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Case Report

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Bilateral Recurrent Ocular Toxoplasmosis with Hydrocephalus in a 10-Year-Old Girl: A Case Report

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Key words:
Recurrent Ocular Toxoplasmosis, Hydrocephalus, Congenital TORCH Infection

Abstract:

This case report was done in Sir Salimullah Medical College & Mitford Hospital in Bangladesh in March 2025.Through Clinical & laboratory investigations, imaging were helpful for confirmatory diagnosis. After confirmation patient was treated with Anti-toxoplasma therapy & ventriculo-peritoneal (VP) shunt surgery. Clinical recording, pretreatment & post treatment photographs was documented properly. A 10-year-old girl presented with bilateral dimness of vision, double vision with inward deviation of right eye with headache. On examination there was right side abduction deficit & retinal examination revealed papilledema, multifocal chorio-retinitis(BE).She had a documented history of congenital ocular toxoplasmosis infection and hydrocephalus with triventriculomegaly (2015) which was resolved with anti-parasite & steroid but this patient was lost in follow ups, following recurrence of congenital infection after 10 year again underwent through imaging , lumber puncture for CSF analysis & serum serology for toxoplasma & started treatment with long term anti-toxoplasma, immunosuppressants & underwent successful VP shunt surgery in a tertiary neurology center & condition dramatically improved, steroid tapered & discharged with anti-toxoplasma drug for a period of three weeks followed by secondary prophylaxis, the patients is now on regular follow up. This case is being reported for its rarer & recurrent occurrence which started in intrauterine life & again recur, highlights the importance of long -term continuation of antimicrobial treatment with follow ups & through neuro-ophthalmologic evaluation in patients with systemic symptoms & history of congenital toxoplasma infections.

Introduction:

Toxoplasmosis, which is caused by an obligate intracellular protozoan, *Toxoplasma gondii*, still now a leading cause of posterior uveitis globally in children.[1] Vertical transmission from maternal infection, typically results congenital ocular toxoplasmosis & acquired toxoplasma retinitis usually due to reactivation of a congenital infection is a significant contributor to pediatric severe visual impairments.[2] Toxoplasma gondii can cause severe

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neuro developmental sequelae, like hydrocephalus due to inflammation & development of lesions causing obstruction of fluid flow in brain such as in aqueduct of Sylvius or the foramen of Monro leading to increased intracranial pressure (ICP), developmental delay, seizures and ocular squeal like chorioretinitis.[3] Bilateral Ocular toxoplasmosis cases in pediatric patients are rare but can be vision-threatening.[4,5] Chorioretinal infection is the hallmark manifestation, but complications like retinal vasculitis, macular star formation, and optic nerve involvement can occur.[6, 7,8,9,10] Organism usually exists in 3 forms in their life cycle like sporozoites, bradyzoites and tachyzoites; ingestion of sporozoites from accidental contamination from unhygienic handling of cat litter trays or parasites in the form of tachyzoites may spread trans placentally from a pregnant woman usually causes the disease progression in human body.[11] Recurrent episodes of inflammation commonly occur when the cysts rupture and release hundreds of tachyzoites into normal retinal cells. Recurrences usually take place between the ages of 10 and 35 yrs. The scars from which recurrences arise may be the residual of previous congenital infestations or more frequently, remote acquired involvements. We describe in this case report about an uncommon and also complicated case of bilateral recurrent ocular toxoplasmosis in a child with documented congenital Toxoplasma infection with a history of congenital hydrocephalus, now it is more complicated with raised ICP, visual impairment, abduction deficiency of right eye as a consequence of recurrence.

Early diagnosis, treatment with antiparasitic drug & multidisciplinary approaches were arranged for prompt management for that patient.

This case report was carried out at the ophthalmology department of Sir Salimullah Medical College & Mitford Hospital in March 2025. Comprehensive clinical, neurological, and ophthalmologic evaluations were conducted with multiple laboratory testing included complete blood count with ESR and neuroimaging (MRI). Fundus photography was utilized for documentation of ocular findings. Hess chart & optical coherence tomography (OCT) was advised. Clinical photographs were taken for documentation & clinical research. Therapeutic intervention was started with a triple therapy regimen (sulphamethoxazole, trimeyhoprim and folinic acid) with adjunct corticosteroids. Started & neuro-surgical intervention was required for reduction of raised intracranial pressure and a ventriculoperitoneal (VP) shunt was placed & discharged with anti-toxoplasma drug for a period of three weeks followed by secondary prophylaxis.

Case Report:

A 10 years old girl presented with progressive dimness of vision in both eyes, deviation of right eye with double vision associated with severe morning headache, nausea, vomiting for last 1 week; patient's attendant also gave history of transient loss of vision for twice for seconds. A documented history of perinatal Toxoplasma infection with tri-ventricular hydrocephalus with calcification at both cerebral hemisphere and brainstem was also found, which was resolved with short term conservative management & ventriculo-peritoneal shunt was advised but not done as financial issue and lost follow ups. There was a history of delayed developmental milestones too.

On ophthalmological evaluation, her visual acuity was counting finger 1 feet(B/E) unaided , anterior segment was normal, fundoscopy revealed bilateral optic disc swelling, flame shaped hemorrhages, dot & blot hemorrhages, exudates, edema, vascular sheathing and well-demarcated multifocal chorioretinitis. There was no redness, no history of trauma, contact with TB patient, or any recent systemic illness like hepatosplenomegaly. The patient was sent to the outpatient lab to obtain toxoplasmosis antibodies, erythrocyte sedimentation rate (ESR), Tuberculin test (MT)-TB and CBC with differential. Serology resulted with the presence of toxoplasmosis IgG antibodies against T. Gondii. MRI revealed non communicating hydrocephalus due to aqueduct stenosis. Her tuberculin test (MT) was negative, ESR was 26 mm in 1st hour. Her other systemic investigation like lumber puncture –CSF study, chest X-Ray, cervical spine study, renal function, cardiac function & thyroid status revealed normal. We also advised for color fundus photography, optical coherence tomography -macula, Hess chart.

She was prescribed triple therapy with 80 mg TMP (Trimethoprim)/400 mg SMX (Sulfame-thoxazole), along with Folinic Acid 5 mg twice daily. Treatment with Pyrimethamine-Sulfadiazine was not financially possible for the patient[12,13] & immediate referred to neurosurgeon undergone VP shunt surgery. During follow-up, her condition was dramatically improved & her visual acuity was 6/24 (B/E) Unaided with no further deterioration of visual acuity & on fundoscopy examination hemorrhages, exudates, edema was resolved but the optic disc was pale(partial secondary optic atrophy) & macular star was developed. Triple therapy continued for a total of three weeks. Followed by secondary prophylaxis for long term and maintain follow ups.

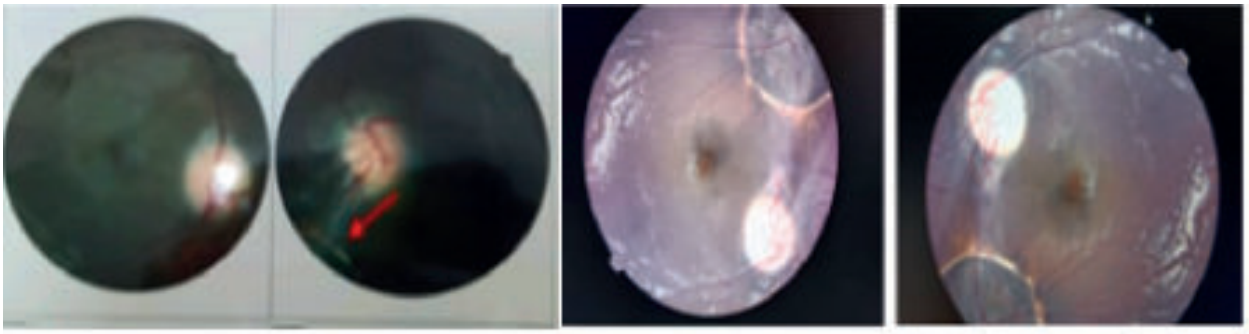

Fig: *CFP finding with chorioretinitis before & after starting triple therapy.*

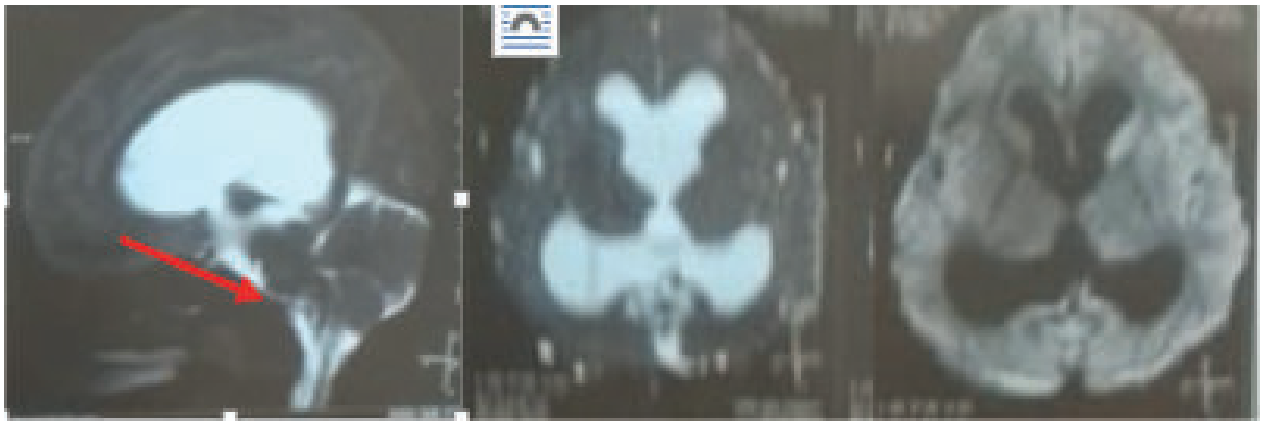

Fig: *Post Contrast Periventricular Enhancement On MRI of Brain shows Hydrocephalus & Triventriculomegaly; Red arrow showing Aqueductal stenosis.*

Fig: *Photographs of the patient before and after starting treatment & VP shunt surgery.*

Discussion:

Recurrent ocular & CNS toxoplasmosis is a rare but significant complication in pediatric patients with congenital *T. gondii* infection and usually leads to irreversible visual impairment if untreated.[1,2] Bilateral involvement, though rare, has been associated with more severe disease and neurological complications[4] like hydrocephalus.[8] The presence of macular star and secondary optic atrophy with widespread retinal inflammation, which can further compromise vision. Early initiation of triple therapy remains the mainstay of treatment, focusing on reducing parasite load and control inflammation.[9] Immune response mediated tissue damage was minimized by judicious use of corticosteroids in adequate dose. Initial treatment of choice for ýthis patient was pyrimethamine plus sulfadiazine; however, given financial challenges and evolving expert consensus, so that TMP-SMX is being identified as a regimen with comparable efficacy and potentially fewer side effects.[12,13] As was seen in this case, pyrimethamine can be expensive. Therefore, a significant lesson taken from this case is the practicality of using TMP-SMX in place of the pyrimethamine-sulfadiazine combination, which was historically utilized as the first-line treatment & dramatic improvement after treatment emphasize the need of initiation of triple therapy along with steroid in recurrent cases who are serologically negative for Ig M.[14] Surgical management with VP shunting was indicated in cases of obstructive hydrocephalus with raised ICP to prevent long-term neurological damage.[10] This case emphasizes the need for high suspicion and early intervention in patients with congenital infection history, particularly when ocular and neurological symptoms co-exist.

Conclusion:

Early detection and intensive long-term continuation of antimicrobial & immuno-suppressive treatment, follow ups & multidisciplinary approaches are mandatory to reduce recurrent attack & vision threatening complications in congenital toxoplasmosis.

Conflict of Interest:

The authors stated that there was no conflict of interest in this study

Funding:

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Consent:

For the purpose of publishing this case report and any related photos, the parents were written informed consent was acquired.

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