TOXOPLASMA NEURO-RETINITIS IN AN IMMUNO-COMPETENT ADULT- A CASE REPORT AND REVIEW OF LITERATURE

Ophthalmology

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ABSTRACT

Toxoplasmosis is a protozoan parasitic infection caused by *Toxoplasma gondii*. It is transmitted congenitally or acquired in later stages of life either by ingestion of oocysts from cat's feces attached or by eating under cooked meat. Ocular toxoplasmosis presents most commonly as posterior uveitis and rarely involves the optic nerve. We report a case of 45-year-old female, who is immuno-competent, presented with painless diminution vision in her left eye. Her best corrected vision was 6/36 in left eye and 6/6 in right eye. Examination of left eye revealed a clear media with optic disc swelling and hard exudates arranged in stellate fashion around the macula and inferior altitudinal field defects. Investigations revealed elevated titres of toxoplasma IgG antibody. Patient showed significant improvement with medical therapy. Since this neuroretinitis type of presentation in ocular toxoplasmosis is rare, awareness about this condition among clinicians can help prompt treatment and prevent significant blindness.

KEYWORDS

Toxoplasmosis, Neuroretinitis, Immunoglobulin G

Introduction

Neuro-retinitis is an inflammatory condition characterized by the presence of edema of the optic disc and hard exudates around the macula in stellate pattern.^[1] The presentation is unilateral painless visual loss associated with color vision deficit and field defects. The etiology can be infectious or immune mediated, among which cat-scratch disease accounts for two-thirds of cases,^[2] and around a quarter of cases remain idiopathic.^[3] Other infectious etiologies like tuberculosis, Lyme's disease, leptospirosis, herpes simplex, toxoplasmosis can also present as neuro-retinitis. Although systemic toxoplasmosis is common in immunocompromised individuals, ocular toxoplasmosis can occur in immunocompetent individuals as well and most commonly presents as posterior uveitis. Ocular toxoplasmosis presenting as neuro-retinitis is very rare.^[4]

Case report

A 45-year-old female presented to Ophthalmology clinic with sudden painless diminution of vision in left eye and inability to see the objects located inferiorly for the past ten days. There was no history of pain on eye movements, fever, headache, jaw claudication, focal neurological deficit, contact with pets, sexual promiscuity, and travel to endemic areas of Lyme's disease. She did not have any systemic comorbid illness and there were such episodes in the past. On examination, her best corrected visual acuity was 6/6 in the right eye and 6/36 in the left eye. She had grade 1 relative afferent pupillary defect in left eye with normal intraocular pressure and normal anterior segment. Fundus examination of left eye revealed a clear media with optic disc swelling and hard exudates arranged in stellate fashion around the macula (Fig-1). Field tests showed inferior altitudinal field defect. Examination of right eye was totally normal. Laboratory investigations of complete blood count differential, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), HIV serology, Toxoplasmosis serology, serum angiotensin converting enzyme (ACE) level, FTA-ABS, chest x-ray, Mantoux test, Herpes simplex virus (HSV) PCR and *Bartonella henselae* serology.

Figure 1: Fundus photo of both the eyes with left eye showing disc edema and stellate maculopathy

Based on our clinical diagnosis with consideration of cat scratch disease as the commonest etiology, we started the patient on empirical

treatment of doxycycline 100mg twice daily along with topical steroid drops. On day 3 of admission, all the laboratory reports were found to be within the normal limits, except for toxoplasma serology. Toxoplasma IgM antibody was negative, but IgG antibody level was found to be > 150 IU/L. As the initial response to empirical treatment was not good, we shifted the patient to anti-toxoplasmosis treatment. We started the patient on pyrimethamine 50mg/day and sulfadiazine 500mg four times a day along with folinic acid and oral prednisolone 1mg/kg/day after three days and tapered gradually to tackle the associated inflammation. One week following the treatment, we noted reduction in disc edema with improvement in visual acuity to 6/24. After 6 weeks of treatment, patient's visual acuity improved to 6/9 with complete resolution of disc edema and macular exudates.

Discussion

Leber, in 1916, first identified the syndrome of optic disc edema with stellate maculopathy which was later renamed as Leber's neuro retinitis.^[5] Most common form of infectious neuro-retinitis is caused by cat scratch disease followed by spirochetosis, leptospirosis, tuberculosis and other infections and inflammatory conditions.

Toxoplasma gondii is an obligate intracellular pathogen infecting humans and warm blooded animals. Although the prevalence of the disease may vary among different regions and climates, around one-third of the total human population in the world have chronic *Toxoplasma gondii* infection.^[6] The main route of infection has been found to be ingestion of oocysts from cat's feces found in soil and attached to fruits, vegetables and water as well as from ingestion of uncooked or raw meat.^[7] Ocular toxoplasmosis can be either congenital via placental spread presenting as bilateral macular scars or acquired presenting as focal chorioretinitis with or without an adjacent chorioretinal scar.^[8] Typically, ocular toxoplasmosis attack occurs in second decade with multiple recurrences. Toxoplasma retino-choroiditis is the most frequent presentation in endemic countries. Optic nerve involvement presenting with disc edema and macular star in toxoplasma is very rare.^[9] Studies have shown that, of all their patients with ocular toxoplasmosis (284 patients) only 0.7% (2 patients) had toxoplasma neuro-retinitis.^[10,11]

Diagnosis of ocular toxoplasmosis is based on clinical examination and if definite diagnosis cannot be made clinically, then increased antibody titers in serum and ocular fluids or DNA amplification can be helpful in diagnosis.^[12] Relying on serology alone can lead to wrong diagnosis as it may be affected by immune status of the patient and endemic locality. Serology can be used as an adjunct to clinical diagnosis and nucleic acid amplification from intraocular fluids. Although the disease is self limiting, antibiotic treatment has been proven beneficial as they reduce the number of recurrences and speed the resolution.^[13] Complications of ocular toxoplasmosis include

cataract,secondary glaucoma,cystoid macular edema and retinal detachment.

Since our patient had vision threatening optic nerve involvement with no response to empirical treatment and positive toxoplasma serology with elevated titres, pyrimethamine- sulfadiazine combination was started and clinical improvement was noted within one week, thus confirming our diagnosis.

Conclusion

Although neuro-retinitis is a rare presentation of toxoplasmosis, it should be still considered in the diagnosis to prevent visual loss and complications. Mere awareness of this cause can help clinicians to initiate prompt treatment and good visual outcome in such patients.

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