Case Report

A Case Report of Ocular Manifestation of Rickettsial Infection- A Rare Vision Threatening Gram Negative Bacteria Causing Chorioretinitis

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Abstract

Rickettsioses are emergent and resurgent arthropod vector borne diseases due to obligate intracellular small gram-negative bacteria. Most of them are transmitted to humans by the bite of infected arthropods, such as ticks. Ocular involvement is common, including conjunctivitis, keratitis, anterior uveitis, panuveitis, retinitis, retinal vascular changes, and optic nerve involvement. Though rickettsiosis is common in India, there is paucity of rickettsial retinitis (RR) reports from India. Moreover, rickettsial sub-types and their association with retinitis have not been studied.Ocular rickettsial infection may be a part of systemic rickettsial infection which is mainly autoimmune in nature so treatment is mostly based on steroids and antibiotics.

We report the case of a 36 year old male native of North India.

Keywords: India, Retinitis, Rickettsia, Typhus, Vasculitis.

Introduction

Rickettsia are a rather diverse collection of organisms with several differences; this prohibits their description as a single homogenous group.[1] A general characteristic of *rickettsia* is that mammals and arthropods are natural hosts. Rickettsioses are usually transmitted to humans by arthropods.[2-4]

Ocular involvement is common in patients with rickettsioses, but since it is frequently asymptomatic and self-limited, it may be easily overlooked.[5,6]

Ocular involvement is common, including conjunctivitis, keratitis, anterior uveitis, panuveitis, retinitis, retinal vascular changes, and optic nerve involvement. The diagnosis is usually confirmed by the detection of specific antibodies in serum.

The Weil-Felix reaction is a test used in the diagnosis of rickettsial infections. The test was developed upon the observation that certain serotypes of *Proteus* bacteria display antigenic cross-reactivity with Rickettsia species. Through the isolation of these *Proteus* antigens, a heterophile agglutination reaction was developed to identify antibodies against the *Rickettsia* disease groups. *P. vulgaris* OX19 antigen reacts with antibodies to the typhus-group (TG), *P. mirabilis* OXK antigen reacts with antibodies to the scrub typhus group (STG), and both *P. vulgaris* OX2 and OX19 antigens react with antibodies to the spotted fever group (SFG).[7]

We present the case of a 36 year old male with chorioretinitis post febrile illness who showed high titers of OX2 antigen, strongly suggesting rickettsial infection.

Case Report

A 36 year male presented to our OPD with diminution of vision in both eyes since 1 month post febrile illness which was not associated with chills. Diminution of vision was insidious in onset and progressive in nature which deteriorated over the course of one month.

General examination revealed lymphadenopathy of a preauricular and submandibular group of lymph nodes. Best corrected visual acuity was 1/60 in both eyes.

Anterior segment examination was within normal limits. The pupillary reaction was sluggish in both eyes.

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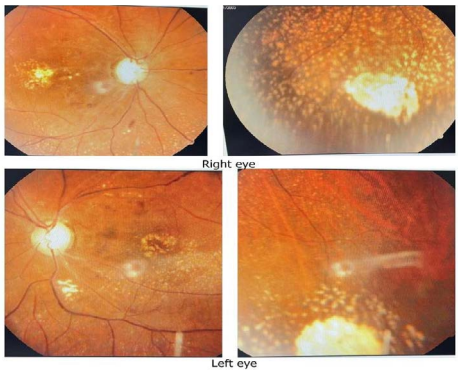

Figure 1: Pre-treatment fundus picture of both eyes

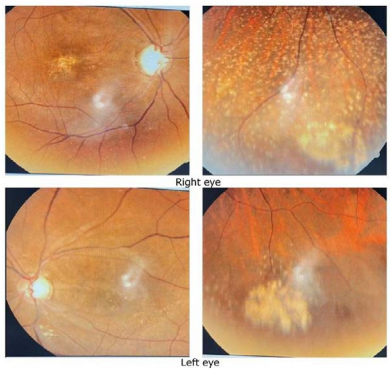

Figure 2: Post-treatment fundus picture of hoth eyes

Fundus Examination

Multiple hypopigmented (active) retinochoroiditic spots involving the macula as well as mid-peripheral retina extending up to the equator with retinal pigment epithelium alteration. Few flame-shaped and dot-blot shaped intraretinal hemorrhages present in all four quadrants. A single large hypopigmented granuloma was also present peripherally. Foveal reflex is absent (Figure 1).

USG B Scan Pre-treatment Showed – Exudative retinal detachment localized near the posterior pole.

CBC and urine investigations were all WNL except for some mild lymphocytosis and thrombocytosis.

Since the patient belonged to young age group and developed chorioretinitis post febrile illness which raised a strong suspicion of infective etiology, keeping this in mind numerous serological tests like chikungunya, dengue and malaria and Weil-Felix test were performed which showed raised titres for *Proteus* antigen OX2 which strongly suggests antibodies to spotted fever group.

The patient was given intravenous methyl prednisone 1-gm in 250 mL DNS slowly over 4 to 6 hours for 5 consecutive days which was tapered with oral prednisone(1-mg/kg/day) over the next month. Along with steroids he was also given oral doxycycline 200 mg BD for first 3 weeks and then 200 mg OD for next 3 weeks. The patient was kept on follow-up every 15 days.

1-month post treatment patient's vision is 6/18(20/60) and 6/12(20/40) in right and left eye, respectively with near vision N6 in both eyes.

Post-treatment Fundus Picture

Shows resolution of hemorrhages in the macular region of both eyes (Figure 2).

USG B-scan showing resolution of exudative retinal detachment, which was present in the patient's right eye (Figure 3).

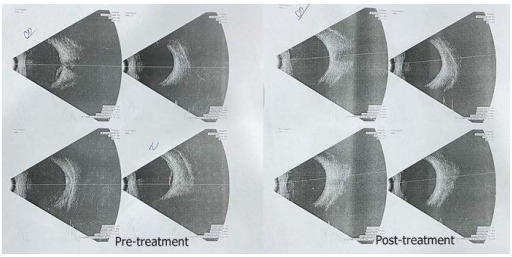

Figure 3: Pre and post treatment USG B-Scan showing resolution of exudative retinal detachment which was present in the right eye of the patient.

Discussion

Focal or multifocal retinitis post febrile illness is known to be caused by chikungunya, dengue, West Nile virus (WNV), bartonellosis, Lyme's disease, rift valley fever, etc. Rickettsial retinitis (RR) also contributes a significant portion of this condition. Posterior segment manifestations in Mediterranean spotted fever are well studied by Khairallah *et al.*[6] In our patient we performed various serological and routine urine examinations, including tests for the detection for chikungunya, dengue and Malaria and Weil-Felix test, which India being a resource-limited country gold standard test, Immunofluorescence assay, is not readily available to the general population. The value of Weil-Felix test, though not a gold standard, has been proven in Indian studies to be of definitive diagnostic value for rickettsial infection.[8,9]

Post 1-month treatment, subjective (improved vision) and objective (resolution of multiple foci of chorioretinitis on fundus picture and resolution of localized exudative retinal detachment on USG B-Scan improvement in our patient. Once the patients are diagnosed as RR or presumed RR, they can be started on steroids and antibiotics.

Conclusion

Thus we conclude the following diagnostic approach for young pts with retinitis with a history of recent fever in the indian scenario. Baseline blood investigations like complete blood count, total leucocyte count, differential leucocyte count, erythrocyte sedimentation rate, TPHA or rapid plasma reagent, HIV, ANA, ANCA and TORCH serology should be done. If above mentioned tests are inconclusive then a second panel of investigations, including chikungunya, dengue, WNV, Weil-Felix test can also be considered. Based on the availability and affordability of laboratory tests ocular fluid

analysis and PCR for cytomegalovirus, herpes, Varicella zoster can also be performed. Especially for poor response towards steroid treatment and atypical presentation. OCT is also recommended if we are suspecting RR because RR shows involvement of inner retinal layers which differentiates retinitis from other etiologies such as toxoplasmosis, CMV or VZV which generally involve full thickness of retina.[10] Patient diagnosed as RR based on Weil-Felix test should be started on steroids and antibiotics, although the role of antibiotics is unclear as multifocal chorioretinits because of RR is chiefly considered as an autoimmune response against the antigen.[11] Indian tick typhus and epidemic typhus are more common of RR as compared to scrub typhus in India. Larger randomised control studies are required to study the prevalence and chalk out standard management protocols as well as recovery period in RR with antibiotics and steroids either in combination or alone.

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