LE OCT-Macula - Day 1

Figure 1 B

Optical coherence tomography (OCT) macula RE showed altered macular contour with central thickness 405 micrometers and serous macular detachment. Retinal edema surrounded the serous detachment. LE OCT macula showed thinning of central macula, with deep excavation and central thickness of 205 micrometers and surrounding grossly hyper-reflective inner retinal layers suggesting retinal edema. Small dot-like hyper-reflective lesions in the middle retinal layers suggested hard exudates (Figure 1 C, D2). FFA was contraindicated due to pregnancy.

Our working diagnosis was bilateral post fever retinitis with stellate maculopathy. Differentials included post-typhoid immune-mediated retinitis, post-viral, rickettsial, atypical toxoplasma retinitis, tuberculosis or syphilis. Oral steroid treatment was planned if all infectious causes of retinitis were ruled out.<sup>5-7</sup> Gynecological consultation was done for assessment of healthy pregnancy and consent for use of oral steroids.

VDRL, TPHA, HIV, Toxoplasma titres (IgM and IgG) were negative and Mantoux test for tuberculosis showed no induration in 72 hours. Absence of rashes, joint pains ruled out rickettsial, lyme associated retinitis. Diagnosis of post typhoid retinitis BE was made and oral prednisolone started at 1mg/kg/day. Patient was counselled to monitor for pre-term labor.

BCVA one week later was 6/9P RE and 6/36 LE. Clinically, retinal edema had decreased around the vascular arcades and fluffy exudates were more discrete. In RE, smaller retinal lesions had resolved, only four lesions remained and were more discrete. Retinal edema decreased. Macular edema also decreased but hard exudates persisted. In LE, similar reduction in focal retinitis occurred and hemorrhages also decreased. Glial tissue was developing from the optic disc towards the periphery along the major vascular arcades. Macular edema decreased but fovea had persistent excavation and fibrotic changes (Figure 2 A, B). There were no systemic side effects to oral steroids.

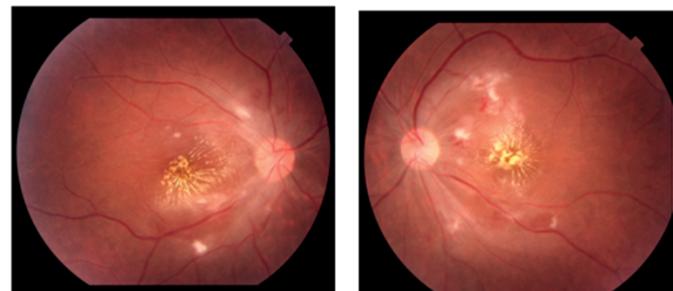


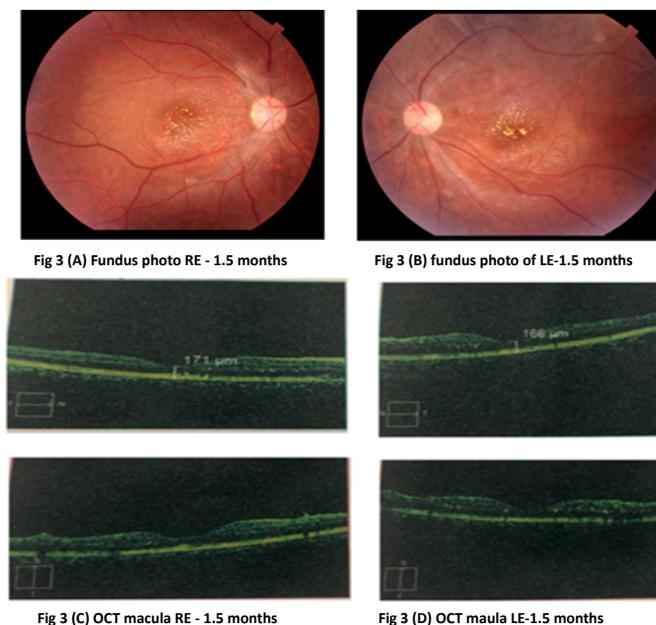
Fig 2 (A) RE fundus photo after 1 week

Fig 2 (B) LE fundus photo after 1 week

Figure: 2A, 2B

Oral prednisolone was tapered weekly to 10mg per day

and 5 mg/day was used for 2-weeks, a total of 6 weeks. Patient came 1 week after completion of therapy. BCVA was 6/6 in RE and 6/12P in LE. Clinically, most focal retinitis lesions had resolved. However, gliosis was seen from optic disc to periphery along major blood vessels, more in LE than RE. Hard exudates were still present but macular edema had significantly decreased (Figure 4). Findings were corroborated by OCT. Central subfield thickness was 154 micrometer in right eye and 118 micrometer in left eye.



**Figure: 3A, 3B, 3C and 3D**

## DISCUSSION

WHO health reports on December 2019 state that between 11 and 20 million cases and 128000 to 161000 typhoid-related deaths occur annually worldwide.<sup>8</sup> It is the cause of 2.5%-7.2% of acute febrile illnesses in Nepal.<sup>9</sup> In conjunction with the data that the sensitivity of culture positivity is only 61% (52%-70%, 95% CI) and also prior use of antibiotics further reduces the rate of culture-positivity, it can be concluded that typhoid or enteric fever is a common cause of febrile illness in Nepal.<sup>10</sup>

Post-fever retinitis is not a common cause of posterior uveitis in Nepal. A study done to determine common etiologies of uveitis and scleritis in Nepal found that 144 of total 1113 patients had posterior uveitis. But none of these were post fever retinitis.<sup>5</sup>

In the Indian subcontinent, most cases of post fever retinitis/epidemic retinitis were idiopathic, and 87 percent bilateral. Following diagnoses were made by treating physicians: typhoid (n=15), measles (n=1), dengue (n=7), chikungunya (n=2), viral thrombocytopenic fever (n=3), viral meningo-encephalitis (n=2), malaria (n=3),

suspected rickettsial (n=3), and leptospiral fever (n=1).<sup>6</sup> In our case, history taking and investigation reports refuted all alternative diagnoses. Also, the treating physician grossly stated a diagnosis of enteric fever.

Post-typhoid sequelae with posterior segment involvement has been stated to be either due to direct invasion by bacteria i.e. panuveitis, endophthalmitis and panophthalmitis or due to immune-mediated phenomena including optic neuritis, vasculitis with branch retinal vein occlusion and subhyaloid hemorrhage at macula.<sup>4</sup>

On treating post-typhoid immune-mediated sequelae with oral steroids, a case series found that all patients responded to oral steroids positively but in variable manner. Post-treatment vision ranged between 6/60 and 6/12 in most cases and fundus lesions resolved leaving retinal pigment epithelial changes and foveal thinning in cases with severe macular involvement.<sup>11</sup>

Prabhushanker M et al. reported a strikingly similar case of a 59-year-old male who presented with decreased vision for one week and history of adequately treated typhoid 4 weeks back presenting BCVA was 2/60 RE, 6/6 LE; all blood investigations were negative. Xcyton analysis of aqueous came negative. He was diagnosed as post-typhoid immune-mediated retinitis with macular neurosensory detachment RE and retinitis in LE and prescribed prednisolone 1mg/kg/day, tapered down over a period of 2 months. BCVA after 2 months improved to 6/6 BE.<sup>12</sup> In our case, we didn't have such tests but physician's reports were straightforward and led to diagnosis.

## CONCLUSION

In this typhoid endemic region, we must maintain a high index of suspicion for patients with retinitis and a history of fever preceding the ocular symptoms. Post-typhoid immune-mediated retinitis is rare sequelae of typhoid fever which can be treated with good visual outcome using oral steroids

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